Salinas Valley Groundwater Basin 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan

Salinas Valley Basin
Groundwater Sustainability Agency

(Approved by Salinas Valley Basin Groundwater Sustainability Agency Board of Directors on January 9, 2020)

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Salinas Valley: 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan
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ACRONYMS & ABBREVIATIONS

ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AF	acre-feet
AF/yr.	acre-feet per year
Alco	Alisal Water Corporation
AMBAG	Association of Monterey Bay Area Governments
amls	above mean sea level
AWPF	Advanced Water Purification Facility
Basin Plan	Water Quality Control Plan for the Central Coast Basin
BCM	Basin Characterization Model
bgs	below ground surface
BLM	U.S. Bureau of Land Management
Cal-Am	California-American Water
CASGEM	California Statewide Groundwater Elevation Monitoring
CCGC	Central Coast Groundwater Coalition
CCR	California Code of Regulations
CCRWQCB	Central Coast Regional Water Quality Control Board
CCTAG	Climate Change Technical Advisory Group
cfs	cubic feet per second
CIFP	Capital Improvement and Financing Plan
COCs	Constituents of Concern
COOP	Cooperative Observer program
County GSA	County of Monterey Ground Water Sustainability Agency
CSD	Community Services District
CSIP	Castroville Seawater Intrusion Project
DCE	dichloroethylene
DDW	Division of Drinking Water
DEM	Digital Elevation Model
DMS	Data management system
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EIR	environmental impact report
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ET	evapotranspiration
eWRIMS	Electronic Water Rights Information Management System
ft/d	feet per day
ft/yr	feet per year
ft2/d	square feet per day
FORA	Fort Ord Reuse Authority
GAMA	Groundwater Ambient Monitoring and Assessment

GDE	groundwater-dependent ecosystem
GIS	geographic information systems
GMP	Groundwater Management Plan
gpd/ft	gallons per day per foot
gpm	gallons per minute
GPS	global positioning system
GRC	General Rate Case
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
gSSURGO	Gridded Soil Survey Geographic
HCP	Habitat Conservation Plan
HSU	hydrostratigraphic unit
ILRP	Irrigated Lands Regulatory Program
InSAR	Interferometric Synthetic Aperture Radar
IRWM	Integrated Regional Water Management
JPA	Joint Powers Authority
LID	Low Impact Development
M1W	Monterey One Water
MA	Management Area
MCL	Maximum Contaminant Level
MCRCD	Monterey County Resource Conservation District
MCWD	Marina Coast Water District
MCWRA	Monterey County Water Resources Agency
meq/L	milliequivalents per liter
mg/L	milligrams per liter
MPWSP	Monterey Peninsula Water Supply Project
MTBE	methyl tert butyl ether
NCCAG	Natural Communities Commonly Associated with Groundwater
NCSS	National Cooperative Soil Survey
NEPA	National Environmental Policy Act
NHD	National Hydrology Dataset
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	USDA Natural Resources Conservation Service
NWIS	National Water Information System (USGS)
NWS	National Weather Service
O&M	operations and maintenance
OSWCR	Online System for Well Completion Reports
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PCE	tetrachloroethylene
PET	potential evapotranspiration

PRISM	Parameter-elevation Regressions on Independent Slopes Model
PWM	Pure Water Monterey
QA/QC	quality assurance / quality control
QAPP	Quality Assurance Project Plan
R2	correlation coefficient
RMS	representative monitoring sites
RTP	Regional Wastewater Treatment Plan
RWMG	Regional Water Management Group
SAGBI	Soil Agricultural Groundwater Banking Index
SB	Senate Bill
SGMA	Sustainable Groundwater Management Act
SMC	Sustainable Management Criteria
SMCA	State Marine Conservation Area
SMCL	secondary maximum contaminant level
SMR	State Marine Reserve
SRDF	Salinas River Diversion Facility
Subbasin	Salinas Valley – 180/400-Foot Aquifer Subbasin
SVBGSA	Salinas Valley Basin Groundwater Sustainability Agency
SVIHM	Salinas Valley Integrated Hydrologic Model
SVRP	Salinas Valley Reclamation Project
SVWP	Salinas Valley Water Project
SWQCB	State Water Quality Control Board
SWRCB	State Water Resources Control Board
TCE	trichloroethylene
TDS	total dissolved solids
TNC	The Nature Conservancy
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VIC	Variable Infiltration Capacity
VOC	volatile organic compound
VSMOW	Vienna Standard Mean Ocean Water
WDR	Waste Discharge Requirements

DEFINITIONS

California Water Code

Sec. 10721

Unless the context otherwise requires, the following definitions govern the construction of this part:

(a) Adjudication action means an action filed in the superior or federal district court to determine the rights to extract groundwater from a basin or store water within a basin, including, but not limited to, actions to quiet title respecting rights to extract or store groundwater or an action brought to impose a physical solution on a basin.

(b) Basin means a groundwater basin or subbasin identified and defined in Bulletin 118 or as modified pursuant to Chapter 3 (commencing with Section 10722).

(c) Bulletin 118 means the department's report entitled California's Groundwater: Bulletin 118 updated in 2003, as it may be subsequently updated or revised in accordance with Section 12924.

(d) Coordination agreement means a legal agreement adopted between two or more groundwater sustainability agencies that provides the basis for coordinating multiple agencies or groundwater sustainability plans within a basin pursuant to this part.

(e) De minimis extractor means a person who extracts, for domestic purposes, two acre-feet or less per year.

(f) Governing body means the legislative body of a groundwater sustainability agency.

(g) Groundwater means water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water that flows in known and definite channels.

(h) Groundwater extraction facility means a device or method for extracting groundwater from within a basin.

(i) Groundwater recharge or recharge means the augmentation of groundwater, by natural or artificial means.

(j) Groundwater sustainability agency means one or more local agencies that implement the provisions of this part. For purposes of imposing fees pursuant to Chapter 8 (commencing with Section 10730) or taking action to enforce a groundwater sustainability plan,

groundwater sustainability agency also means each local agency comprising the groundwater sustainability agency if the plan authorizes separate agency action.

(k) Groundwater sustainability plan or plan means a plan of a groundwater sustainability agency proposed or adopted pursuant to this part.

(l) Groundwater sustainability program means a coordinated and ongoing activity undertaken to benefit a basin, pursuant to a groundwater sustainability plan.

(m) In-lieu use means the use of surface water by persons that could otherwise extract groundwater in order to leave groundwater in the basin.

(n) Local agency means a local public agency that has water supply, water management, or land use responsibilities within a groundwater basin.

(o) Operator means a person operating a groundwater extraction facility. The owner of a groundwater extraction facility shall be conclusively presumed to be the operator unless a satisfactory showing is made to the governing body of the groundwater sustainability agency that the groundwater extraction facility actually is operated by some other person.

(p) Owner means a person owning a groundwater extraction facility or an interest in a groundwater extraction facility other than a lien to secure the payment of a debt or other obligation.

(q) Personal information has the same meaning as defined in Section 1798.3 of the Civil Code.

(r) Planning and implementation horizon means a 50-year time period over which a groundwater sustainability agency determines that plans and measures will be implemented in a basin to ensure that the basin is operated within its sustainable yield.

(s) Public water system has the same meaning as defined in Section 116275 of the Health and Safety Code.

(t) Recharge area means the area that supplies water to an aquifer in a groundwater basin.

(u) Sustainability goal means the existence and implementation of one or more groundwater sustainability plans that achieve sustainable groundwater management by identifying and causing the implementation of measures targeted to ensure that the applicable basin is operated within its sustainable yield.

(v) Sustainable groundwater management means the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.

(w) Sustainable yield means the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus that can be withdrawn annually from a groundwater supply without causing an undesirable result.

(x) Undesirable result means one or more of the following effects caused by groundwater conditions occurring throughout the basin:

(1) Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and groundwater recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods.

(2) Significant and unreasonable reduction of groundwater storage.

(3) Significant and unreasonable seawater intrusion.

(4) Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.

(5) Significant and unreasonable land subsidence that substantially interferes with surface land uses.

(6) Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

(y) Water budget means an accounting of the total groundwater and surface water entering and leaving a basin including the changes in the amount of water stored.

(z) Watermaster means a watermaster appointed by a court or pursuant to other law.

(aa) Water year means the period from October 1 through the following September 30, inclusive.

(ab) Wellhead protection area means the surface and subsurface area surrounding a water well or well field that supplies a public water system through which contaminants are reasonably likely to migrate toward the water well or well field.

Official California Code of Regulations

Title 23. Waters
Division 2. Department of Water Resources
Chapter 1.5. Groundwater Management
Subchapter 2. Groundwater Sustainability Plans
Article 2. Definitions
23 CCR § 351
§ 351. Definitions.

The definitions in the Sustainable Groundwater Management Act, Bulletin 118, and Subchapter 1 of this Chapter, shall apply to these regulations. In the event of conflicting definitions, the definitions in the Act govern the meanings in this Subchapter. In addition, the following terms used in this Subchapter have the following meanings:

(a) "Agency" refers to a groundwater sustainability agency as defined in the Act.

(b) "Agricultural water management plan" refers to a plan adopted pursuant to the Agricultural Water Management Planning Act as described in Part 2.8 of Division 6 of the Water Code, commencing with Section 10800 et seq.

(c) "Alternative" refers to an alternative to a Plan described in Water Code Section 10733.6.

(d) "Annual report" refers to the report required by Water Code Section 10728.

(e) "Baseline" or "baseline conditions" refer to historic information used to project future conditions for hydrology, water demand, and availability of surface water and to evaluate potential sustainable management practices of a basin.

(f) "Basin" means a groundwater basin or subbasin identified and defined in Bulletin 118 or as modified pursuant to Water Code 10722 et seq.

(g) "Basin setting" refers to the information about the physical setting, characteristics, and current conditions of the basin as described by the Agency in the hydrogeologic conceptual model, the groundwater conditions, and the water budget, pursuant to Subarticle 2 of Article 5.

(h) “Best available science” refers to the use of sufficient and credible information and data, specific to the decision being made and the time frame available for making that decision, that is consistent with scientific and engineering professional standards of practice.

(i) “Best management practice” refers to a practice, or combination of practices, that are designed to achieve sustainable groundwater management and have been determined to be technologically and economically effective, practicable, and based on best available science.

(j) “Board” refers to the State Water Resources Control Board.

(k) “CASGEM” refers to the California Statewide Groundwater Elevation Monitoring Program developed by the Department pursuant to Water Code Section 10920 et seq., or as amended.

(l) “Data gap” refers to a lack of information that significantly affects the understanding of the basin setting or evaluation of the efficacy of Plan implementation, and could limit the ability to assess whether a basin is being sustainably managed.

(m) “Groundwater dependent ecosystem” refers to ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface.

(n) “Groundwater flow” refers to the volume and direction of groundwater movement into, out of, or throughout a basin.

(o) “Interconnected surface water” refers to surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted.

(p) “Interested parties” refers to persons and entities on the list of interested persons established by the Agency pursuant to Water Code Section 10723.4.

(q) “Interim milestone” refers to a target value representing measurable groundwater conditions, in increments of five years, set by an Agency as part of a Plan.

(r) “Management area” refers to an area within a basin for which the Plan may identify different minimum thresholds, measurable objectives, monitoring, or projects and management actions based on differences in water use sector, water source type, geology, aquifer characteristics, or other factors.

(s) “Measurable objectives” refer to specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions that have been included in an adopted Plan to achieve the sustainability goal for the basin.

(t) “Minimum threshold” refers to a numeric value for each sustainability indicator used to define undesirable results.

(u) “NAD83” refers to the North American Datum of 1983 computed by the National Geodetic Survey, or as modified.

(v) “NAVD88” refers to the North American Vertical Datum of 1988 computed by the National Geodetic Survey, or as modified.

(w) “Plain language” means language that the intended audience can readily understand and use because that language is concise, well-organized, uses simple vocabulary, avoids excessive acronyms and technical language, and follows other best practices of plain language writing.

(x) “Plan” refers to a groundwater sustainability plan as defined in the Act.

(y) “Plan implementation” refers to an Agency's exercise of the powers and authorities described in the Act, which commences after an Agency adopts and submits a Plan or Alternative to the Department and begins exercising such powers and authorities.

(z) “Plan manager” is an employee or authorized representative of an Agency, or Agencies, appointed through a coordination agreement or other agreement, who has been delegated management authority for submitting the Plan and serving as the point of contact between the Agency and the Department.

(aa) “Principal aquifers” refer to aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems.

(ab) “Reference point” refers to a permanent, stationary and readily identifiable mark or point on a well, such as the top of casing, from which groundwater level measurements are taken, or other monitoring site.

(ac) “Representative monitoring” refers to a monitoring site within a broader network of sites that typifies one or more conditions within the basin or an area of the basin.

(ad) “Seasonal high” refers to the highest annual static groundwater elevation that is typically measured in the Spring and associated with stable aquifer conditions following a period of lowest annual groundwater demand.

(ae) “Seasonal low” refers to the lowest annual static groundwater elevation that is typically measured in the Summer or Fall, and associated with a period of stable aquifer conditions following a period of highest annual groundwater demand.

(af) “Seawater intrusion” refers to the advancement of seawater into a groundwater supply that results in degradation of water quality in the basin, and includes seawater from any source.

(ag) “Statutory deadline” refers to the date by which an Agency must be managing a basin pursuant to an adopted Plan, as described in Water Code Sections 10720.7 or 10722.4.

(ah) “Sustainability indicator” refers to any of the effects caused by groundwater conditions occurring throughout the basin that, when significant and unreasonable, cause undesirable results, as described in Water Code Section 10721(x).

(ai) “Uncertainty” refers to a lack of understanding of the basin setting that significantly affects an Agency's ability to develop sustainable management criteria and appropriate projects and management actions in a Plan, or to evaluate the efficacy of Plan implementation, and therefore may limit the ability to assess whether a basin is being sustainably managed.

(aj) “Urban water management plan” refers to a plan adopted pursuant to the Urban Water Management Planning Act as described in Part 2.6 of Division 6 of the Water Code, commencing with Section 10610 et seq.

(ak) “Water source type” represents the source from which water is derived to meet the applied beneficial uses, including groundwater, recycled water, reused water, and surface water sources identified as Central Valley Project, the State Water Project, the Colorado River Project, local supplies, and local imported supplies.

(al) “Water use sector” refers to categories of water demand based on the general land uses to which the water is applied, including urban, industrial, agricultural, managed wetlands, managed recharge, and native vegetation.

(am) “Water year” refers to the period from October 1 through the following September 30, inclusive, as defined in the Act.

(an) “Water year type” refers to the classification provided by the Department to assess the amount of annual precipitation in a basin.

EXECUTIVE SUMMARY

ES-1 INTRODUCTION AND AGENCY INFORMATION (GSP CHAPTERS 1 - 2)

The 2014 California Sustainable Groundwater Management Act (SGMA) requires that medium- and high-priority groundwater basins and subbasins develop Groundwater Sustainability Plans (GSPs) that outline how they will achieve groundwater sustainably in 20 years, and maintain sustainability for an additional 30 years. This GSP fulfills that requirement for the Salinas Valley - 180/400-Foot Aquifer Subbasin.

In 2017, local GSA-eligible entities formed the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) to develop and implement the GSPs for the Salinas Valley. The SVBGSA is a Joint Powers Authority (JPA) with membership comprising the County of Monterey, Water Resources Agency of the County of Monterey (Monterey County Water Resources Agency, or MCWRA), City of Salinas, City of Soledad, City of Gonzales, City of King, Castroville Community Services District, and Monterey One Water. The SVBGSA is governed by an eleven-member Board of Directors, representing public and private groundwater interests throughout the Salinas Valley Groundwater Basin. In addition, an Advisory Committee ensures participation by, and input to, the Board by constituencies whose interests are not directly represented on the Board. The SVBGSA's activities are coordinated by a General Manager.

The Salinas Valley Groundwater Basin consists of nine subbasins, of which six fall entirely or partially under the SVBGSA's jurisdiction. One of the nine subbasins, the Seaside Subbasin, is adjudicated and not managed by the SVBGSA. Another two subbasins, the Paso Robles and Atascadero Subbasins, lie completely in San Luis Obispo County and are managed by other groundwater sustainability agencies.

The SVBGSA developed this GSP in coordination with the Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA) and the County of Monterey Ground Water Sustainability Agency (County GSA). The SVBGSA developed this GSP for the 180/400-Foot Aquifer Subbasin (Subbasin) in concert with the GSPs for its five other Salinas Valley Subbasins: the Eastside Aquifer Subbasin (DWR subbasin number 3-004.02), the Forebay Aquifer Subbasin (DWR subbasin number 3-004.04), the Upper Valley Aquifer Subbasin (DWR subbasin number 3-004.05), the Langley Area Subbasin (DWR subbasin number 3-004.09) and the Monterey Subbasin (DWR subbasin number 3-004.10). Together, the six subbasin plans under the SVBGSA will be integrated into the Salinas Valley Integrated Groundwater Sustainability Plan.

This GSP covers all of the 89,700 acres of the 180/400-Foot Aquifer Subbasin, as shown in Figure 1.The GSP describes current groundwater conditions, develops a hydrogeologic conceptual model, establishes a water budget, outlines local sustainable management criteria, and provides projects and programs for reaching sustainability in the Subbasin by 2040.

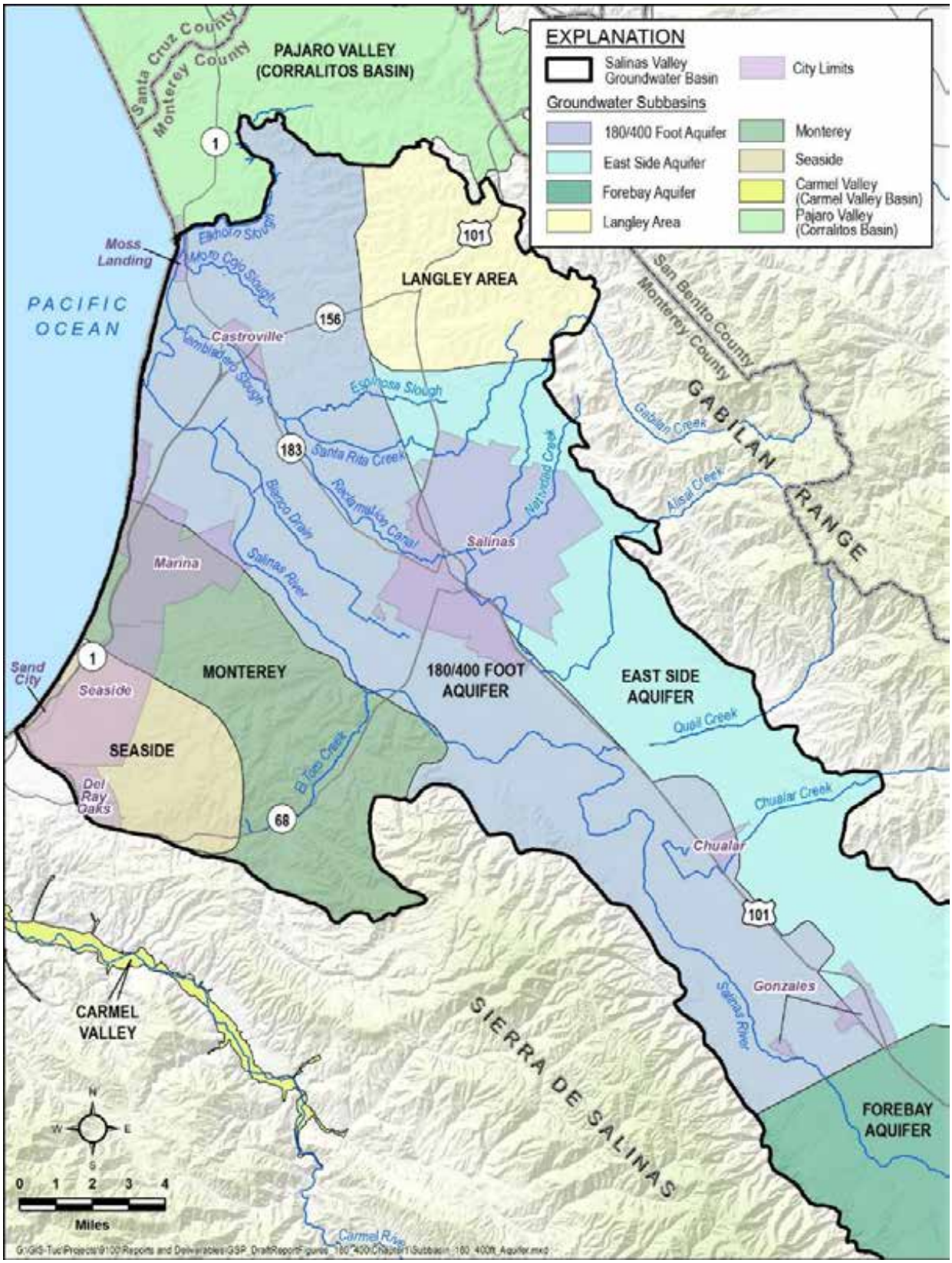

Figure ES-1. 180/400-Foot Aquifer Subbasin

ES-2 DESCRIPTION OF PLAN AREA (GSP CHAPTER 3)

The 180/400-Foot Aquifer Subbasin is a high-priority groundwater subbasin in northwestern Monterey County that includes the northern end of the Salinas River Valley. The Salinas River flows into the Subbasin from the south and discharges into Monterey Bay in the north. The majority of land in the Subbasin is used for agriculture, with lettuce, strawberries, and broccoli as the top three crops (Monterey County Agriculture Commissioner, 2018). The Subbasin contains the municipalities of Marina, Salinas, and Gonzales; and the census-designated places of Castroville, Moss Landing, Elkhorn, Boronda, Spreckels, and Chualar.

Groundwater is the main water source in the Subbasin. The Salinas River and its tributaries provide limited surface water; and the Castroville Seawater Intrusion Project (CSIP) delivers a combination of groundwater, surface water, and recycled water from Monterey One Water to the coastal farmland surrounding Castroville. The primary water use sector is agriculture, which uses 85% of the water in the Subbasin. Most of the remaining water use is urban, with only minimal use by wetlands and native vegetation.

A significant number of existing groundwater and surface water monitoring programs active in the Subbasin will be directly incorporated into the GSP implementation. Ongoing monitoring programs include:

- CASGEM groundwater elevation monitoring
- Non-CASGEM groundwater elevation monitoring
- MCWRA's groundwater pumping annual reporting
- MCWRA's seawater intrusion monitoring
- Municipal, small water system, and agricultural groundwater quality monitoring
- Stream gauge measurements

ES-3 HYDROGEOLOGIC CONCEPTUAL MODEL (GSP CHAPTER 4)

Due to decades of extensive study and groundwater development, the structure and boundaries of the 180/400-Foot Aquifer Subbasin are relatively well-developed. The 180/400-Foot Subbasin is an alluvial basin with elevations that range from sea level at the coast to approximately 500 feet (NAVD88) along the Sierra de Salinas. Lateral boundaries between subbasins are determined in part by geologic structures and depositional changes that influence flow and interaction between basins and subbasins. The northern boundary of the 180/400-Foot Aquifer Subbasin follows the current course of Elkhorn Slough and corresponds to a paleo-drainage of the Salinas River (DWR, 2003) that limits groundwater flow between basins (Durbin, et al., 1978). The boundary with the Langley Subbasin to the northeast is based on a topographic change from the valley

floor to an elevated foothill area, but there is no hydraulic barrier to groundwater flow. To the east, hydraulic connectivity is restricted by depositional changes along the border with the Eastside Aquifer. To the southeast, there is hydraulic connectivity with the Forebay Subbasin. To the southwest, the boundary with the Monterey Subbasin is based on topographic rise that coincides with a buried trace of the Reliz fault, which may act as a groundwater flow barrier (Durbin, et al. 1978); however, more data is needed to determine the extent of hydraulic connectivity. Finally, there is no hydraulic barrier between the 180/400-Foot Aquifer Subbasin and the Monterey Bay.

Vertically, the shallowest water-bearing sediments are not considered a principal aquifer because they are thin, laterally discontinuous, and a minor source of water. Groundwater in these shallow sediments is hydraulically connected to the Salinas River but poorly connected to the underlying productive principal aquifers: the 180-Foot, 400-Foot, and Deep Aquifers. The base of the shallow sediments is the Salinas Valley Aquitard, which overlies and confines the 180-Foot Aquifer. The 180-Foot Aquifer consists of interconnected sand and gravel beds that are 50 to 150 feet thick. Below the 180-Foot Aquifer, the 180/400-Foot Aquitard confines the 400-Foot Aquifer. The 400-Foot Aquifer is a relatively permeable horizon that is approximately 200 feet thick near Salinas; but in other areas the aquifer is split into multiple permeable zones by clay layers (DWR, 1973). Below the 400-Foot Aquifer the 400-Foot/Deep Aquitard, confines the Deep Aquifers, also referred to as the 900-Foot and 1500-Foot Aquifers. There are limited data available from the Deep Aquifers. The Subbasin does not have a well-defined base, and this GSP adopts the base of the Subbasin defined by the USGS (Durbin, et al., 1978).

Detailed aquifer property values (storativity, conductivity, and transmissivity) for each aquifer were not available at the time of GSP development, although estimates from calibrated groundwater models were available. The SVBGSA will fill this data gap during GSP implementation. This GSP uses specific capacity data as a proxy for transmissivity data. The specific capacity data indicate that the 180-Foot Aquifer and the 400-Foot Aquifer are relatively transmissive aquifers with high well yields.

Natural groundwater recharge occurs through infiltration of surface water, deep percolation of excess applied irrigation water, and deep percolation of infiltrating precipitation. Recharge to the 180-Foot Aquifer is likely limited due to the low permeability of the Salinas Valley Aquitard. No mapped springs, seeps, or discharge to streams have been identified in the Subbasin. Some phreatophytes discharge groundwater through evapotranspiration in areas where the water table is sufficiently high.

The primary surface water body in the Subbasin is the Salinas River. Two reservoirs outside of the Subbasin, Lake Nacimiento and Lake San Antonio, control river flows and are important controls for managed aquifer recharge. Agricultural diversions have altered the Salinas River's hydrology, and the River no longer exhibits natural seasonal variation in flows.

ES-4 GROUNDWATER CONDITIONS (GSP CHAPTER 5)

General groundwater conditions in the Subbasin are described for current (after January 1, 2015) and historical conditions (before January 1, 2015), organized by DWR's six sustainability indicators.

- **Groundwater Elevations** – Groundwater hydrographs show a general decline in groundwater elevations in the 180/400-Foot Aquifer Subbasin. Groundwater elevations have been chronically lowered due to pumping and are lowest during higher irrigation seasons. The lowered groundwater elevations are the cause of seawater intrusion in both the 180-Foot and the 400-Foot Aquifers.
- **Change in Groundwater Storage –** This GSP defines change in usable groundwater storage as the annual average increase or decrease in groundwater that can be safely used for domestic, industrial, or agricultural purposes. Change in usable groundwater storage is the sum of change in storage determined from groundwater elevation changes and the change in storage due to seawater intrusion. For the 180/400-Foot Aquifer Subbasin, the historical average annual loss of storage is approximately 11,700 acre-feet per year (AF/yr.).
- **Seawater Intrusion –** The 180-Foot and 400-Foot Aquifers have been subject to seawater intrusion for more than 70 years. MCWRA and others have implemented projects to slow seawater intrusion; however, it remains an ongoing threat. Seawater intrusion is less extensive in the 400-Foot Aquifer than in the 180-Foot Aquifer; however, between 2013 and 2017, the area impacted by intrusion in the 400-Foot Aquifer increased from approximately 12,500 acres to 18,000 acres. To date, seawater intrusion has not been reported in the Deep Aquifers.
- **Groundwater Quality –** Elevated nitrate concentrations in groundwater were locally present in the 1960s and significantly increased in 1970s and 1980s. In 2005, nitrate levels exceeding the primary maximum contaminant level (MCL) were found in 32% of public water supply samples in the Salinas Valley Groundwater Basin (USGS, 2005). In 2018, nitrate levels exceeded the primary MCL in 26% of On-Farm Domestic Wells and 21% of Irrigation Supply Wells in the Subbasin (CCRWQCB, 2018), a majority of which originated from irrigated agricultural waste discharges. Other constituents found at levels of concern for either potable or irrigation uses include 1,2,3-trichloropropane, arsenic, cadmium, chloride, fluoride, hexavalent chromium, iron, manganese, methyl tert-butyl ether, perchlorate, total dissolved solids, and thallium.
- **Subsidence –** No measurable subsidence has been recorded anywhere in the Subbasin between June 2015 and June 2018.
- **Interconnected Surface Water –** Although the Salinas Valley Aquitard inhibits hydraulic connectivity between the 180/400-Foot Aquifer and Salinas River,

interconnection may exist in the two limited areas where groundwater is less than 20 feet below ground surface: near the southern boundary where the Salinas River enters the Subbasin and northern boundary where the River discharges into Monterey Bay. While this analysis is based on best available data, it contains significant uncertainty and data gaps that will be filled during GSP implementation.

ES-5 WATER BUDGETS (GSP CHAPTER 6)

Water budgets provide an accounting and assessment of the total annual volume of surface water and groundwater entering and leaving the Subbasin. This GSP presents three water budgets – historical (1995-2014), current (2015-2017), and projected. A surface water budget and a groundwater budget are presented for each time period. The groundwater budget is the budget for the entire groundwater system, including the shallow sediments and principal aquifers. It contains aggregate numbers for the Subbasin and is not differentiated spatially or by aquifer.

Historical and Current Water Budgets – Historical and current water budgets use best available data and tools to determine the water budget components; however, no groundwater model was available at the time of writing to produce an integrated historical and current water budget. Data include surface flow gauges, calculations from historical studies, precipitation records and estimated subsurface flows based on flow directions and hydraulic gradients. In 2020, the USGS will release its Salinas Valley Integrated Hydrologic Model (SVIHM). The historical and current water budgets will be updated to reflect the SVIHM output when it is released. Figure 2 summarizes annual average components of the historical groundwater water budget.

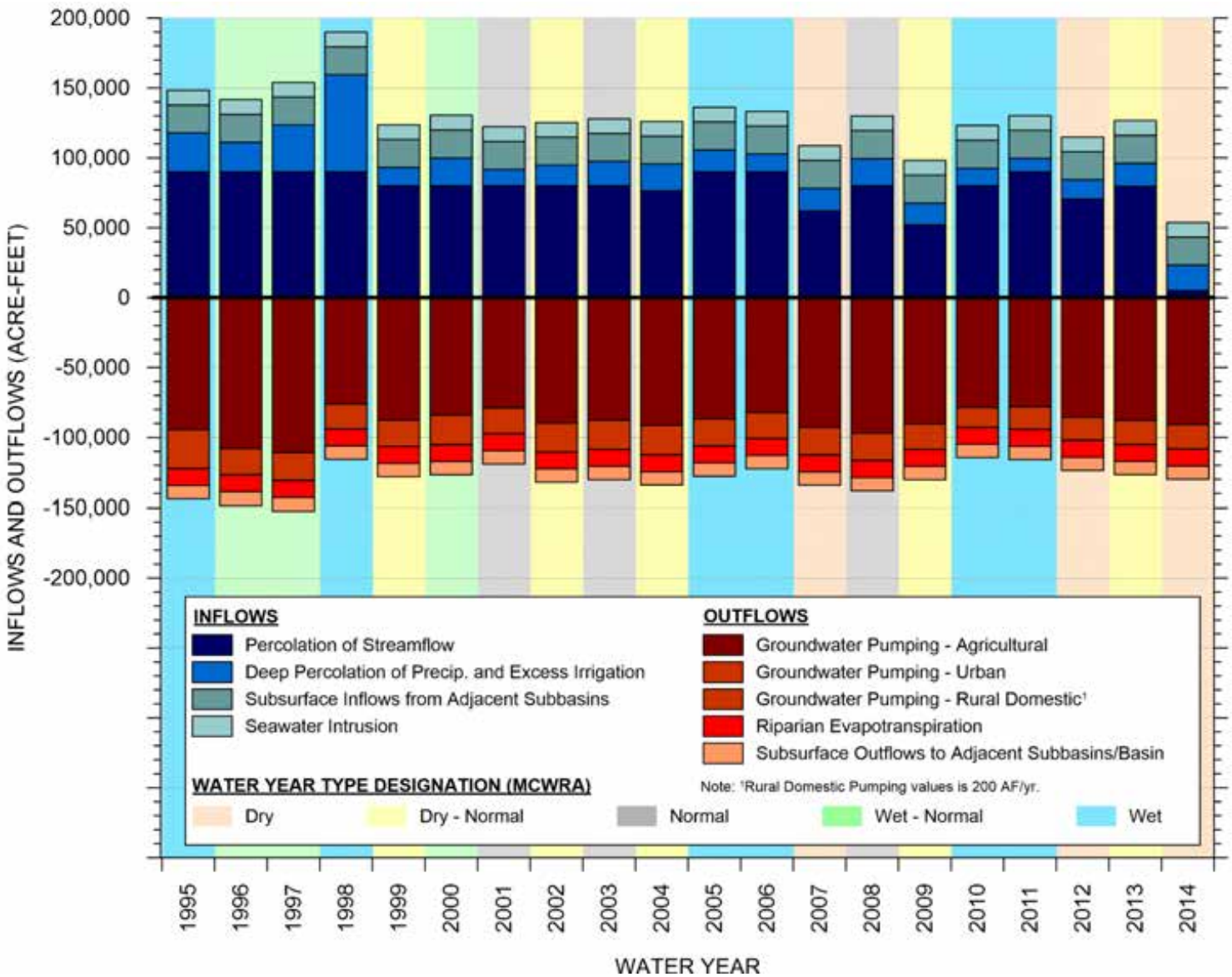

Figure ES-2. Annual Average Historical Groundwater Budget

The average loss in storage due to groundwater level fluctuations during the historical and current periods are approximately 400 AF/yr. and 600 AF/yr., respectively. Additionally, seawater intrusion decreases usable water by 10,500 AF/yr.

Uncertainty of the groundwater budgets was calculated by subtracting change in storage estimated using groundwater levels from the change in storage based on inflow and outflow components of the groundwater budgets. Table ES-1 shows the main components of the historical and current groundwater budgets; and calculates the percent uncertainty for each budget. The relatively high percent uncertainty in the current budget emphasizes the need to adopt the modeled historical groundwater budget when the historical SVIHM becomes available.

Table ES-1. Estimated Historical and Current Groundwater Budgets and Uncertainties

Groundwater Component	Historical Budget	Current Budget
Average Annual Inflow (AF/yr.)	116,700	64,800
Average Annual Outflow (AF/yr.)	129,600	130,600
Average Annual Change in Storage (AF/yr.)	-12,900	-65,800
Seawater Intrusion (AF/yr.)	-10,500	-10,500
Average Annual Change in Storage Based on Inflows and Outflows (AF/yr.)	-2,400	-55,300
Estimated Average Annual Change in Storage (AF/yr.) Based on MCWRA Water Level Measurements	-400	-600
Difference Between Budget and Estimated (AF/yr.)	-2,000	-54,700
Difference Between Budget and Estimated (% of Outflow)	-2%	-42%

Note: although seawater intrusion is identified as an inflow to quantify the overall basin water budget, it is not considered part of the sustainable yield.

The sustainable yield of the Subbasin is an estimate of the quantity of groundwater that can be pumped on a long-term average annual basis without causing a net decrease in storage. Sustainable yield is calculated as total pumping minus loss of storage. Based on the water budget, the historical sustainable yield of the Subbasin was 97,200 AF/yr., which is 10% less than the average annual pumping rate.

Projected Water Budgets – The projected water budgets are based on output from the operational version of the SVIHM that was provided by USGS. Because the projected water budgets are derived from a draft model, but the current and water budgets are not, the water budgets are not directly comparable due to differing analytical approaches. Two projected water budgets, one for 2030 and one for 2070, are developed from the draft operational SVIHM, which include climate change and sea level rise estimates. DWR's climate change factors were adopted to account for 2030 and 2070 projected climate change. The projected water budgets are used to establish how sustainability will be achieved in the 20-year implementation period and maintained over the 50-year planning and implementation horizon. The projected sustainable

yield is the long-term management number once all undesirable results have been addressed. It is the sustainable yield that will continue to avoid all six undesirable results at that point, but is not the amount of pumping needed to stop undesirable results, which may be substantially less.

Table ES-2 lists the groundwater inflow and outflow components derived from the SVIHM and calculates the percent error. The percent error from the modeled, projected water budgets is substantially less than the percent error from the calculated historical or current water budgets. This demonstrates the utility of using a groundwater model for estimating water budgets.

Based on these projections, pumping will need to be about 7% lower than projected pumping rates to meet the long-term sustainable yield. The projected water budgets can be interpreted as most likely future conditions; however, there is inherent uncertainty associated with using climate scenarios.

Table ES-2. Average Annual Groundwater Budget and Groundwater Storage Change for Future Projections

	Projected Climate Change Timeframe	
GROUNDWATER BUDGET	2030 (AF/yr.)	2070 (AF/yr.)
Inflows		
Stream leakage	71,500	71,700
Deep Percolation	76,300	81,800
Interflow in Wells	20,400	20,900
Underflow from Monterey Subbasin	10,900	11,500
Underflow from East Side Subbasin	9,800	10,400
Underflow from Forebay Subbasin	5,300	5,300
Underflow from Langley Subbasin	1,800	1,800
Mountain front recharge	2,600	2,700
Underflow from Pajaro Valley Basin	100	100
Net mountain front recharge	1,700	1,800
Outflows		
Pumping	135,800	141,600
Drain Flows	7,100	8,000
Flow to Streams	1,800	1,900
Groundwater ET	35,100	36,700
Underflow to Ocean	800	700
Underflow to Monterey Subbasin	5,400	5,300
Underflow to East Side Subbasin	17,000	16,600
Underflow to Forebay Subbasin	300	300
Underflow to Langley Subbasin	100	100
Underflow to Upland Areas	900	900
Underflow to Pajaro	1,000	1,000
Groundwater Storage		
Groundwater Level Change	4,600	4,700
Seawater Intrusion	-3,500	-3,900
Total	1,100	800
Total Inflows	198,700	206,200
Total Outflows	-205,300	-213,100
Change in Storage	-6,600	-6,900
% Error	0.74%	0.81%

ES-6 MONITORING NETWORKS (GSP CHAPTER 7)

Monitoring networks are developed to promote the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the Subbasin and to evaluate changing conditions that occur as the Plan is implemented. The SVBGSA developed monitoring networks for each of the six sustainability indicators, based on existing monitoring sites. For some sustainability indicators, it is necessary to expand existing monitoring systems. Filling data gaps and developing more extensive and complete monitoring systems will improve the SVBGSA's ability to demonstrate sustainability and refine the hydrogeologic conceptual model.

- **Groundwater Elevations** are measured in designated monitoring wells that form a network sufficient to demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features. The SVBGSA will build upon the existing California Statewide Groundwater Elevation Monitoring (CASGEM) network of wells, which have been regularly monitored by MCWRA.

- **Groundwater Storage** is measured by the annual amount of groundwater pumping. Monitoring includes municipal groundwater users and small water system pumping available from the State's Drinking Water Information Clearinghouse, agricultural pumping reported to the MCWRA and estimated using Monterey County crop data, and domestic pumping estimated based on number of domestic users.

- **Seawater Intrusion** is evaluated based on an isochloride contour derived from measurements at a specific network of monitoring wells. Well data are collected and maintained by MCWRA, who produces chloride isocontour maps to provide an indication of the extent of seawater intrusion.

- **Groundwater Quality Distribution and Trends** are evaluated by monitoring groundwater quality at a network of existing water supply wells. Drinking water constituents of concern will be assessed at public water supply wells. Agricultural constituents of concern will be assessed at agricultural supply wells that are monitored through the Irrigated Lands Regulatory Program.

- **Land Subsidence** is assessed based on the land subsidence data DWR has collected with InSAR satellite data.

- **Interconnected Surface Water** depletion rates are estimated through modeling, and checked with shallow wells near areas of interconnection. Given the extremely limited monitoring data, the SVBGSA plans to install shallow wells to establish the level of interconnection of the Salinas River with the underlying shallow sediments. The SVIHM will be used to assess the rate of streamflow exchange between the two systems.

The SVBGSA has developed a Data Management System (DMS) to store, review, and upload data collected as part of GSP development and implementation. The DMS includes a publicly accessible web-map hosted on the SVBGSA website; accessed at https://svbgsa.org/gsp-web-map-and-data/.

ES-7 SUSTAINABLE MANAGEMENT CRITERIA (GSP CHAPTER 8)

Sustainable Management Criteria (SMC) define the conditions that constitute sustainable groundwater management. A description of the SMC for each of the six sustainability indicators is included in Table ES-3. Each sustainability indicator includes:

- **Minimum thresholds** – specific, quantifiable values for each sustainability indicator used to define undesirable results *(i.e., indicators of unreasonable conditions that should not be exceeded)*
- **Measurable objectives** – specific, quantifiable goals that provide operational flexibility above the minimum thresholds *(i.e., goals the GSP is designed to achieve)*
- **Undesirable results** – Quantitative combinations of minimum thresholds

The SMC detailed in Table ES-3 define the Subbasin's future conditions and commit the GSA to actions that will meet these objectives.

Table ES-3. Sustainable Management Criteria Summary

Sustainability Indicator	*Measurable Objective*	*Minimum Threshold*	*Undesirable Result*
Chronic lowering of groundwater levels	Set to 2003 groundwater elevations	Set to 1 foot above 2015 groundwater elevations	Over the course of any one year, no more than 15% of groundwater elevation minimum thresholds shall be exceeded in any single aquifer and no one well shall exceed its minimum threshold for more than two consecutive years. Allows two exceedances in the 180-Foot aquifer and two exceedances in the 400-Foot aquifer.
Reduction in groundwater storage	Pumping set to the estimated long-term future sustainable yield of 112,000 AF/yr. for the entire 180/400-Foot Aquifer Subbasin (Minimum thresholds and measurable objectives are identical)		During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the total groundwater pumping shall not exceed the minimum threshold.
Seawater intrusion	The line defined by Highway 1 for the 180-Foot, 400-Foot, and Deep Aquifers	The 2017 extent of 500 mg/L chloride isocontour for the 180- and 400-Foot Aquifers, and the line defined by Highway 1 for the Deep Aquifers	On average in any one year there shall be no mapped seawater intrusion beyond the 2017 extent of the 500 mg/L chloride isocontour.
Degraded groundwater quality	Minimum threshold is zero additional exceedances of groundwater quality constituents of concern known to exist in the subbasin above drinking water or agricultural limits. (Minimum thresholds and measurable objectives are identical)		On average during any one year, no groundwater quality minimum threshold shall be exceeded as a direct result of projects or management actions taken as part of GSP implementation.
Subsidence	Minimum threshold is zero net long-term subsidence. (Minimum thresholds and measurable objectives are identical)		In any one year, there will be zero exceedances of the groundwater elevation proxy minimum thresholds based on average groundwater levels.
Depletion of interconnected surface water	Set to the estimated average historical rate of stream depletion, adjusted for climate change. This is currently estimated to be 69,700 acre-feet per year for future conditions including climate change. (Minimum thresholds and measurable objectives are identical)		During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the depletion of interconnected surface waters shall not exceed the minimum threshold.

ES-8 PROJECTS AND MANAGEMENT ACTIONS (GSP CHAPTER 9)

This GSP identifies projects and actions that provide stakeholders with options to reach sustainability. The set of projects and actions achieve the following objectives:

- Achieving groundwater sustainability by meeting Subbasin-specific SMC by 2040
- Creating equity between who benefits from projects and who pays for projects
- Establishing a source of funding for project implementation
- Providing incentives to constrain groundwater pumping within limits

The projects and actions included in the GSP are defined as a toolbox of options. The GSP demonstrates that sufficient options exist to reach sustainability. Specific details need to be developed for stakeholders to determine which projects and actions to implement. The projects and management actions described in this GSP constitute an integrated management program for the entire Salinas Valley Groundwater Basin.

Water Charges Framework – This GSP proposes a water charges framework the provides incentives to constrain groundwater pumping to the sustainable yield while generating funds for project implementation. The framework creates sustainable pumping allowances, charging a Tier 1 Sustainable Pumping Charge for pro-rata shares of sustainable yield, Tier 2 Transitional Pumping Charge to help users transition to pumping allowances, and higher Tier 3 Supplementary Pumping Charge for using more water. Pumping allowances are not water rights, but would be established to incentivize pumping reductions.

Management Actions – This GSP identifies six management actions that are the most reliable, implementable, cost-effective, and acceptable to stakeholders. The six management actions include:

- Agricultural land and pumping allowance retirement
- Outreach and education for agricultural best management practices
- Reservoir reoperation
- Restrict pumping in CSIP area
- Support and strengthen Monterey County restrictions on additional wells in the Deep Aquifers
- Establish a seawater intrusion technical working group

Specific Projects Prioritized for Integrated Management of the Salinas Valley – This GSP identifies nine priority projects, categorized below by type of project. A preliminary ranking

based on cost effectiveness is noted after each project. These rankings may change after project details are refined during GSP implementation.

Project Type 1: In-lieu recharge through direct delivery of water to replace groundwater pumping – projects that use available water supplies for irrigation in lieu of groundwater

- Optimize CSIP Operations (ranked #2 in terms of cost effectiveness)
- Modify Monterey One Water Recycled Water Plant (ranked #3 in terms of cost effectiveness)
- Expand Area Served by CSIP (ranked #4 in terms of cost effectiveness)
- Maximize Existing SRDF Diversion (ranked #5 in terms of cost effectiveness)

Project Type 2: Direct recharge through recharge basins or wells (also commonly referred to as Managed Aquifer Recharge) – projects that fill large artificial ponds with water to percolate from the basin into the groundwater system or construct injection wells

- 11043 Diversion Facilities Phase I: Chualar (ranked #7 in terms of cost effectiveness)
- 11043 Diversion Facilities Phase II: Soledad (ranked #8 in terms of cost effectiveness)
- SRDF Winter Flow Injection (ranked #9 in terms of cost effectiveness)

Project Type 3: Indirect recharge through decreased evapotranspiration or increased infiltration – projects to remove invasive species from riparian corridors to decrease evapotranspiration or to capture stormwater to increase percolation

- Invasive Species Eradication (ranked #1 in terms of cost effectiveness)

Project Type 4: Hydraulic barrier to control seawater intrusion – projects to construct a hydraulic barrier consisting of a series of wells drilled a short distance inland, aligned parallel to the coast. It could be operated as a recharge barrier that injects water into the wells, or an extraction barrier that pumps water from wells. Both approaches would create a hydraulic barrier to seawater intrusion

- Seawater Intrusion Pumping Barrier (ranked #6 in terms of cost effectiveness)

Additionally, the GSA identified a number of alternative projects that could help achieve sustainability if needed, including desalinizing water from the seawater barrier extraction wells, recharging local runoff from Eastside Range, injecting winter potable reuse water, and seasonally storing water in 180/400-Foot Aquifer.

Other Groundwater Management Activities – Although not specifically funded or managed by the SVBGSA, a number of associated groundwater management activities will be promoted and encouraged by the SVBGSA as part of general good groundwater management practices. These include: promoting agricultural best management practices, continuing urban and rural

residential conservation, promoting stormwater capture, supporting well destruction policies, and watershed protection and management.

Mitigation of Overdraft – The water charges framework is specifically designed to promote pumping reductions. Should adequate pumping reductions not be achieved to mitigate all overdraft, funds collected through the water charges framework will support recharge of imported water, either through direct recharge or in-lieu means. Potential projects to mitigate overdraft include: invasive species eradication, optimizing CSIP, modifying Monterey One Water Plant, expanding CSIP area, maximizing the existing SRDF, and using SRDF winter flows.

ES-9 IMPLEMENTATION (GSP CHAPTER 10)

This GSP lays out a roadmap for addressing all of the activities needed for GSP implementation between 2020 and 2040, focusing mainly on the activities between 2020 and 2025. Implementing this GSP requires the following formative activities:

- **Monitoring and Reporting** – This activity will begin immediately following adoption of the GSP and will rely primarily on existing monitoring programs. Monitoring data will be stored in the DMS and will be routinely evaluated to ensure progress is being made toward sustainability and to identify whether undesirable results are occurring. The GSA will submit to DWR and make publicly available: annual reports, Five-Year GSP Assessment Reports, and GSP Periodic Evaluations and Assessment.
- **Refining and Implementing the Water Charges Framework –** Long-term GSP implementation will be funded through the water charges framework described in this GSP, or in combination with other financing methods where appropriate. Details of the framework will be developed during the first three years of this GSP's implementation through a facilitated process.
- **Addressing Identified Data Gaps** – An aquifer properties assessment and deep aquifers investigation will be conducted to address key data gaps.
- **Expanding and Improving the Existing Monitoring Networks –** Monitoring networks will be expanded and enhanced to provide more robust data on the sustainability indicators.
- **Updating the Data Management System** – As new information is collected during monitoring and provided by local stakeholders, the GSA will update the DMS and make publicly available via the web application.
- **Implementing the New Upcoming USGS Groundwater Model for the Salinas Valley (SVIHM) –** The USGS is currently working on revising and calibrating the SVIHM. When available, it will be used to revisit water budgets, update estimated sustainable

yield, refine numerical minimum thresholds for interconnected surface water depletion, and more rigorously evaluate benefits of projects and management actions.

- **Refining and Implementing Projects and Management Actions –** The SVBGSA will refine projects and actions during the first three years of implementation. These projects and actions depend in part on the five subbasins in the Valley that will not complete GSPs until January 2022.

The SVBGSA estimates that planned activities will cost $11,406,100 over the first five years of implementation (an estimated $2,281,220 per year). Of this, $1,783,500 are costs directly attributable to the 180/400-Foot Aquifer Subbasin and $9,422,600 are Valley-wide costs. These costs include routine administrative operations, public outreach, supplemental hydrogeologic investigations to address data gaps, improvements to the monitoring networks (including installation of new monitoring wells), annual monitoring and reporting of sustainability conditions, and early planning efforts.

Implementing the 180/400-Foot Aquifer Subbasin GSP must be integrated with the implementation of the five other GSPs in the Salinas Valley. The general implementation schedule refines details of the water charges framework, the sustainability projects, and the management actions during the first three years of implementation as the five other subbasin GSPs are produced. This will ensure the 180/400-Foot Aquifer Subbasin GSP is implemented in coordination with the other Valley subbasins, while at the same time moving ahead with negotiating implementation details.

ES-10 STAKEHOLDER ENGAGEMENT AND COMMUNICATION STRATEGY (GSP CHAPTER 11)

The SVBGSA designed all phases of SGMA implementation to be open collaborative processes with active stakeholder engagement that allows stakeholders and public participants opportunities to provide input and to influence the planning and development process. The four main phases consist of:

- **GSA Formation and Coordination** – from 2015-2017, local agencies and stakeholders worked with the Consensus Building Institute to facilitate the formation of the SVBGSA.
- **GSP Preparation and Submission** – starting in 2017, the GSA developed this GSP and will continue to develop the five other subbasin GSPs through the January 2022 deadline.
- **GSP Review and Evaluation** – the GSA engaged in a public review process of the full draft prior to submission, giving stakeholders an opportunity to provide feedback and comments, and DWR will also give stakeholders a 60-day comment period after submission.

- **Implementation and Reporting** – following submission of the GSP to DWR, the SVBGSA will begin implementation efforts to reach sustainability within the basin.

Public participation is supported by the development of an interactive website that allows access to all planning and meeting materials, data sets, and meeting notifications. The website can be accessed at: https://svbgsa.org.

1 INTRODUCTION TO THE 180/400-FOOT AQUIFER SUBBASIN GROUNDWATER SUSTAINABILITY PLAN

1.1 Purpose of the Groundwater Sustainability Plan

The State of California enacted the Sustainable Groundwater Management Act (SGMA) in 2014. This law requires groundwater basins or subbasins that are designated as medium or high priority to be managed sustainably. The Salinas Valley Groundwater Basin comprises nine subbasins, of which seven are within Monterey County. The subject of this report is one of those subbasins: the 180/400-Foot Aquifer Subbasin.

Satisfying the requirements of SGMA generally requires four basic activities:

1. Forming one or more Groundwater Sustainability Agency(s) (GSAs) in the basin
2. Developing a Groundwater Sustainability Plan (GSP)
3. Implementing the GSP and managing to measurable, quantifiable objectives
4. Providing regular reports to the California Department of Water Resources (DWR)

This document satisfies the GSP requirement for the Salinas Valley – 180/400-Foot Aquifer Subbasin (Subbasin or 180/400-Foot Subbasin). The purpose of this GSP is to outline how the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) and its partner GSAs will achieve groundwater sustainably in the Subbasin in 20 years, and maintain sustainability for an additional 30 years. The SVBGSA developed this GSP in coordination with the Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA) and the County of Monterey Ground Water Sustainability Agency (County GSA), each of which has exclusive jurisdiction over part of the 180/400-Foot Aquifer Subbasin.

1.2 Description of the 180/400-Foot Aquifer Subbasin

The 180/400-Foot Aquifer Subbasin is identified by DWR as Subbasin 3-004.01. The Subbasin is part of the greater Salinas Valley Groundwater Basin in the Central Coastal region of California (DWR, 2016a). DWR has designated the 180/400-Foot Aquifer Subbasin as a critically overdrafted basin. DWR defines critically overdrafted basins as basins in which the continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts. The Subbasin is named for its two primary water-bearing units: the 180-Foot Aquifer and the 400-Foot Aquifer. The Subbasin encompasses an area of approximately 89,700 acres, or 140 square miles (DWR, 2019). The Subbasin lies in Monterey County and contains parts of the urban areas of Salinas, Castroville, Moss Landing, Marina, Chualar, and Gonzales (Figure 1-1).

The Subbasin is bounded by Monterey Bay to the northwest. Five groundwater basins or subbasins adjoin the 180/400-Foot Subbasin (Figure 1-1).

- The Corralitos - Pajaro Valley Basin is located along the northern Subbasin boundary. The boundary with the Corralitos – Pajaro Valley Basin coincides with the inland projection of a clay-filled paleodrainage of the Salinas River buried beneath Elkhorn Slough which acts as a flow barrier between the basins (DWR, 2004).
- The Eastside Aquifer Subbasin (DWR subbasin number 3-004.02) is located along most of the northeastern boundary of the Subbasin. There is some, although potentially limited, hydraulic communication between the Eastside Aquifer Subbasin and the 180/400-Foot Aquifer Subbasin.
- The Langley Area Subbasin (DWR subbasin number 3-004.09) is located along a short length of the northeastern boundary of the Subbasin.
- The Forebay Aquifer Subbasin (DWR subbasin number 3-004.04) is located along the southeastern boundary, near the city of Gonzales. The boundary is the approximate limit of confining conditions in the up-valley direction (DWR, 2004).
- The Monterey Subbasin (DWR subbasin number 3-004.10) is located along the southwestern boundary of the Subbasin. The boundary roughly follows portions of the King City fault and a groundwater divide.

All five surrounding basins and subbasins are medium or high priority and are required to develop GSPs under SGMA. GSPs for the Eastside,Langley Area, and Upper Valley Subbasins will be developed by the SVBGSA. The GSP for the Forebay Subbasin will be developed jointly by the SVBGSA and the Arroyo Seco GSA. The GSP for the Monterey Subbasin will be developed jointly by the SVBGSA and the MCWD GSA. An alternative GSP submittal for the Corralitos – Pajaro Valley Basin was submitted by the Pajaro Valley Water Management Agency and accepted by DWR in August 2019.

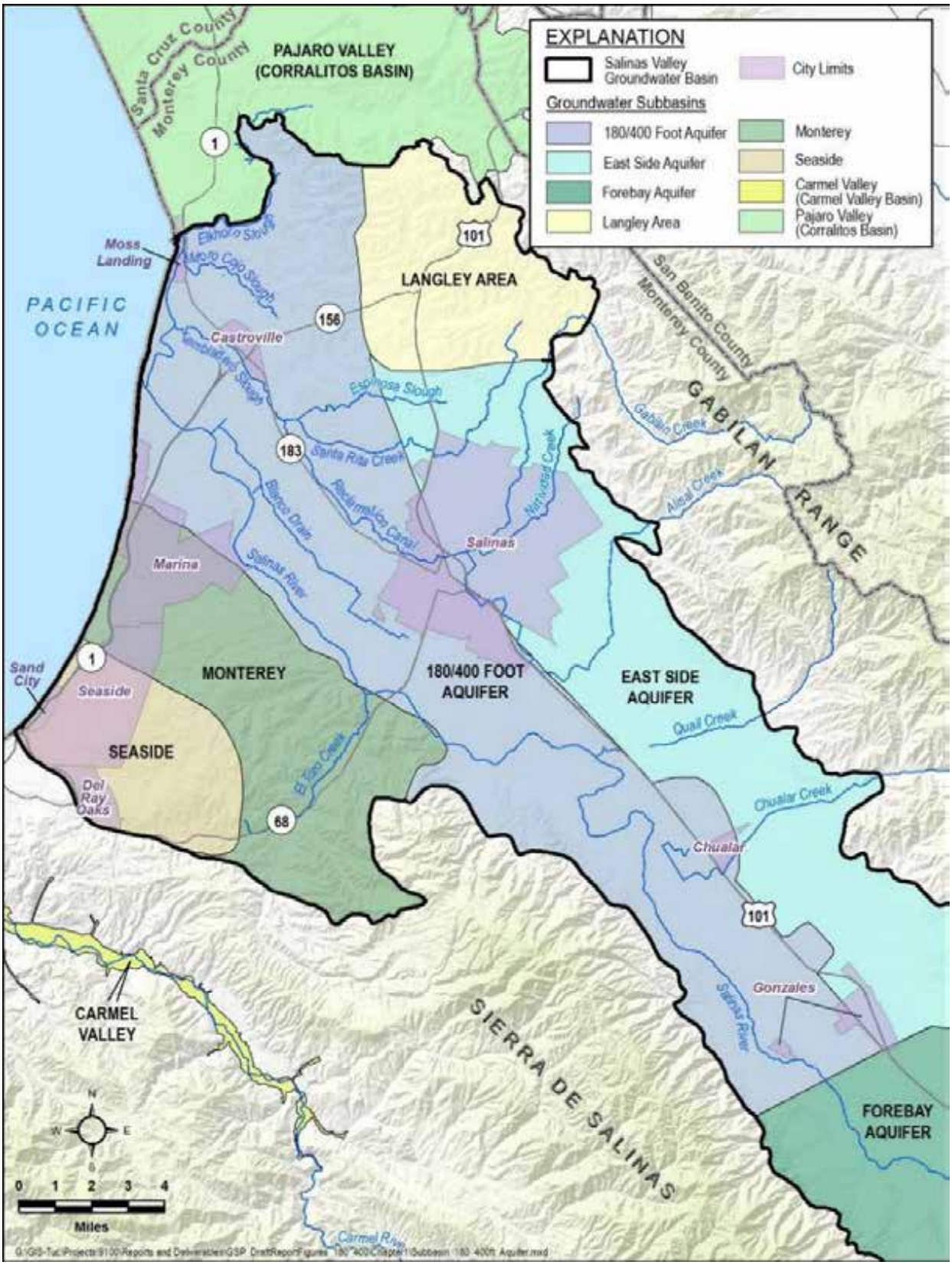

Figure 1-1. 180/400-Foot Aquifer Subbasin Location

1.3 Overview of this GSP

The SVBGSA, with input from MCWD and County GSA, developed this GSP for the entire 180/400-Foot Aquifer Subbasin. This GSP is developed in concert with GSPs for five other Salinas Valley Groundwater Basin subbasins under SVBGSA jurisdiction: the Eastside Aquifer Subbasin, the Forebay Aquifer Subbasin, the Upper Valley Aquifer Subbasin, the Langley Area Subbasin and the Monterey Subbasin. The projects and programs presented in this GSP are part of a cohesive set of projects and programs designed to achieve sustainability throughout the entire Salinas Valley Groundwater Basin. The 180/400-Foot Aquifer Subbasin is referred to as the Subbasin throughout this GSP, and the collection of Salinas Valley Groundwater Basin subbasins that fall partially or entirely under SVBGSA jurisdiction are collectively referred to as the Basin or the Valley.

The SVBGSA used a collaborative process to develop this GSP. Chapter 11 details the stakeholders that participated, and process followed to develop this GSP. Stakeholders worked together to gather existing information, define sustainable management criteria for the Subbasin, and develop a list of projects and management actions.

This GSP includes the SVBGSA's administrative information, describes the basin setting, presents the hydrogeologic conceptual model, and describes historical and current groundwater conditions. It further establishes estimates of the historical, current, and future water budgets based on the best available information. This GSP defines local sustainable management criteria, details required monitoring networks, and outlines projects and programs for reaching sustainability in the Subbasin by 2040. Finally, it describes the communication and outreach strategy used to develop the Plan.

The SVBGSA used best available existing data to develop this GSP. The SVBGSA intended to use the Salinas Valley Integrated Hydrologic Model (SVIHM) developed by the United States Geological Service (USGS) for this GSP. The USGS provided SVBGSA with limited information from the SVIHM during part of GSP development; however, the model could not be used as initially intended. The USGS anticipates releasing the revised SVIHM in spring 2020, at which point the SVBGSA plans to use the Model to update and implement this GSP.

The SVBGSA developed this GSP as part of an adaptive management process. This GSP will be updated and adapted as new information and more refined models become available. This includes updating SMCs and projects and management actions to reflect updates and future conditions. Adaptive management will be reflected in the required five-year updates to GSPs and annual reports. The SVBGSA also envisions completing a two-year update to this Plan as the GSPs for surrounding subbasins are developed.

2 AGENCY INFORMATION

Three GSAs cover the GSP area: the SVBGSA, MCWD GSA, and County GSA. This GSP was developed by the SVBGSA with input and assistance from the MCWD GSA and the County GSA. Each is an exclusive GSA for its respective portion of the Subbasin. The jurisdictional areas of all three GSAs in relation to the Subbasin boundary are shown on Figure 2-1.

2.1 Agency Names and Mailing Addresses

Contact information is provided for each GSA that is a signatory to this GSP, pursuant to California Water Code § 10723.8.

Salinas Valley Basin Groundwater Sustainability Agency
Attn.: Gary Petersen, General Manager
1441 Schilling Place
Salinas, CA 93901
https://svbgsa.org

Marina Coast Water District Groundwater Sustainability Agency
Attn.: Keith Van Der Maaten, General Manager
11 Reservation Road
Marina, CA 93933
http://www.mcwd.org

County of Monterey Ground Water Sustainability Agency
Attn: Brian Briggs, Deputy County Counsel
169 W Alisal St, 3rd Floor
Salinas, CA 93901
https://www.co.monterey.ca.us/

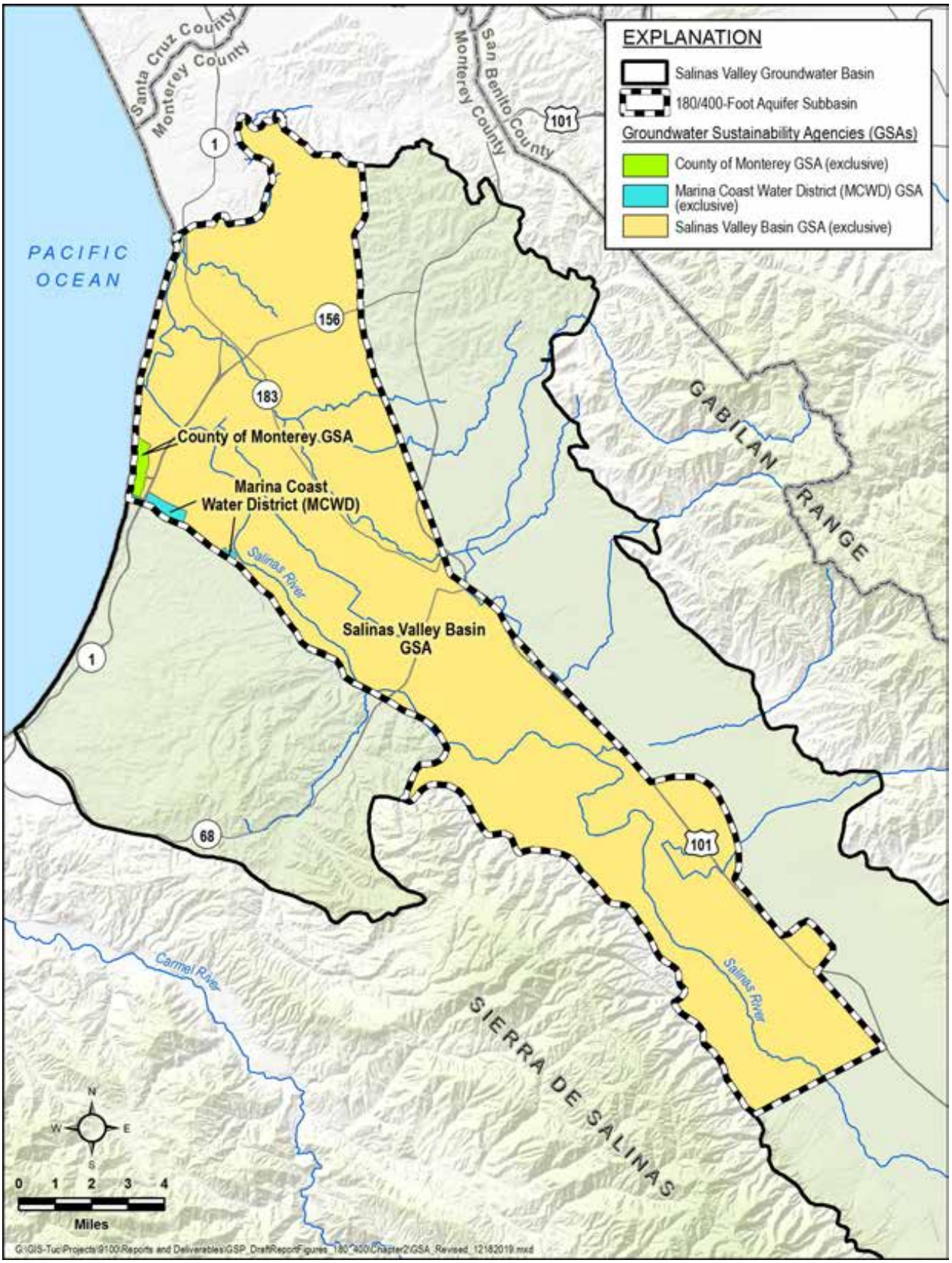

Figure 2-1. Map of Areas Covered by GSAs and Overlap Areas

2.2 Agencies' Organization and Management Structure

The organization and management structure of each of the three GSAs that cover the GSP area are described in the sections below. Relevant documentation regarding the formation of the GSAs is included in Appendix 2A.

2.2.1 SVBGSA

The SVBGSA was formed in 2017. The SVBGSA represents agriculture, public utility, municipal, county, and environmental stakeholders; and is partially or entirely responsible for developing GSPs in six of the Salinas Valley Groundwater Subbasins.

The SVBGSA is a Joint Powers Authority (JPA). The JPA membership comprises the County of Monterey, Water Resources Agency of the County of Monterey (Monterey County Water Resources Agency, or MCWRA), City of Salinas, City of Soledad, City of Gonzales, City of King (King City), the Castroville Community Services District (CSD), and Monterey One Water (formerly the Monterey Regional Water Pollution Control Agency). The SVBGSA is governed and administered by an eleven-member Board of Directors, representing public and private groundwater interests throughout the Valley. When a quorum is present, a majority vote is required to conduct business. Some business items require a super majority vote or a super majority plus vote. A super majority requires an affirmative vote by eight of the eleven Board members. A super majority vote is required for:

- Approval of a GSP
- Amendment of budget and transfer of appropriations
- Withdrawal or termination of Agency members

A super majority plus requires an affirmative vote by eight of the eleven Board members, including an affirmative vote by three of the four agricultural representatives. A super majority plus vote is required for:

- Decisions to impose fees not requiring a vote of the electorate or property owners
- Proposals to submit to the electorate or property owners (as required by law) decisions to impose fees or taxes
- Limitations on well extractions (pumping limits)

In addition to the Board of Directors, SVBGSA includes a Budget and Finance Committee consisting of five Directors, an Executive Committee consisting of five Directors, a Planning Committee consisting of five Directors, and an Advisory Committee consisting of Directors and non-directors. The Advisory Committee is designed to ensure participation by, and input to, the

Board of Directors by constituencies whose interests are not directly represented on the Board. The SVBGSA's GSA activities are coordinated by a general manager.

2.2.2 MCWD

MCWD is governed by a five-member Board of Directors who each serve four-year terms. Board members are elected at large. Decisions on all GSA-related matters require an affirmative vote of a majority of the five Board of Directors members. The MCWD's GSA activities are coordinated by the MCWD's existing staff.

2.2.3 County GSA

The County GSA is governed by the Board of Supervisors of the County of Monterey. The Board of Supervisors is composed of five members who are elected by their respective geographical districts within the County. The County's GSA activities are coordianted by its Deputy General Counsel.

2.3 Authority of Agency/Agencies

All GSAs involved in the development of this GSP were formed in accordance with the requirements of California Water Code § 10723 *et seq*. Each agency's specific authorities for GSA formation and groundwater management are listed below.

2.3.1 SVBGSA

SVBGSA is a JPA that was formed in accordance with the requirements of California Government Code §6500 *et seq*. The JPA agreement is included in Appendix 2A. In accordance with California Water Code §10723 *et seq*, the JPA signatories are all cities, counties, and water agencies with water or land use authority; and are all independently eligible to serve as GSAs:

- The County of Monterey has land use authority over the unincorporated areas of the County, including areas overlying the 180/400-Foot Aquifer Subbasin. The County of Monterey is therefore a local agency under California Water Code §10721 with the authority to establish itself as a GSA.
- The MCWRA is a California Special Act District with broad water management authority in Monterey County. The MCWRA is therefore a local agency under California Water Code §10721 with the authority to establish itself as a GSA.
- The City of Salinas is incorporated under the laws of the State of California. The City provides water supply and land use planning services to its residents. The City is therefore a local agency under California Water Code §10721 with the authority to establish itself as a GSA.

- The City of Soledad is incorporated under the laws of the State of California. The City provides water supply and land use planning services to its residents. The City is therefore a local agency under California Water Code §10721 with the authority to establish itself as a GSA.
- The City of Gonzales is incorporated under the laws of the State of California. The City provides water supply and land use planning services to its residents. The City is therefore a local agency under California Water Code §10721 with the authority to establish itself as a GSA.
- King City is incorporated under the laws of the State of California. The City provides water supply and land use planning services to its residents. The City is therefore a local agency under California Water Code §10721 with the authority to establish itself as a GSA.
- The Castroville CSD is a local public agency of the State of California, organized and operating under the Community Services District Law, Government Code §6100 *et seq*. Castroville CSD provides water services to its residents. Castroville CSD is therefore a local agency under California Water Code §10721 with the authority to establish itself as a GSA.
- Monterey One Water is itself a joint powers authority whose members include many members of the SVBGSA. Monterey One Water is a local agency under California Water Code §10721 with authority to establish itself as a GSA.

Upon establishing itself as a GSA, the SVBGSA retains all the rights and authorities provided to GSAs under California Water Code §10725 *et seq*. as well as the powers held in common by the members.

2.3.2 MCWD GSA

MCWD was formed in accordance with California Water District Law, California Water Code §34000, and is responsible for water supply in a portion of the Subbasin. MCWD is therefore a local agency under California Water Code § 10721 with the authority to establish itself as a GSA. Upon establishing itself as a GSA, MCWD retains all the rights and authorities provided to GSAs under California Water Code §10725 *et seq*.

2.3.3 County GSA

Pursuant to California Water Code section §10724, the Board of Supervisors of the County of Monterey elected to be the exclusive GSA for the 372-acre parcel within the 180/400-Foot Aquifer Subbasin currently owned by RMC Pacific Materials, LLC, known as the CEMEX site.

2.3.4 Coordination Agreements

Because the SVBGSA is developing a single GSP for the entire 180/400-Foot Aquifer Subbasin, with input of MCWD GSA and County GSA, coordination agreements with MCWD GSA and County GSA are not required (California Water Code section §10720.7). However, the SVBGSA and MCWD GSA developed agreements to cooperatively develop this GSP. MCWD GSA will adopt those aspects of the SVBGSA's 180/400-Foot Aquifer Subbasin GSP that apply to their respective jurisdictions within the 180/400-Foot Aquifer Subbasin. These agreements to cooperatively develop this GSP are included in Appendix 2B.

2.3.5 Contact Information for Plan Manager

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Salinas Valley Basin Groundwater Sustainability Agency
1441 Shilling Place
Salinas, CA 93901 | (831) 682-2592
peterseng@svbgsa.org
https://svbgsa.org

3 DESCRIPTION OF PLAN AREA

3.1 GSP Area Introduction

This GSP covers the entire 180/400-Foot Aquifer Subbasin as shown on Figure 3-1. This includes the areas within the Subbasin under the jurisdiction of the MCWD GSA and County GSA, as shown on Figure 2-1. The 180/400-Foot Aquifer Subbasin lies in northwestern Monterey County and includes the northern end of the Salinas River Valley. The Subbasin covers an area of 89,700 acres, or 140 square miles (DWR, 2019a). The boundaries of the Subbasin, combined with those of the Monterey and Seaside subbasins, are generally consistent with MCWRA's Pressure Subarea (MCWRA, 2006). When this report refers to the 180/400-Foot Aquifer Subbasin, it refers to the area under the jurisdiction of the SVBGSA, MCWD, and County GSA.

The Salinas River drains the Subbasin, discharging into Monterey Bay. The Subbasin contains the municipalities of Salinas and Gonzales, part of Marina, and the census-designated places of Castroville, Moss Landing, Elkhorn, Boronda, Spreckels, and Chualar. United States Highway 101 runs generally north-south along the eastern border of the Subbasin. State Highways 1, 156, 183, and 68 also cross the Subbasin. Rivers and streams, urban areas, and major roads are shown on Figure 3-1.

3.2 Adjudicated Areas, Other GSAs, and Alternatives

An adjudicated basin is one in which, through legal action, the basin has certain requirements placed on it by the Court, and those requirements are normally administered by a Watermaster that is appointed by the Court. The Subbasin is not adjudicated. The only adjudicated area in the Salinas Valley Groundwater Basin is the Seaside Subbasin (DWR subbasin number 3-004.08), which is not adjacent to the 180/400-Foot Aquifer Subbasin. The adjudicated Seaside Subbasin is shown by the shaded area on Figure 3-2.

No alternative plans have been submitted for any part of the Subbasin, or for any other Salinas Valley Groundwater Basin subbasins.

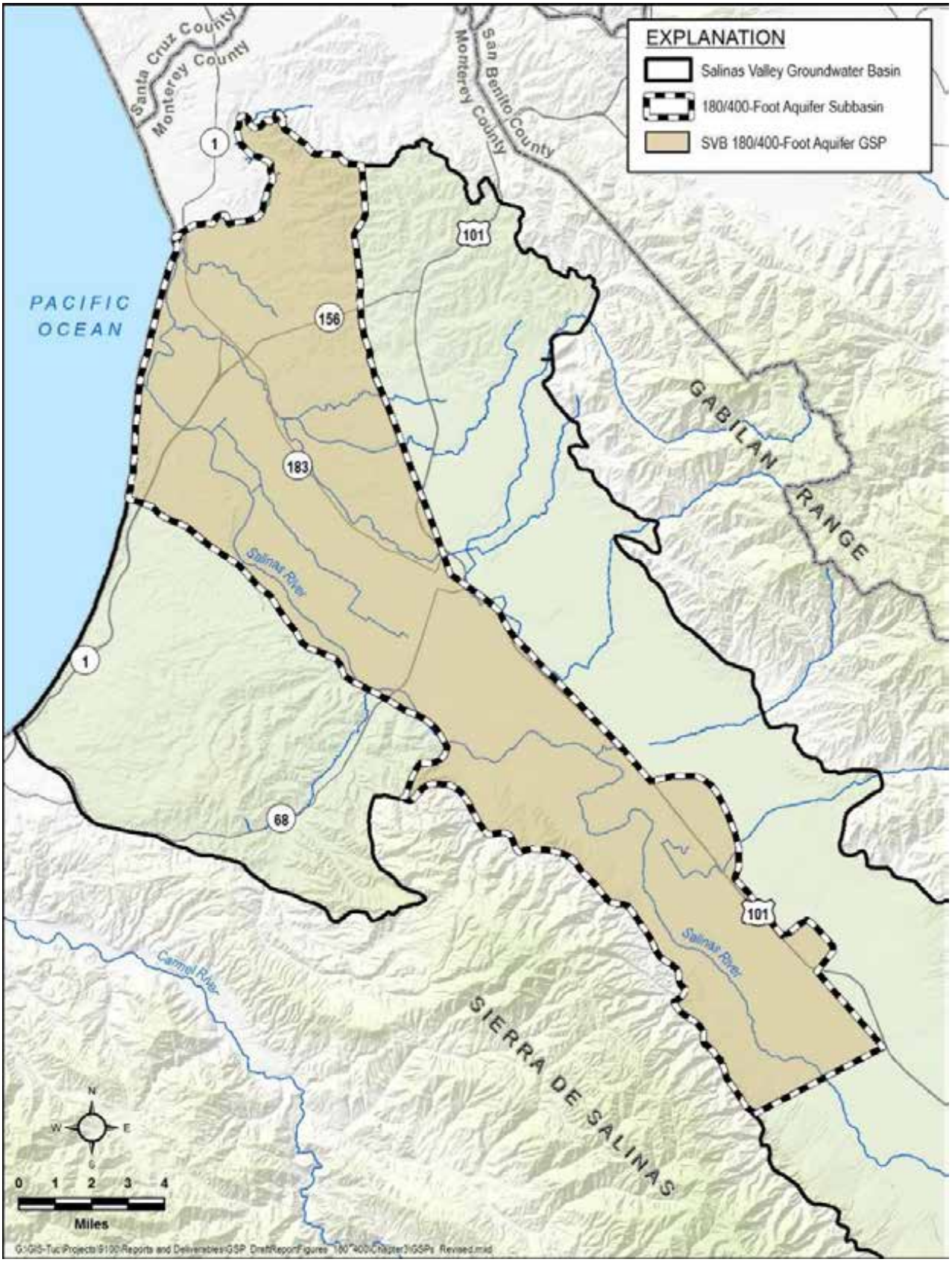


Figure 3-1: Area Covered by GSP

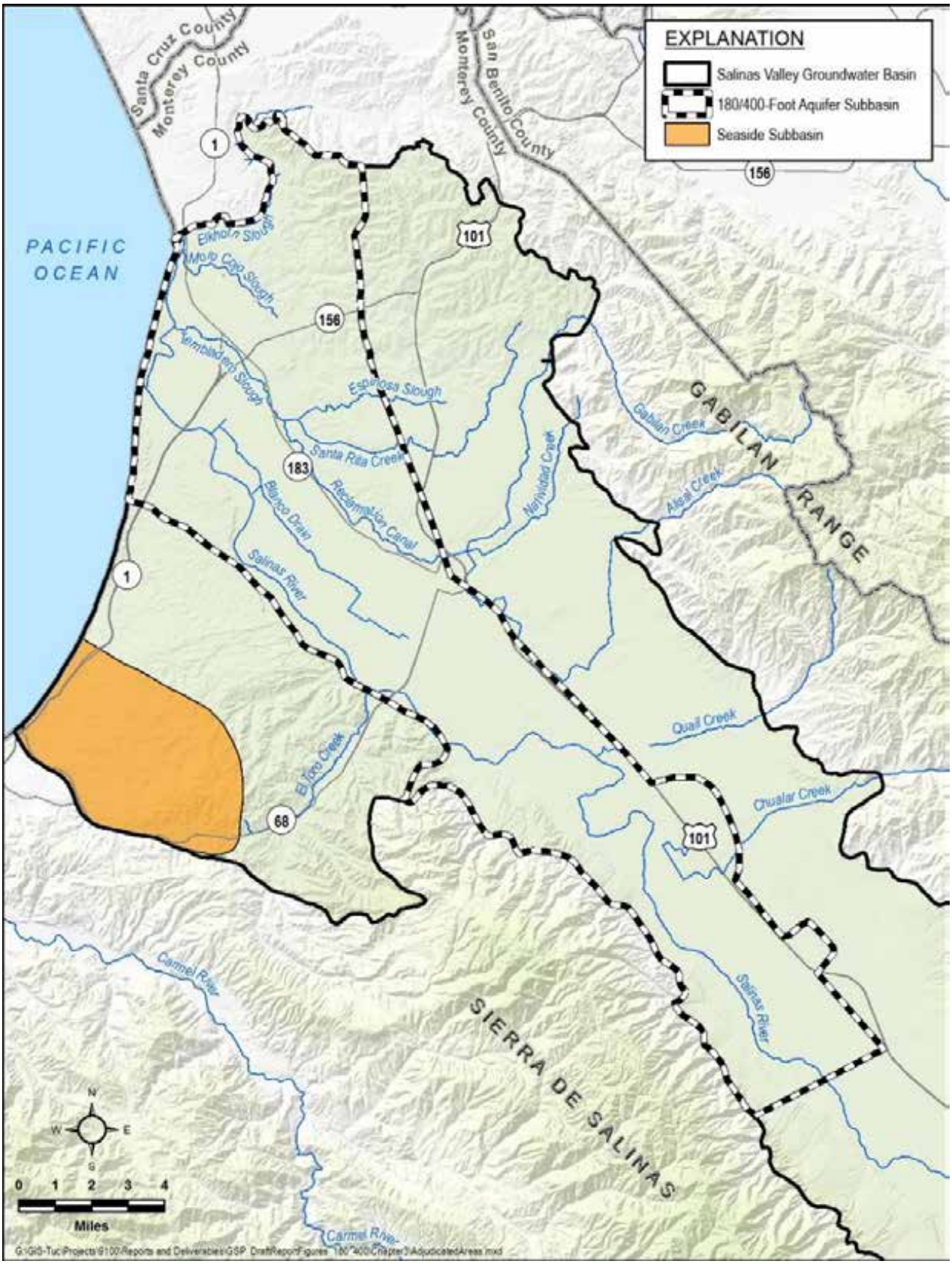


Figure 3-2. Location of the Adjudicated Seaside Subbasin

3.3 Jurisdictional Areas

There are several federal, state, and local agencies with water management authority in the Subbasin. There are no tribal lands in the Subbasin.

3.3.1 Federal Jurisdiction

Areas under federal jurisdiction are shown on Figure 3-3. The United States Department of Fish and Wildlife manages the Salinas River National Wildlife Refuge. A portion of the Fort Ord former Army base lies in the Subbasin and encompasses the Marina Municipal Airport. Although the DWR land use dataset depicts this area as federal land, this land has been transferred to civilian use and is no longer under federal jurisdiction.

3.3.2 State Jurisdiction

Areas under State jurisdiction are shown on Figure 3-3. The California Department of Fish and Wildlife owns and operates the Elkhorn Slough Ecological Reserve, the Moro Cojo Slough State Marine Reserve (SMR), Elkhorn Slough State Marine Conservation Area (SMCA), Elkhorn SMR, and the Moss Landing Wildlife Area. The California Department of Parks and Recreation manages several areas in the Subbasin near Moss Landing including: Moss Landing State Beach, Salinas River Dunes Natural Preserve, Salinas River State Beach, and the Salinas River Mouth Natural Preserve.

3.3.3 County Jurisdiction

The entire Subbasin lies in Monterey County; the County of Monterey has jurisdiction over the entire Subbasin.

3.3.4 City and Local Jurisdiction

In accordance with the SGMA Regulations § 354.8 (a)(3), this section only cities and governmental agencies with water management responsibilities. The jurisdictional boundaries of these areas are shown on Figure 3-4.The cities of Salinas, Gonzales, and Marina have water management authority in their incorporated areas, although the City of Salinas is served by California Water Company and Alisal Water Corporation (Alco). The Castroville CSD provides water and sewer collection services in the town of Castroville. The MCWD provides water and sewer collection services within its jurisdictional boundaries. A small portion of the MCWD's service area extends from the Monterey Subbasin into the 180/400-Foot Aquifer Subbasin. Pajaro/Sunny Mesa Community Services District provides water service to part of the northern Subbasin.

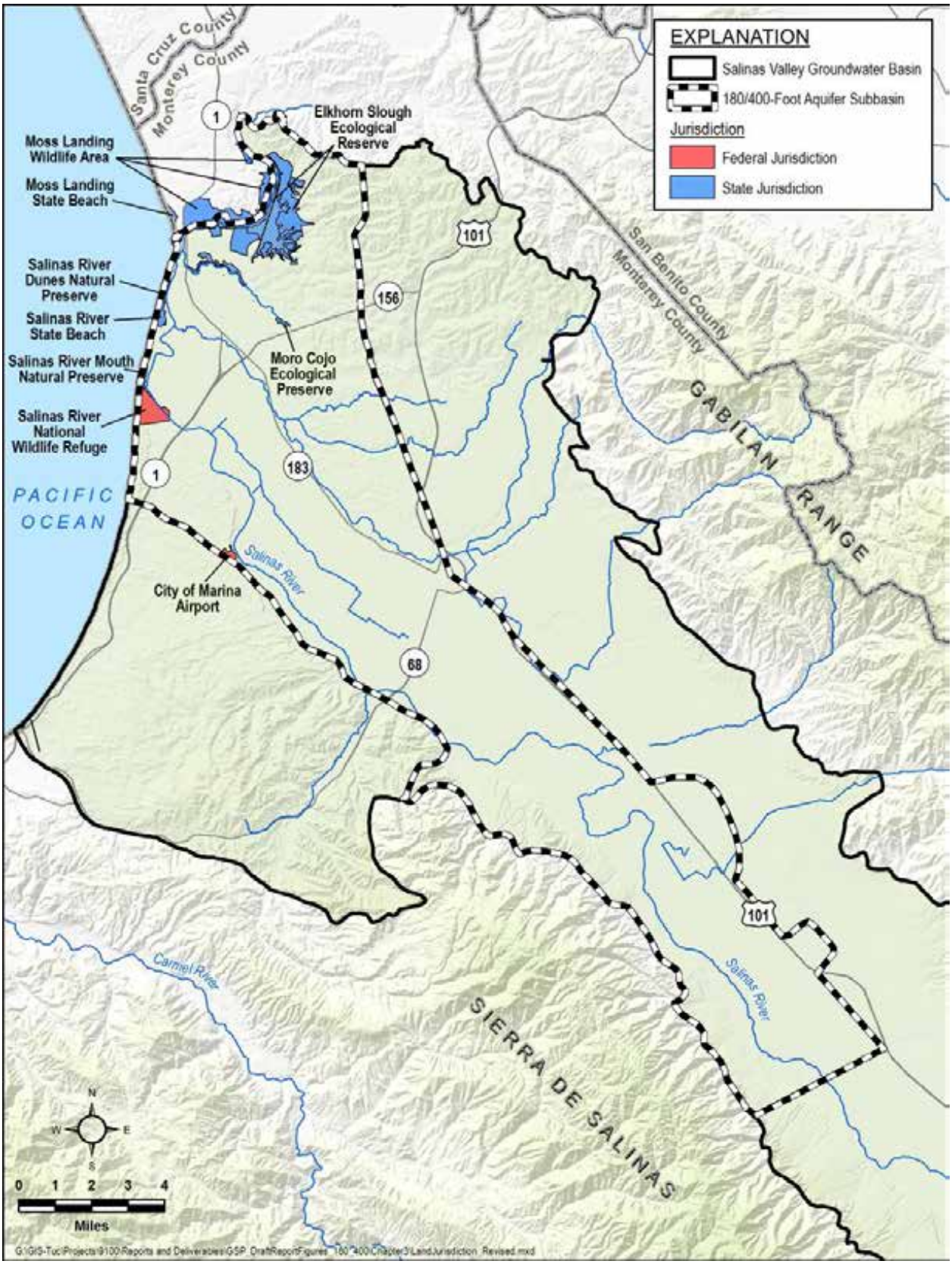


Figure 3-3. Map of Federal and State Groundwater Jurisdictional Areas

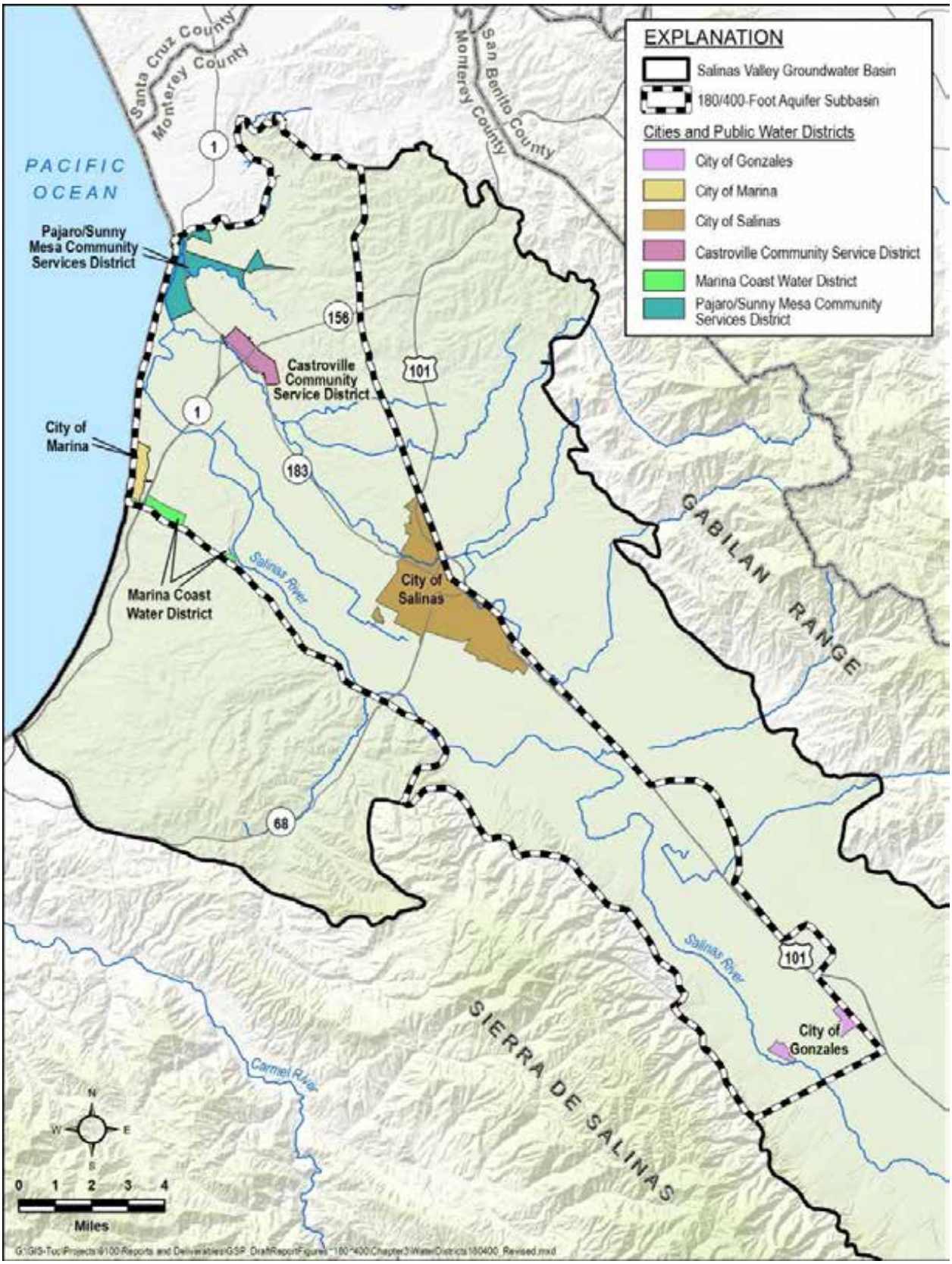


Figure 3-4. City, CSD, and Water District Jurisdictional Areas

3.4 Land Use

The Monterey County Assessor's office maintains a Geographic Information System (GIS) database of land use at the parcel level. These data were used to develop land use maps for the SVBGSA exclusive area. Current land use in the 180/400-Foot Aquifer Subbasin is shown on Figure 3-5 and summarized by major category in Table 3-1. The difference between the land use area in Table 3-1 and the total Subbasin area of 89,000 arecres is the result of 1) MCWD parcels not being included in the table, 2) some parcels having null land use values, and 3) small gaps between parcels that are not counted.

Table 3-1. Land Use Summary

Category	Area in Subbasin (acres)
Irrigated Agriculture	62,519
Non-irrigated Agriculture	2,534
Commercial	823
Industrial	2,175
Institutional	5,019
Miscellaneous	1,276
Multi-Family	563
Residential (Urban)	2,574
Rural	6,562
Other	1,233
Total	85,278

Source: Monterey County Assessor's Office parcel data

The majority of land in the Subbasin is used for agriculture; the top three crops, by value, in Monterey County in 2017 were lettuce, strawberries, and broccoli (Monterey County Agriculture Commissioner, 2018). Vineyards are also a major crop in Monterey County. Other crops included under irrigated agriculture are various row crops, field crops, alfalfa, pasture, orchards (fruits and nuts), and irrigated agricultural preserves.

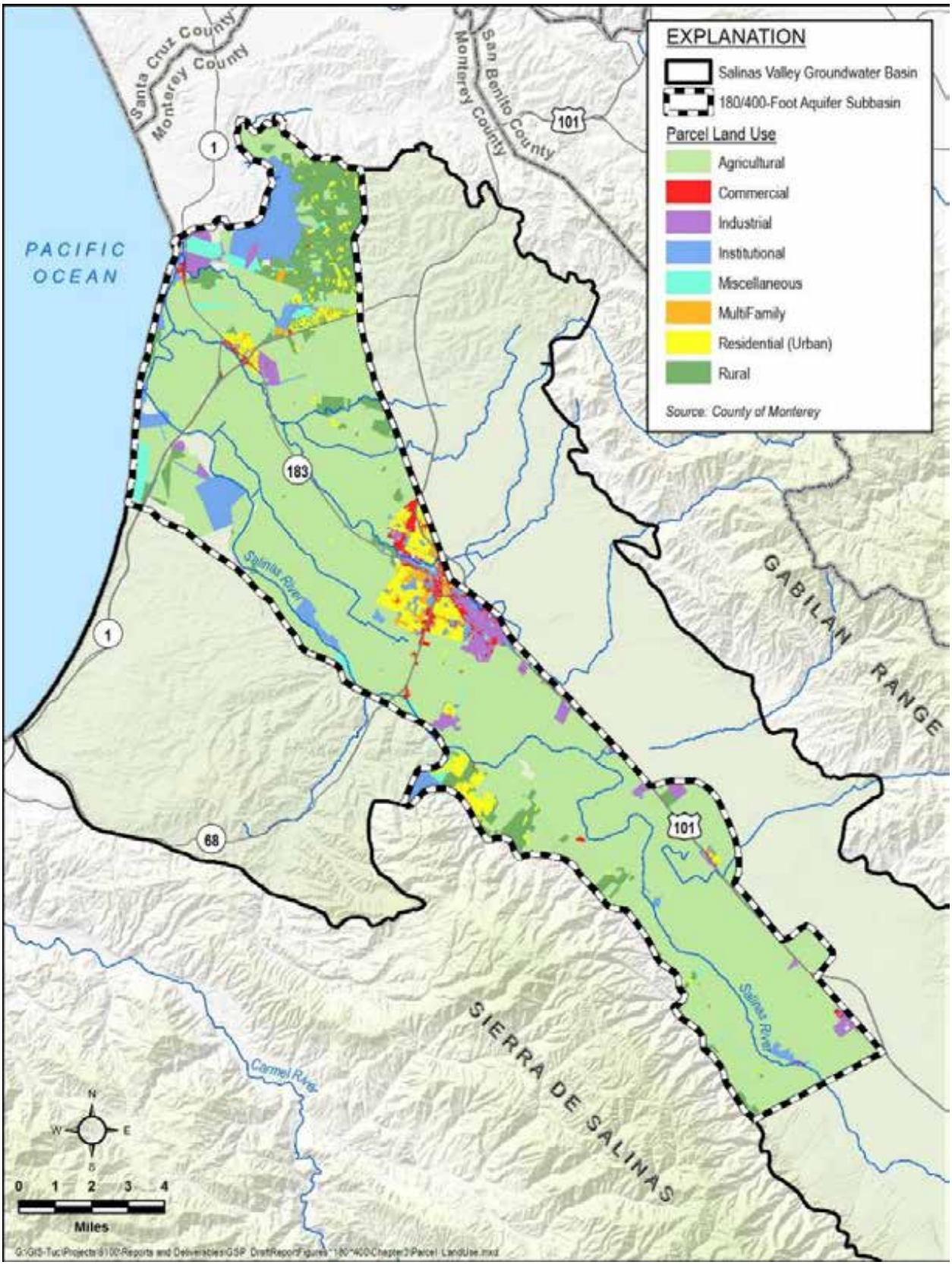


Figure 3-5. Existing Land Use

3.4.1 Water Source Types

The Subbasin has three water source types: groundwater, surface water, and recycled water. Groundwater is the primary water source for all water use sectors in the Subbasin. Water districts that depend on groundwater are shown in orange on Figure 3-6. The water districts areas shown on this figure are derived from the DWR Water Districts shapefile, which contains both municipal water districts and small state districts that rely groundwater. Groundwater is also used for rural residential areas, small community systems, and small commercial operations such as golf courses and schools.

The coastal farmland surrounding Castroville receives a combination of recycled water from SVBGSA member entity Monterey One Water, groundwater, and surface water through the Castroville Seawater Intrusion Project (CSIP). CSIP delivers this water to the agricultural land shown in green on Figure 3-6. Recycled water is additionally used for irrigation in the Las Palmas Ranch development.

Surface water supplies are derived from the Salinas River and its tributaries. Direct diversions provide surface water to agriculture, and additional surface water is diverted through a pneumatic diversion dam known as the Salinas River Diversion Facility (SRDF). This dam is located on the Salinas River near Marina. The SRDF provides surface water to the CSIP distribution system to offset groundwater pumping.

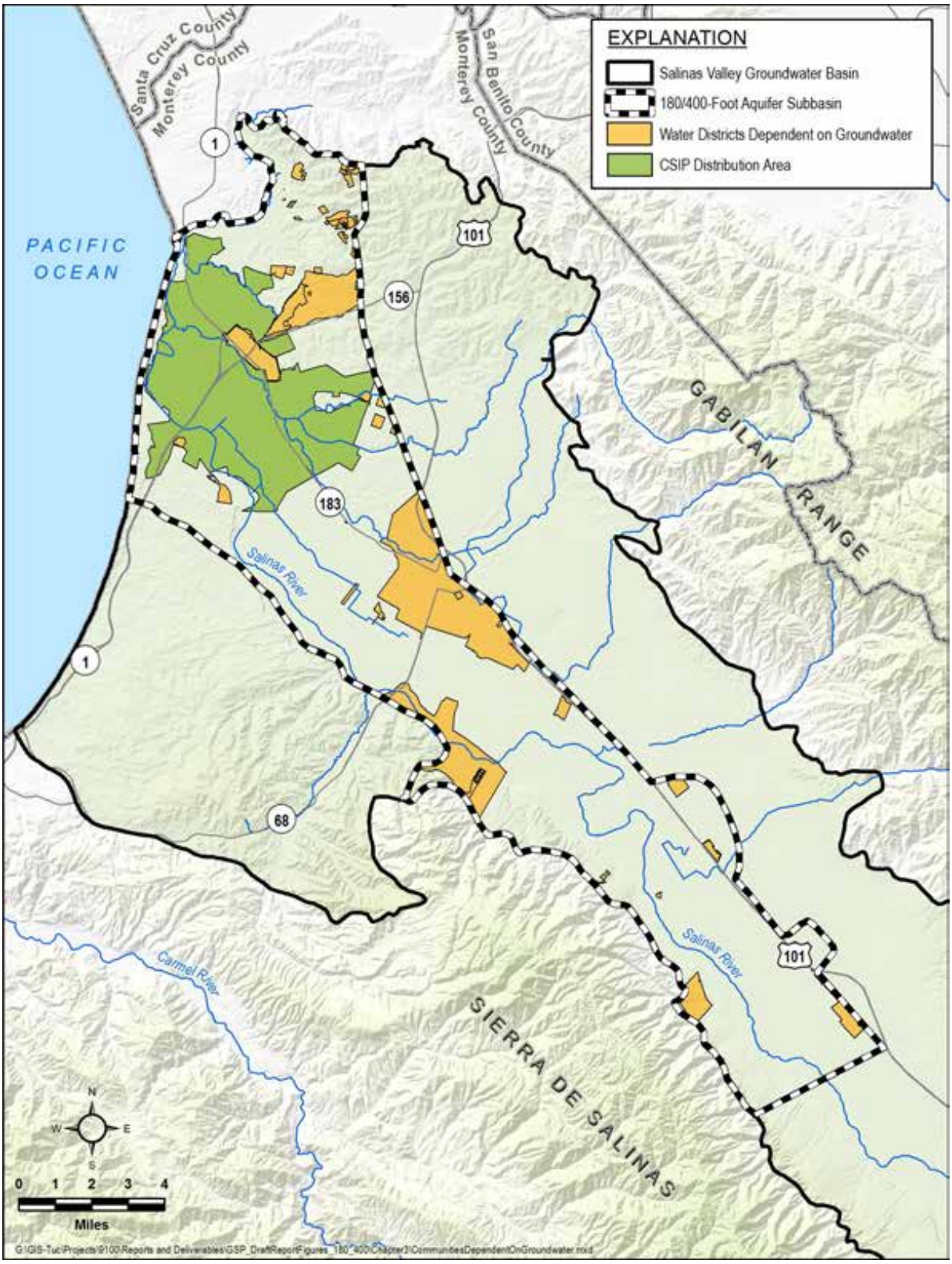


Figure 3-6. Water Districts Dependent on Groundwater and the CSIP Distribution Area

3.4.2 Water Use Sectors

Groundwater demands in the Subbasin are classified into the six water use sectors identified in the GSP Regulations. Groundwater demand categories include:

- **Urban**. Urban water use is assigned to non-agricultural water uses in the cities and census-designated places. Domestic use outside of census-designated places is not considered urban use. For the years 2010-2015, urban water use averaged 17,400 acre-feet (AF) and accounted for an average of 15% of the groundwater pumped in the Subbasin (MCWRA, 2015a; MCWRA, 2017a).
- **Industrial**. There is limited industrial use in the Subbasin. DWR does not have any records of wells in the Subbasin that are categorized as industrial use. MCWRA records lump industrial use and urban use together as a single type of water use.
- **Agricultural**. This is the largest water use sector in the Subbasin, with an annual average use of 96,600 AF between 2010 and 2015. Agricultural water use accounted for an average of 85% of the groundwater pumped in the Subbasin (MCWRA, 2015a; MCWRA 2017a).
- **Managed wetlands**. DWR land use records indicate that there is one managed wetland in the Subbasin, an 11.2-acre wetland owned by the State of California and located northeast of the Monte De Lago neighborhood, between state highway 156 and Castroville Boulevard. The water use of this wetland is unknown.
- **Managed recharge**. There is no managed recharge in the Subbasin. Wastewater treated by the Salinas Valley Reclamation Project (SVRP) is distributed by the CSIP distribution system and used to offset agricultural groundwater pumping within the CSIP service area resulting in in-lieu recharge.
- **Native vegetation.** Approximately 90% of the Subbasin comprises commercial, industrial, agricultural, or residential land uses. Approximately 4% is identified as “conservation” and approximately 5% is identified as “public” or “quasi-public”. Groundwater use by native vegetation is minimal. Although not a native species, water use by *Arundo donax* is estimated at between 32,000 and 64,000 acre-feet per year (AF/yr.) in the entire Salinas Valley Groundwater Basin (Giessow, 2011); an unknown quantity occurs within the 180/400-Foot Aquifer Subbasin.

3.5 Existing Well Types, Numbers, and Density

Well density data were derived from the database of wells that DWR specifically developed for use in GSPs. Other data sources are available from MCWRA or other sources, and they may result in different well densities. The DWR data were used for simplicity and consistency with other DWR data used in this GSP.

DWR's Well Completion Report Map Application classifies wells as domestic, production, and municipal; the majority of wells classified as production wells are assumed to be used for agricultural irrigation, with some production wells used for industrial purposes. More than half of the wells in the DWR dataset are production wells. Domestic wells account for most of the remaining wells. Some of the domestic wells identified by DWR may be classified as *de minimis* extractors, defined as pumping less than 2 AF/yr for domestic purposes. Well counts in the Subbasin are summarized in Table 3-2. Figure 3-7 and Figure 3-8 show the density of domestic and agricultural production wells, respectively, in the Subbasin.

Fewer than 3% of wells in the Subbasin are classified as public supply wells, even though groundwater is the primary water source for urban and rural communities in the Subbasin.

Figure 3-9 shows the density of municipal wells in the Subbasin. As previously described, Figure 3-6 identifies municipal areas dependent upon groundwater.

Table 3-2. Well Count Summary

Category	Number of Wells
Domestic	691
Production	780
Public Supply	43
Total	1,514

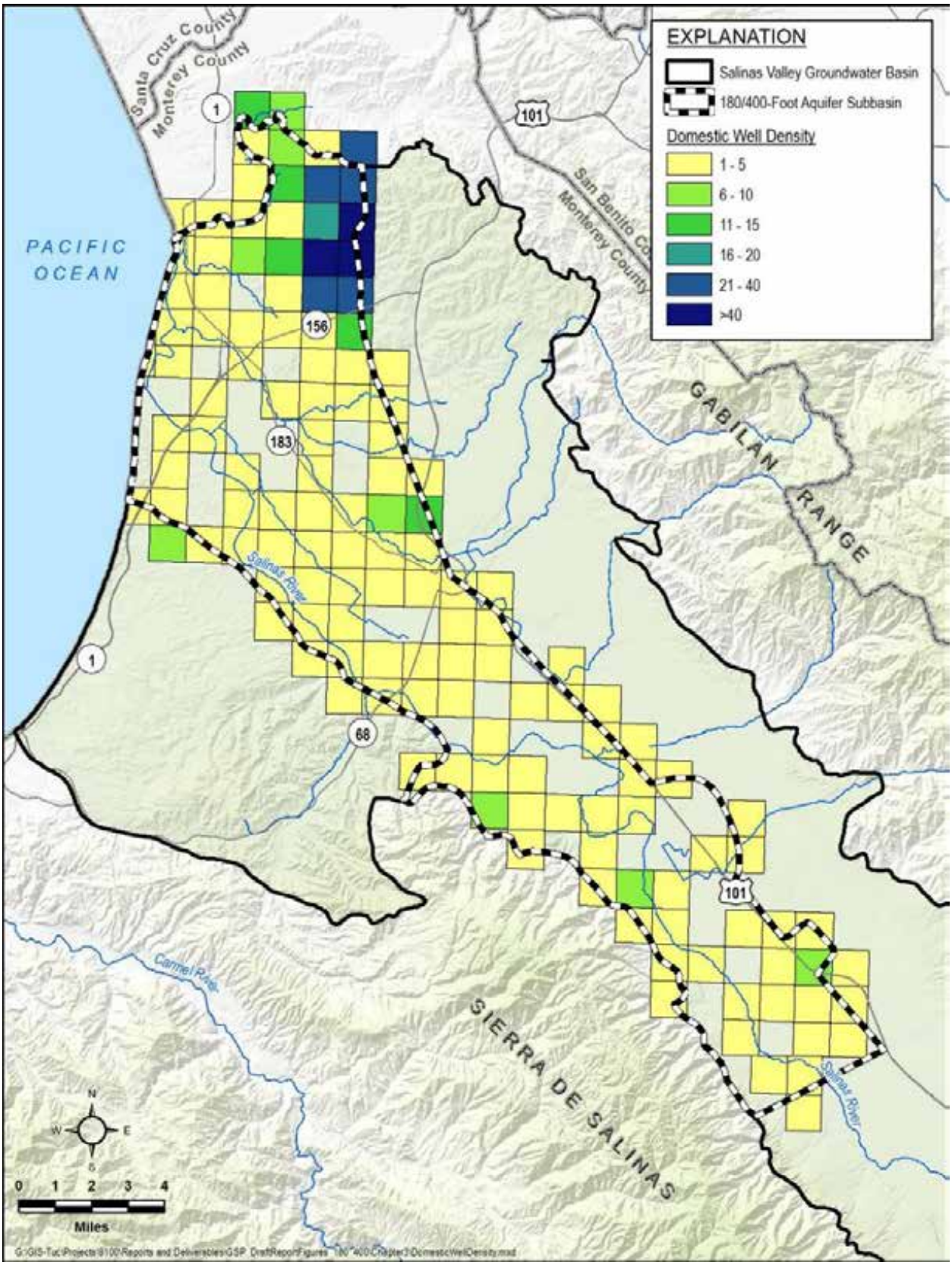


Figure 3-7. Density of Domestic Wells (Number of Wells per Square Mile)

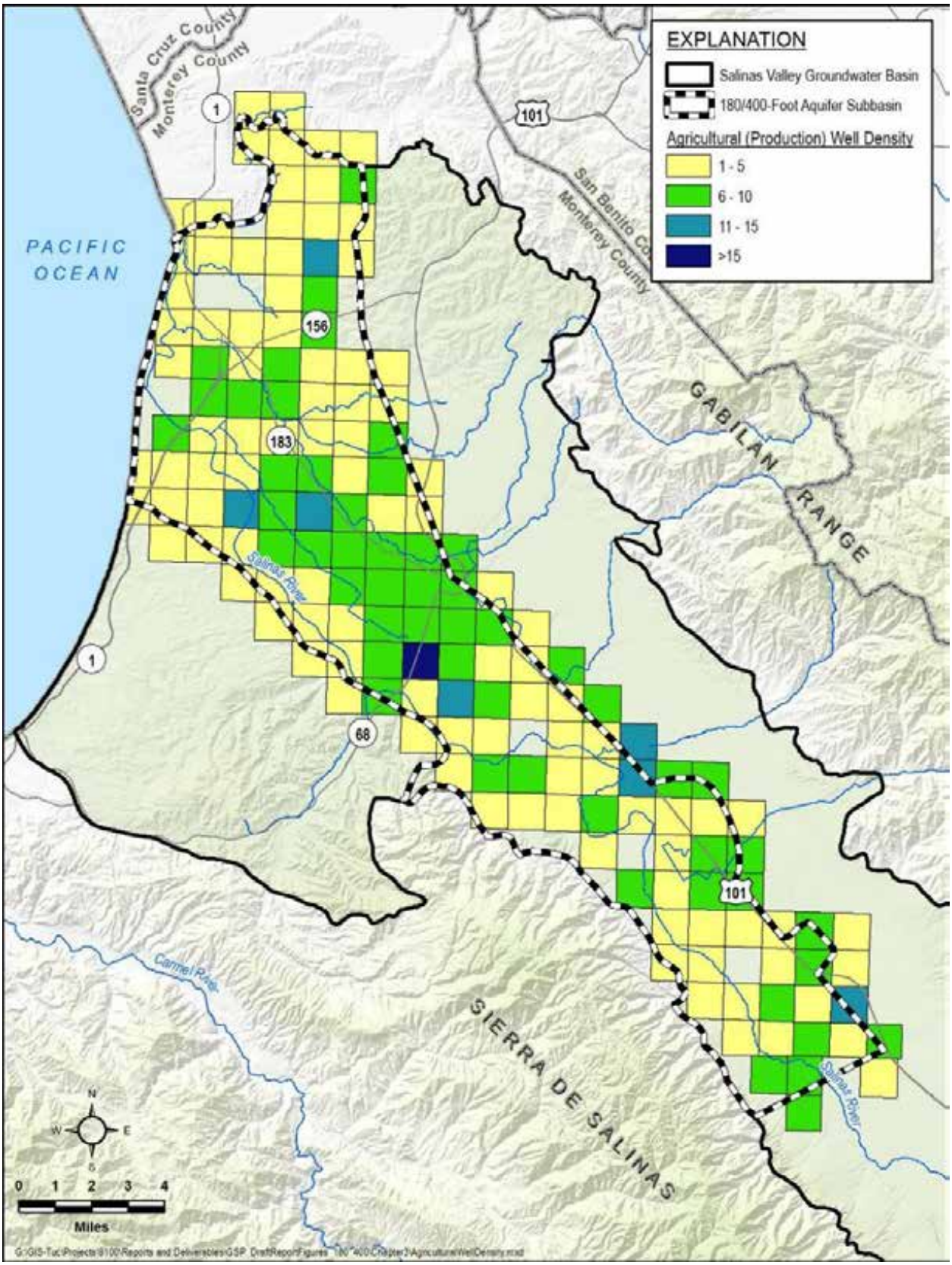


Figure 3-8. Density of Agricultural Production Wells (Number of Wells per Square Mile)

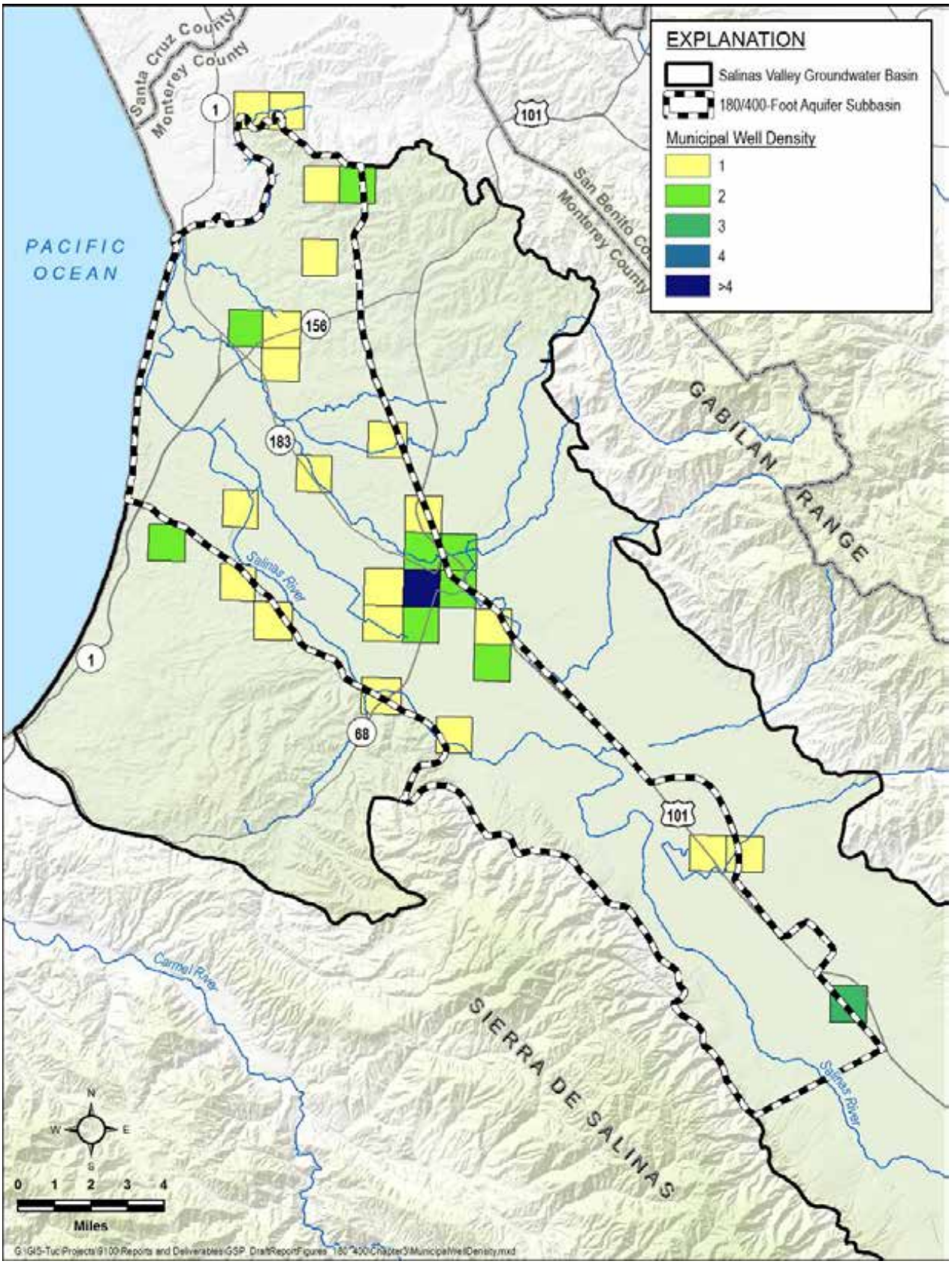


Figure 3-9. Density of Municipal Wells (Number of Wells per Square Mile)

3.6 Existing Monitoring Programs

3.6.1 Existing Groundwater Elevation Monitoring

3.6.1.1 MCWRA Monthly Groundwater Elevation Monitoring

MCWRA collects monthly groundwater elevation measurement from approximately 100 wells throughout the Salinas Valley Groundwater Basin. Of these wells, 38 are in the 180/400-Foot Aquifer Subbasin. MCWRA processes these monthly measurements to develop a computed average depth to water for the Subbasin.

3.6.1.2 MCWRA Annual Fall Groundwater Elevation Monitoring

MCWRA collects groundwater elevation measurements from an additional 120 wells in the 180/400-Foot Aquifer Subbasin each fall. MCWRA uses these annual measurements to develop contour maps depicting the annual groundwater elevation.

3.6.1.3 MCWRA August Groundwater Elevation Monitoring

MCWRA collects groundwater elevation measurements every August from approximately 100 wells in the 180/400-Foot Aquifer Subbasin to establish the location and extent of groundwater pumping depressions that drive seawater intrusion. The August measurements usually coincide with the end of the irrigation season, and groundwater elevations at this time reflect low groundwater elevations prior to the onset of seasonal winter recharge. MCWRA uses the August groundwater elevation data to develop groundwater contour maps of the coastal pumping depressions in odd-numbered years.

3.6.1.4 California Statewide Groundwater Elevation Monitoring (CASGEM)

MCWRA is the responsible agency for CASGEM monitoring in most areas of Monterey County. The monitoring network comprises 51wells throughout the Salinas Valley Groundwater Basin. Of these 51 wells, 23 are in the 180/400-Foot Aquifer Subbasin. Some of the CASGEM monitoring wells are owned by MCWRA and others are privately owned by owners who have volunteered the well for inclusion in the CASGEM program. MCWRA collects monthly groundwater elevation data from the CASGEM wells, except for a few that are monitored biannually, and reports the groundwater elevation data to DWR twice per year. Figure 3-10 shows the locations of the CASGEM monitoring wells in the 180/400-Foot Aquifer Subbasin.

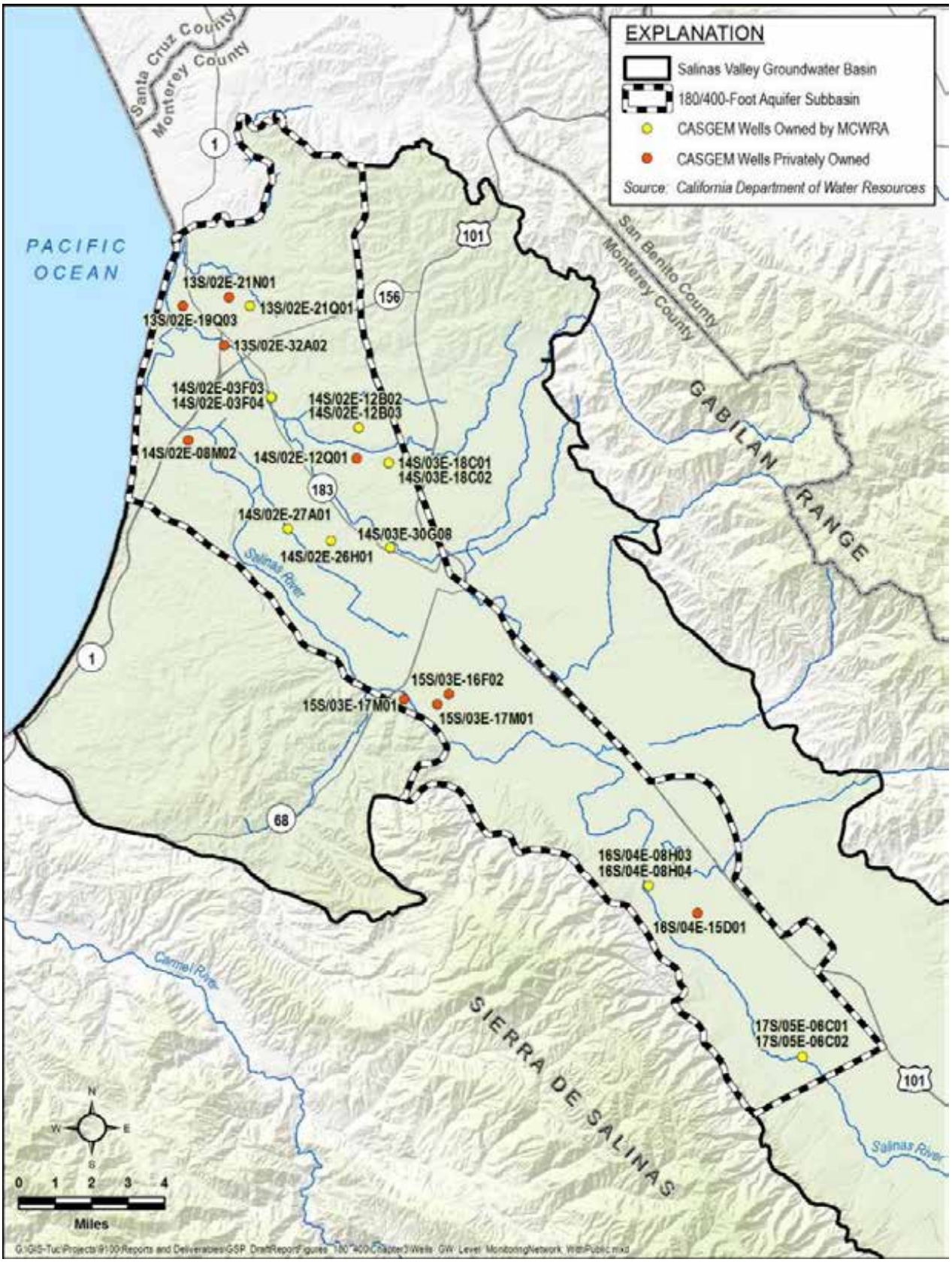


Figure 3-10. Locations of CASGEM Wells in the 180/400-Foot Aquifer Subbasin

3.6.2 Groundwater Extraction Monitoring

MCWRA collects groundwater extraction information from all wells in the 180/400-Foot Aquifer Subbasin that have discharge pipes of three inches or greater in diameter. These data have been collected since 1993. Extraction is self-reported by well owners.

3.6.3 Groundwater Quality Monitoring

3.6.3.1 MCWRA Seawater Intrusion Monitoring

MCWRA monitors seawater intrusion in the Salinas Valley Groundwater Basin with a network of 121 monitoring wells located in the 180/400-Foot Aquifer Subbasin. Ninety-six wells in the network are agricultural production wells that are sampled annually in June and August. Twenty-five of the wells in the network are dedicated monitoring wells that are maintained by either MCWRA or by California-American Water (Cal-Am) as part of its Monterey Peninsula Water Supply Project (MPWSP).

Water quality samples from the wells are analyzed for general water chemistry constituents, including anions and cations, conductivity, etc. The data are used to develop time-series plots of chloride and conductivity trends, stiff and piper diagrams, and to compute molar ratios of chloride to sodium. The data are used to prepare maps of seawater intrusion in the 180- and 400-Foot Aquifers in odd-numbered years. Additional information about the occurrence and extent of seawater intrusion in both the 180- and 400-Foot Aquifers is provided in Section 5.

3.6.3.2 Other Groundwater Quality Monitoring

Groundwater quality is monitored under several different programs and by different agencies including:

- Municipal and community water purveyors must collect water quality samples on a routine basis for compliance monitoring and reporting to the California Division of Drinking Water.
- The United States Geological Survey (USGS) has sporadically collected groundwater quality data under the Groundwater Ambient Monitoring and Assessment (GAMA) program. These data are stored in the State's GAMA/Geotracker system. Figure 3-11 shows the location of wells in the State's GAMA Geotracker database that are in the 180/400-Foot Aquifer Subbasin.
- There are multiple sites at which groundwater quality monitoring is conducted as part of investigation or compliance monitoring programs through the Central Coast Regional Water Quality Control Board.

Cal-Am and MCWRA monitor Cal-Am's proposed source wells for the MPWSP.

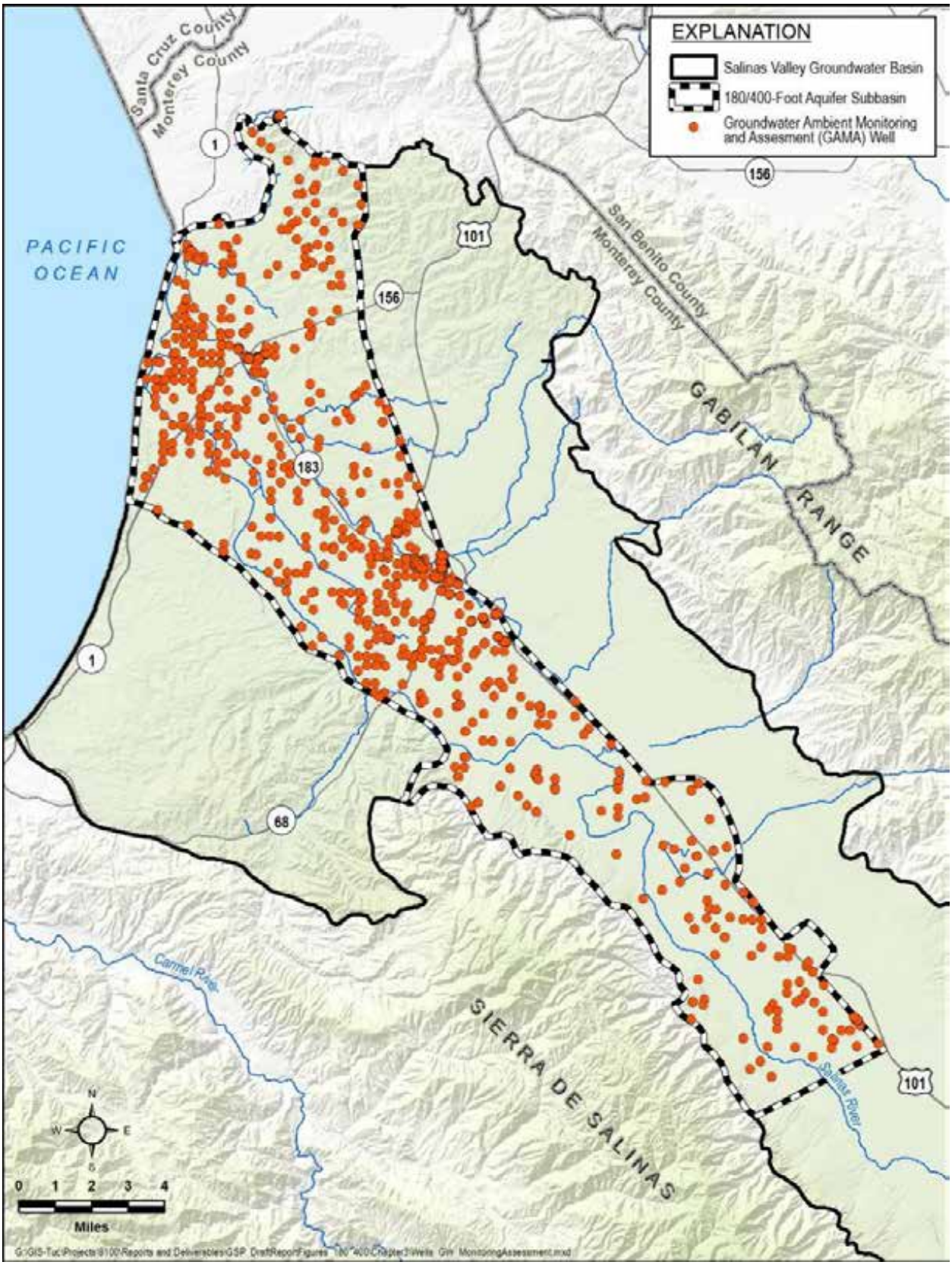


Figure 3-11. Locations of USGS GAMA Wells in the 180/400-Foot Aquifer Subbasin

3.6.4 Surface Water Monitoring

Streamflow gauges operated by the USGS within the 180/400-Foot Aquifer Subbasin include:

- Reclamation Ditch near Salinas (USGS Site #11152650)
- Salinas River near Chualar (USGS Site #11152300)
- Salinas River near Spreckels (USGS Site #11152500)

Water levels in the Salinas River Lagoon are measured by MCWRA at Monte Road and near the slide gate to the Old Salinas River. The locations of the surface-water monitoring facilities are depicted on Figure 3-12.

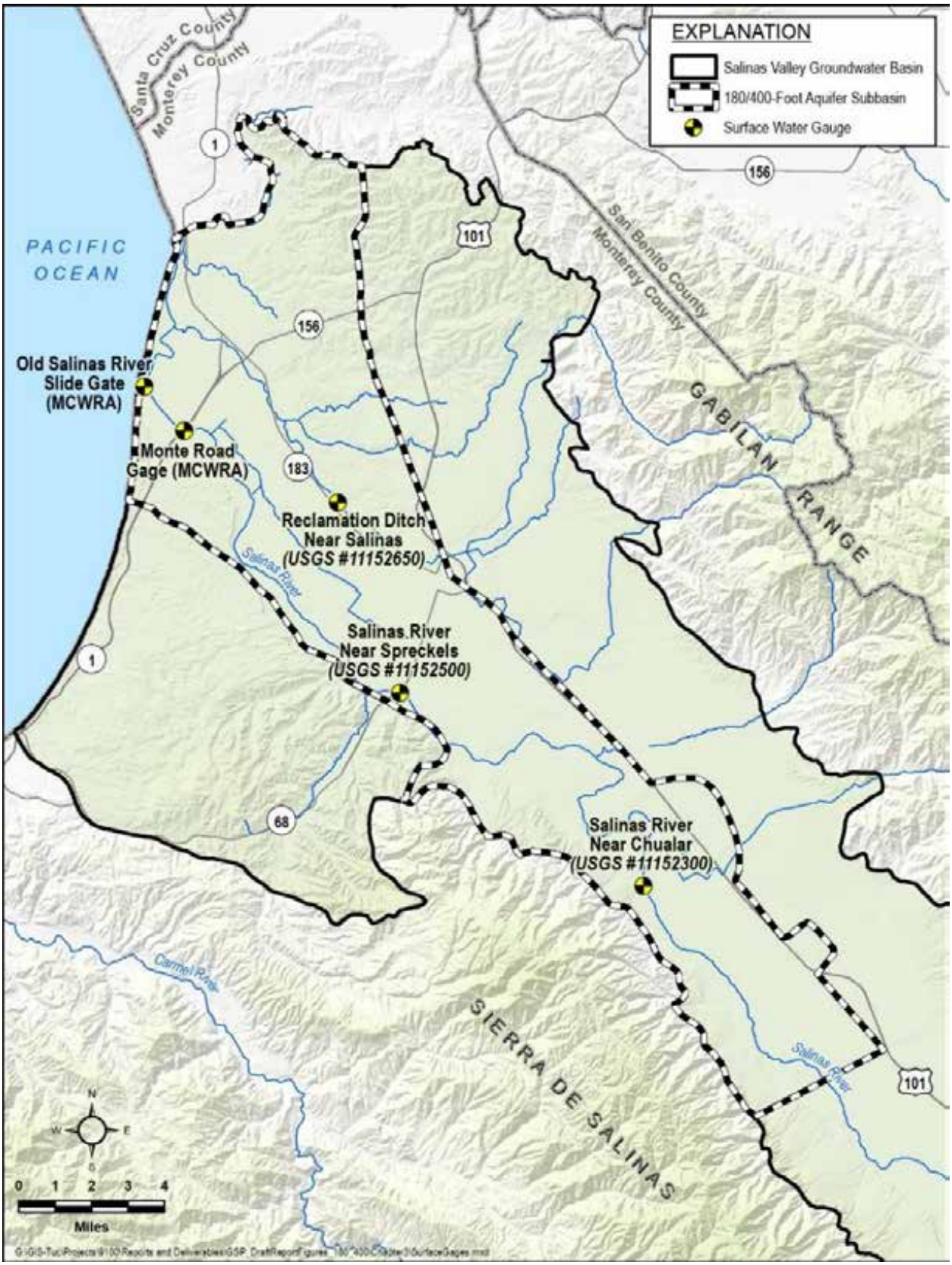


Figure 3-12. Surface Water Gaging Locations

3.6.5 Incorporating Existing Monitoring Programs into the GSP

The existing monitoring programs and monitoring networks constitute a well-developed and broadly distributed system that provides representative data throughout the Subbasin. The groundwater elevation monitoring programs are operated by an existing member of the SVBGSA, and therefore are incorporated into the GSP monitoring plan as appropriate. The existing groundwater elevation monitoring programs will be updated and improved to document the avoidance of undesirable results in each significant aquifer in the Subbasin.

MCWRA currently monitors 23 wells with publicly available data within the 180/400-Foot Aquifer Subbasin as part of the CASGEM network. This network will be used for long-term water elevation monitoring under GSP implementation. MCWRA also monitors seawater intrusion at dedicated monitoring wells and creates chloride concentration maps to track seawater intrusion in the 180/400-Foot Aquifer Subbasin aquifers. This seawater intrusion monitoring network will be used for the seawater intrusion sustainability indicator.

Groundwater quality data will be downloaded and reviewed from existing networks and programs for public water system wells, small public water system wells that are monitored by the County Department of Public Health, and the Irrigated Lands Program agricultural and domestic wells monitored under Ag Order 4.0.

The existing stream gages, primarily those maintained by the USGS, will be incorporated into this GSP monitoring plan to validate projections of surface water depletions from pumping. InSAR data provided by DWR will be used to monitor subsidence in the Subbasin.

3.6.6 Limits to Operational Flexibility

The existing monitoring programs are not anticipated to limit the operational flexibility of this GSP.

3.7 Existing Management Plans

3.7.1 Monterey County Groundwater Management Plan

MCWRA developed a Groundwater Management Plan (GMP) that is compliant with AB3030 and SB1938 legislation (MCWRA, 2006). This GMP exclusively covered the Salinas Valley Groundwater Basin in Monterey County.

The GMP identified three objectives for groundwater management:

Objective 1: Development of Integrated Water Supplies to Meet Existing and Projected Water Requirements

Objective 2: Determination of Sustainable Yield and Avoidance of Overdraft

Objective 3: Preservation of Groundwater Quality for Beneficial Use

To meet these three objectives, the GMP identified 14 elements that should be implemented by MCWRA:

Plan Element 1: Monitoring of Groundwater Elevations, Quality, Production, and Subsidence

Plan Element 2: Monitoring of Surface Water Storage, Flow, and Quality

Plan Element 3: Determination of Basin Yield and Avoidance of Overdraft

Plan Element 4: Development of Regular and Dry Year Water Supply

Plan Element 5: Continuation of Conjunctive Use Operations

Plan Element 6: Short-Term and Long-Term Water Quality Management

Plan Element 7: Continued Integration of Recycled Water

Plan Element 8: Identification and Mitigation of Groundwater Contamination

Plan Element 9: Identification and Management of Recharge Areas and Wellhead Protection Areas

Plan Element 10: Identification of Well Construction, Abandonment, and Destruction Policies

Plan Element 11: Continuation of Local, State and Federal Agency Relationships

Plan Element 12: Continuation of Public Education and Water Conservation Programs

Plan Element 13: Groundwater Management Reports

Plan Element 14: Provisions to Update the Groundwater Management Plan

3.7.2 Integrated Regional Water Management Plan

The Integrated Regional Water Management (IRWM) Plan for the Greater Monterey County Region was developed by the Greater Monterey County Regional Water Management Group (RWMG), which consists of government agencies, nonprofit organizations, educational organizations, water service districts, private water companies, and organizations representing agricultural, environmental, and community interests, including:

- Big Sur Land Trust

- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

The 180/400-Foot Aquifer Subbasin falls within the IRWM Plan area. The IRWM Plan consists of a set of goals and objectives that were identified by the RWMG as being critical to address water resource issues within the planning area in the areas of:

- Water Supply
- Water Quality
- Flood Protection and Floodplain Management
- Environment
- Regional Communication and Cooperation
- Disadvantaged Communities
- Climate Change

The IRWM Plan includes more than 25 projects that could assist regional groundwater management (Greater Monterey County Regional Water Management Group, 2018).

3.7.3 Urban Water Management Plans

3.7.3.1 California Water Service (Salinas District) Urban Water Management Plan

California Water Service serves a portion of the City of Salinas. Its 2015 Urban Water Management Plan (UWMP) (California Water Service, 2016) describes the service area; reports historic and projected population; identifies historical and projected water demand by category such as single-family, multi-family, commercial, industrial, institutional/government, and other; and describes the distribution system and identifies system losses.

The UWMP describes the system's reliance on groundwater and California Water Service's support for efforts to avoid overdraft, including working cooperatively with MCWRA and participating in the development of this GSP. Specific activities that California Water Service intends to conduct include:

- Outreach to public agencies to ensure that the Company's presence, rights and interests, as well as historical and current resource management concerns are honored/incorporated within the GSA and GSP formulation process(es).
- Outreach to applicable local and regulatory agencies to ensure the Company's full participation, while also meeting the requirements and expectations set forth by SGMA.
- The enhanced use of digital/electronic groundwater monitoring equipment and other new technology aimed at measuring withdrawal rates, pumping water elevations, and key water quality parameters within the context of day-to-day operations.
- Full participation in the development of GSPs and formulation of groundwater models constructed in basins where the Company has an operating presence.
- Full participation in individual and/or joint projects aimed at mitigating seawater intrusion and other undesirable results.
- Inclusion of sound groundwater management principles and data in all applicable technical reports, studies, facility master plans, and urban water management, particularly as these undertakings relate or pertain to water resource adequacy and reliability.
- Inclusion of sound groundwater management principles and data in all general rate case filings and grant applications to ensure that resource management objectives remain visible and central to Cal Water's long-term planning/budgeting efforts.

The UWMP also addresses California Water Service's position on alternative supplies currently being developed for the Salinas Valley Groundwater Basin. California Water Service is evaluating the possibility of using up to 10,000 AF/yr., or more, of water from the proposed Deep Water Desal LLC desalination plant at Moss Landing.

The UWMP addresses the need for California Water Service to implement a well replacement program to mitigate water quality impacts from nitrates, uranium, MTBE, and sand contamination.

California Water Service's UWMP notes that groundwater will continue to remain as its sole supply due to uncertainties regarding the cost and implementation other options, such as surface water diversion or desalination. However, the UWMP recognizes that it would be beneficial for California Water Service to diversify its supply portfolio. California Water Service evaluated the impact of climate change on its water supply. The study found that climate change could result in a supply reduction of 6% to 7% by the end of the century.

3.7.3.2 California American Water Company (Chualar)

Cal-Am operates a satellite water system serving approximately 1,000 residents near Chualar. The operation of this system is described in Cal-Am's 2010 UWMP. The Cal-Am UWMP provides a description of the system, historical and projected water demands, and an assessment of current and future water supplies. Although the Cal-Am UWMP discusses future water supply options such as desalination, aquifer storage and recovery, and recycled water, none of these are applicable to the Chualar satellite system.

The Chualar system is entirely dependent on groundwater from the 180-Foot Aquifer and is far enough inland that it is not considered susceptible to seawater intrusion. The UWMP reports that water quality from the Chualar system wells is generally good.

3.7.3.3 Marina Coast Water District Urban Water Management Plan

The MCWD most recently updated its UWMP in 2015 (MCWD, 2016). The UWMP describes the service area; reports historical and projected population; identifies historical and projected water demand by category such as single-family, multi-family, commercial, industrial, institutional/government, and other; and describes the distribution system and identifies losses.

The MCWD currently relies solely on groundwater, although the UWMP notes that, "The District is located along the Salinas River, and MCWD Board of Directors has considered purchasing surface water rights in the Salinas River Basin as a means of meeting long-term (beyond 2030) demands." The UWMP further notes that, "…the total Ord Community groundwater supply of 6,600 AF/yr. falls short of the total 2030 Ord Community demand of 8,293 AF/yr. by 1,693 AF/yr. [and] …the Central Marina service area is not projected to exceed its current SVGB groundwater allocation from the Fort Ord Reuse Authority (FORA) within the planning period."

The MCWD UWMP includes a number of demand management measures including:

- Water Waste Prevention Ordinances

- Metering
- Conservation Pricing
- Public Education and Outreach
- Programs to Assess and Manage Distribution System Real Loss
- Water Conservation Program Coordination and Staffing Support
- Water Survey Programs for Residential Customers
- Residential Plumbing Retrofits
- Residential Ultra-Low Flow Toilet Replacement Programs
- High-Efficiency Washing Machine Rebate Programs
- Commercial, Industrial, and Institutional Accounts
- Landscape Conservation Programs and Incentives

3.8 Existing Groundwater Regulatory Programs

3.8.1 Groundwater Export Prohibition

The Monterey County Water Resources Agency Act, § 52.21 prohibits the export of groundwater from any part of the Salinas Valley Groundwater Basin, including the 180/400-Foot Aquifer Subbasin. In particular, the Act states:

> *For the purpose of preserving [the balance between extraction and recharge], no groundwater from that basin may be exported for any use outside the basin, except that use of water from the basin on any part of Fort Ord shall not be deemed such an export. If any export of water from the basin is attempted, the Agency may obtain from the superior court, and the court shall grant, injunctive relief prohibiting that exportation of groundwater.*

3.8.2 Agricultural Order

In 2017 the Central Coast Regional Water Quality Control Board (CCRWQCB) issued Agricultural Order No. R3-2017-0002, a Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (CCRWQCB, 2017). The permit requires that growers implement practices to reduce nitrate leaching into groundwater and improve receiving water quality. Specific requirements for individual growers are structured into three tiers based on the relative risk their operations pose to water quality.

Growers must enroll, pay fees, and meet various monitoring and reporting requirements according to the tier to which they are assigned. All growers are required to implement groundwater monitoring, either individually or as part of a cooperative regional monitoring program. Growers electing to implement individual monitoring and not participate in the regional monitoring program implemented by the Central Coast Groundwater Coalition (CCGC) are required to test all on-farm domestic wells and the primary irrigation supply well for nitrate or nitrate plus nitrite, and general minerals; including, but not limited to, TDS, sodium, chloride and sulfate.

Negotiations with the CCRWQCB staff and Board Members for the next iteration of the Agricultural Order are on-going, and expected to conclude in March 2020 with the adoption of a new Irrigated Lands Regulatory Program (ILRP) Waste Discharge Requirements (WDR) for farming operations in the Salinas Valley Groundwater Basin area. As mandated by the State Water Resources Control Board (SWRCB), specific reporting requirements for nitrogen applications and removal, irrigation and surface water discharge management, and groundwater quality monitoring will be included with quantifiable milestones. While the outcome is not certain, the expectation is that the next Agricultural Order will be more complex with additional compliance reporting measures for all growers.

3.8.3 Water Quality Control Plan for the Central Coast Basins

The Water Quality Control Plan for the Central Coastal Basin was most recently updated in September 2017 (SWRCB, 2017). The objective of the Basin Plan is to outline how the quality of the surface water and groundwater in the Central Coast Region should be managed to provide the highest water quality reasonably possible. Water Quality Objectives for both groundwater and surface water are provided in the Basin Plan.

The Basin Plan lists benceficial users, describes the water quality which must be maintained to allow those uses, provides an implementation plan, details SWRCB and CCRWQCB plans and policies to protect water quality, and details statewide and regional survelliance and monitoring programs. The SWRCB’s Sources of Drinking Water Policy, adopted in Resolution No. 88-63 and incorporated in its entirety in the CCRWQCB’s Basin Plan, provides that water with TDS less than or equal to 3,000 mg/L is considered suitable or potentially suitable for drinking water beneficial uses.

Present and potential future beneficial uses for waters in the Basin are municipal supply; agricultural supply; groundwater recharge; recreation; sport fishing; warm fresh water habitat; wildlife habitat; rare, threatened or endangered species habitat; and, spawning, reproduction, and/or early development of fish.

3.8.4 Requirements for New Wells

In October, 2017, Governor Brown signed Senate Bill (SB) 252 which became effective on January 1, 2018. SB 252 requires well permit applicants in critically overdrafted basins to include information about the proposed well, such as location, depth, and pumping capacity (California Legislature, 2017). The bill also requires the permitting agency to make the information easily accessible to the public and the GSAs. These requirements expire on January 30, 2020.

3.8.5 Title 22 Drinking Water Program

The SWRCB Division of Drinking Water (DDW) regulates public water systems in the State to ensure the delivery of safe drinking water to the public. A public water system is defined as a system for the provision of water for human consumption that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year. Private domestic wells, wells associated with drinking water systems with less than 15 residential service connections, industrial, and irrigation wells are not regulated by the DDW.

The DDW enforces the monitoring requirements established in Title 22 of the California Code of Regulations (CCR) for public water system wells, and all the data collected must be reported to the DDW. Title 22 also designates the Maximum Contaminant Levels (MCLs) for various waterborne contaminants, including volatile organic compounds, non-volatile synthetic organic compounds, inorganic chemicals, radionuclides, disinfection byproducts, general physical constituents, and other parameters.

3.8.6 County Moratorium on Accepting and Processing New Well Permits

On May 22, 2018, the Monterey County Board of Supervisors adopted Ordinance No. 5302 pursuant to Government Code Section 65858. The ordinance was an Interim Urgency Ordinance, which took effect immediately upon adoption. The ordinance prohibits the acceptance or processing of any applications for new wells in the defined Area of Impact within the180/ 400-Foot Aquifer Subbasin, with stated exceptions including municipal wells and replacement wells. The ordinance was originally only effective for 45 days, but at the June 26 Monterey County Board of Supervisors meeting, the Board of Supervisors extended the ordinance to May 21, 2020, by adoption of Ordinance No. 5303. During the moratorium, the County has stated that it will conduct further studies to assess groundwater conditions in the Subbasin.

3.8.7 County Ordinance 3709

County Ordinance 3709, passed in 1993, prohibits groundwater extractions and the drilling of new extraction wells in certain portions of the 180-foot aquifer after January 1, 1995.

3.8.8 County Ordinance 3790

Ordinance 3790, passed in 1994, establishes regulations for the classification, operation, maintenance and destruction of groundwater wells in the Castroville Seawater Intrusion Project area, known as Zone 2B.

3.8.9 Incorporating Regulatory Programs into the GSP

Information in these various plans has been incorporated into this GSP and used during the preparation of Sustainability Goals, when setting Minimum Thresholds and Measurable Objectives when developing Projects and Management Actions.

3.8.10 Limits to Operational Flexibility

Some of the existing management plans and ordinances will limit operational flexibility. These limits to operational flexibility have already been incorporated into the projects and programs included in this GSP. Examples of limits on operational flexibility include:

- The groundwater export prohibition included in the Monterey County Water Resources Agency Act prevents export of water out of the Subbasin. This prohibition is not expected to adversely affect SVBGSA's ability to reach sustainability.
- The Basin Plan and the Title 22 Drinking Water Program restrict the quality of water that can be recharged into the Subbasin.
- The Interim Urgency Ordinance, which imposes a temporary moratorium on wells in the Area of Impact, may limit certain activities and the SVBGSA's ability to access certain sources of water. However, the moratorium is not expected to adversely affect SVBGSA's ability to reach sustainability.
- The Habitat Conservation Plan being developed by MCWRA on the Salinas River will limit operational flexibility for Nacimiento and San Antonio reservoir releases for groundwater recharge in the Basin.

3.9 Conjunctive Use Programs

One conjunctive use project operates in the 180/400-Foot Aquifer Subbasin. This project uses recycled water from the SVRP and distributes it through the CSIP distribution system. This project serves approximately 12,000 acres of farmland within the Subbasin. The extent of the current CSIP distribution area is shown on Figure 3-6. The recycled water in the CSIP is supplemented with groundwater and surface water diverted from the SRDF. When river water is available and the SRDF is operating, grower groundwater pumping has been reduced by about 80% during peak irrigation demand periods. However, it is currently necessary to conjunctively manage all three water sources to match irrigation demands with water supplies.

3.10 Land Use Plans

Monterey County and the cities of Gonzales, Marina, and Salinas have land use authority over all or portions of the 180/400-Foot Aquifer Subbasin. Land use is an important factor in water management. The following sections provide a general description of these land use plans and how implementation may affect groundwater management in the 180/400-Foot Aquifer Subbasin. The following descriptions were taken from publicly available general plans at the time of the GSP preparation.

3.10.1 Monterey County General Plan

Relevant elements of the Monterey County General Plan (Monterey County, 2010) are summarized in Table 3-3.

Table 3-3 Monterey County General Plan Summary

Element	Goal / Policy	
Land Use	LU-1.4	Growth areas shall be designated only where an adequate level of services and facilities such as water, sewerage, fire and police protection, transportation, and schools exist or can be assured concurrent with growth and development. Phasing of development shall be required as necessary in growth areas in order to provide a basis for long-range services and facilities planning.
Open Space	OS-3.8	The County shall cooperate with appropriate regional, state and federal agencies to provide public education/outreach and technical assistance programs on erosion and sediment control, efficient water use, water conservation and re-use, and groundwater management. This cooperative effort shall be centered through the Monterey County Water Resources Agency.
et. seq. Public Services	GOAL PS-2	Assure an adequate and safe water supply to meet the county's current and long-term needs.
	PS-2.1	Coordination among, and consolidation with, those public water service providers drawing from a common water table to prevent overdrawing the water table is encouraged.
	PS-2.2	The County of Monterey shall assure adequate monitoring of wells in those areas experiencing rapid growth provided adequate funding mechanisms for monitoring are established in the CIFP.
	PS-2.3	New development shall be required to connect to existing water service providers where feasible. Connection to public utilities is preferable to other providers.
	PS-2.4	Regulations for installing any new domestic well located in consolidated materials (e.g., hard rock areas) shall be enacted by the County.
	PS-2.5	Regulations shall be developed for water quality testing for new individual domestic wells on a single lot of record to identify: a) Water quality testing parameters for a one-time required water quality test for individual wells at the time of well construction. b) A process that allows the required one-time water quality test results to be available to future owners of the well. Regulations pursuant to this policy shall not establish criteria that will prevent the use of the well in the development of the property. Agricultural wells shall be exempt from the

Element		Goal / Policy
		regulation.
	GOAL PS-3	Ensure that new development is assured a long-term sustainable water supply.
	PS-3.1	Except as specifically set forth below, new development for which a discretionary permit is required, and that will use or require the use of water, shall be prohibited without proof, based on specific findings and supported by evidence, that there is a long-term, sustainable water supply, both in quality and quantity to serve the development [see Plan for list].
	PS-3.2	Specific criteria for proof of a Long-Term Sustainable Water Supply and an Adequate Water Supply System for new development requiring a discretionary permit, including but not limited to residential or commercial subdivisions, shall be developed by ordinance with the advice of the General Manager of the Water Resources Agency and the Director of the Environmental Health Bureau. A determination of a Long-Term Sustainable Water Supply shall be made upon the advice of the General Manager of the Water Resources Agency. The following factors shall be used in developing the criteria for proof of a long-term sustainable water supply and an adequate water supply system: [see Plan for list]
	PS-3.3	Specific criteria shall be developed by ordinance for use in the evaluation and approval of adequacy of all domestic wells. The following factors shall be used in developing criteria for both water quality and quantity including, but not limited to: [see Plan for list]
	PS-3.4	The County shall request an assessment of impacts on adjacent wells and instream flows for new high-capacity wells, including high-capacity urban and agricultural production wells, where there may be a potential to affect existing adjacent domestic or water system wells adversely or in-stream flows, as determined by the Monterey County Water Resources Agency. In the case of new high-capacity wells for which an assessment shows the potential for significant adverse well interference, the County shall require that the proposed well site be relocated or otherwise mitigated to avoid significant interference. The following factors shall be used in developing criteria by ordinance for use in the evaluation and approval of adequacy of all such high-capacity wells, including but not limited to: a) Effect on wells in the immediate vicinity as required by the Monterey County Water Resources Agency or Environmental Health Bureau. b) Effects of additional extractions or diversion of water on in-stream flows necessary to support riparian vegetation, wetlands, fish, and other aquatic life including migration potential for steelhead, for the purpose of minimizing impacts to those resources and species. This policy is not intended to apply to replacement wells.
	PS-3.5	The Monterey County Health Department shall not allow construction of any new wells in known areas of saltwater intrusion as identified by Monterey County Water Resources Agency or other applicable water management agencies: a) Until such time as a program has been approved and funded that will minimize or avoid expansion of salt water intrusion into useable groundwater supplies in that area; or b) Unless approved by the applicable water resource agency. This policy shall not apply to deepening or replacement of existing wells, or wells used in conjunction with a desalination project.
	PS-3.6	The County shall coordinate and collaborate with all agencies responsible for the management of existing and new water resources.

Element		Goal / Policy
	PS-3.7	A program to eliminate overdraft of water basins shall be developed as part of the Capital Improvement and Financing Plan (CIFP) for this Plan using a variety of strategies, which may include but are not limited to: a) Water banking; b) Groundwater and aquifer recharge and recovery; c) Desalination; d) Pipelines to new supplies; and/or e) A variety of conjunctive use techniques. The CIFP shall be reviewed every five years in order to evaluate the effectiveness of meeting the strategies noted in this policy. Areas identified to be at or near overdraft shall be a high priority for funding.
	PS-3.8	Developments that use gray water and cisterns for multi-family residential and commercial landscaping shall be encouraged, subject to a discretionary permit.
	PS-3.9	A tentative subdivision map and/or vesting tentative subdivision map application for either a standard or minor subdivision shall not be approved until the applicant provides evidence of a long-term sustainable water supply in terms of yield and quality for all lots that are to be created through subdivision.
	PS-3.10	In order to maximize agricultural water conservation measures to improve water use efficiency and reduce overall water demand, the County shall establish an ordinance identifying conservation measures that reduce agricultural water demand.
	PS-3.11	In order to maximize urban water conservation measures to improve water use efficiency and reduce overall water demand, the County shall establish an ordinance identifying conservation measures that reduce potable water demand
	PS-3.12	The County shall maximize the use of recycled water as a potable water offset to manage water demands and meet regulatory requirements for wastewater discharge, by employing strategies including, but not limited to, the following: a) Increase the use of treated water where the quality of recycled water is maintained, meets all applicable regulatory standards, is appropriate for the intended use, and re-use will not significantly impact beneficial uses of other water resources. b) Work with the agricultural community to develop new uses for tertiary recycled water and increase the use of tertiary recycled water for irrigation of lands currently being irrigated by groundwater pumping. c) Work with urban water providers to emphasize use of tertiary recycled water for irrigation of parks, playfields, schools, golf courses, and other landscape areas to reduce potable water demand. d) d. Work with urban water providers to convert existing potable water customers to tertiary recycled water as infrastructure and water supply become available.
	PS-3.13	To ensure accuracy and consistency in the evaluation of water supply availability, the Monterey County Health Department, in coordination with the MCWRA, shall develop guidelines and procedures for conducting water supply assessments and determining water availability. Adequate availability and provision of water supply, treatment, and conveyance facilities shall be assured to the satisfaction of the County prior to approval of final subdivision maps or any changes in the General Plan Land Use or Zoning designations.
	PS-3.14	The County will participate in regional coalitions for the purpose of identifying and supporting a variety of new water supply projects, water management programs, and multiple agency agreements that will provide additional domestic water supplies for the Monterey Peninsula and Seaside basin, while continuing to protect the Salinas and Pajaro River groundwater basins from saltwater intrusion. The County will also participate in

Element		Goal / Policy
		regional groups including representatives of the Pajaro Valley Water Management Agency and the County of Santa Cruz to identify and support a variety of new water supply, water management and multiple agency agreement that will provide additional domestic water supplies for the Pajaro Groundwater Basin. The County's general objective, while recognizing that timeframes will be dependent on the dynamics of each of the regional groups, will be to complete the cooperative planning of these water supply alternatives within five years of the adoption of the General Plan and to implement the selected alternatives within five years after that time.
	PS-3.15	The County will pursue expansion of the Salinas Valley Water Project (SVWP) by investigating expansion of the capacity for the Salinas River water storage and distribution system. This shall also include, but not be limited to, investigations of expanded conjunctive use, use of recycled water for groundwater recharge and seawater intrusion barrier, and changes in operations of the reservoirs. The County's overall objective is to have an expansion planned and in service by the date that the extractions from the Salinas Valley groundwater basin are predicted to reach the levels estimated for 2030 in the EIR for the Salinas Valley Water Project. The County shall review these extraction data trends at five-year intervals. The County shall also assess the degree to which the Salinas Valley Groundwater Basin (Zone 2C) has responded with respect to water supply and the reversal of seawater intrusion based upon the modeling protocol utilized in the Salinas Valley Water Project EIR. If the examination indicates that the growth in extractions predicted for 2030 are likely to be attained within ten years of the date of the review, or the groundwater basin has not responded with respect to water supply and reversal of seawater intrusion as predicted by the model, then the County shall convene and coordinate a working group made up of the Salinas Valley cities, the MCWRA, and other affected entities. The purpose will be to identify new water supply projects, water management programs, and multiple agency agreements that will provide additional domestic water supplies for the Salinas Valley. These may include, but not be limited to, expanded conjunctive use programs, further improvements to the upriver reservoirs, additional pipelines to provide more efficient distribution, and expanded use of recycled water to reinforce the hydraulic barrier against seawater intrusion. The county's objective will be to complete the cooperative planning of these water supply alternatives within five years and to have the projects on-line five years following identification of water supply alternatives.

The Monterey County General Plan does not include population projections; however, the Association of Monterey Bay Area Governments (AMBAG) has developed population projections through 2050, as shown in Table 3-4.

Table 3-4. Monterey County Population Projections
(AMBAG, 2018)

Geography	2015	2020	2025	2030	2035	2040	Change 2015-2040 Numeric	Change 2015-2040 Percent
AMBAG Region	**762,676**	**791,600**	**816,900**	**840,100**	**862,200**	**883,300**	**120,624**	**16%**
Monterey County	**432,637**	**448,211**	**462,678**	**476,588**	**489,451**	**501,751**	**69,114**	**16%**
Carmel-By-The-Sea	3,824	3,833	3,843	3,857	3,869	3,876	52	1%
Del Rey Oaks	1,655	1,949	2,268	2,591	2,835	2,987	1,332	80%
Gonzales	8,411	8,827	10,592	13,006	15,942	18,756	10,345	123%
Greenfield	16,947	18,192	19,425	20,424	21,362	22,327	5,380	32%
King City	14,008	14,957	15,574	15,806	15,959	16,063	2,055	15%
Marina	20,496	23,470	26,188	28,515	29,554	30,510	10,014	49%
Marina balance	19,476	20,957	22,205	22,957	23,621	24,202	4,726	24%
CSUMB (portion)	1,020	2,513	3,983	5,558	5,933	6,308	5,288	518%
Monterey	28,576	28,726	29,328	29,881	30,460	30,976	2,400	8%
Monterey balance	24,572	24,722	25,324	25,877	26,456	26,972	2,400	10%
DLI & Naval Postgrad	4,004	4,004	4,004	4,004	4,004	4,004	0	0%
Pacific Grove	15,251	15,349	15,468	15,598	15,808	16,138	887	6%
Salinas	159,486	166,303	170,824	175,442	180,072	184,599	25,113	16%
Sand City	376	544	710	891	1,190	1,494	1,118	297%
Seaside	34,185	34,301	35,242	36,285	37,056	37,802	3,617	11%
Seaside balance	26,799	27,003	27,264	27,632	28,078	28,529	1,730	6%
Fort Ord (portion)	4,450	4,290	4,340	4,490	4,690	4,860	410	9%
CSUMB (portion)	2,936	3,008	3,638	4,163	4,288	4,413	1,477	86%
Soledad	24,809	26,399	27,534	28,285	29,021	29,805	4,996	20%
Soledad balance	16,510	18,100	19,235	19,986	20,722	21,506	4,996	30%
SVSP & CTF	8,299	8,299	8,299	8,299	8,299	8,299	0	0%
Balance Of County	104,613	105,361	105,682	106,007	106,323	106,418	1,805	2%
San Benito County	**56,445**	**62,242**	**66,522**	**69,274**	**72,064**	**74,668**	**18,223**	**32%**
Hollister	36,291	39,862	41,685	43,247	44,747	46,222	9,931	27%
San Juan Bautista	1,846	2,020	2,092	2,148	2,201	2,251	405	22%
Balance Of County	18,308	20,360	22,745	23,879	25,116	26,195	7,887	43%
Santa Cruz County	**273,594**	**281,147**	**287,700**	**294,238**	**300,685**	**306,881**	**33,287**	**12%**
Capitola	10,087	10,194	10,312	10,451	10,622	10,809	722	7%
Santa Cruz	63,830	68,381	72,091	75,571	79,027	82,266	18,436	29%
Santa Cruz balance	46,554	49,331	51,091	52,571	54,027	55,266	8,712	19%
UCSC	17,276	19,050	21,000	23,000	25,000	27,000	9,724	56%
Scotts Valley	12,073	12,145	12,214	12,282	12,348	12,418	345	3%
Watsonville	52,562	53,536	55,187	56,829	58,332	59,743	7,181	14%
Balance Of County	135,042	136,891	137,896	139,105	140,356	141,645	6,603	5%

Sources: Data for 2015 are from the U.S. Census Bureau and California Department of Finance. Forecast years were prepared by AMBAG and PRB.

3.10.2 City of Salinas General Plan

The Land Use and Conservation/Open Space Elements of the City of Salinas General Plan (City of Salinas, 2002) are relevant to water-resources within the 180/400-Foot Aquifer Subbasin, and are summarized in Table 3-5.

Table 3-5. City of Salinas General Plan Summary
(City of Salinas, 2002)

Element	Goal / Policy	
Land Use	Goal LU-6	Work with water suppliers and distributors such as Cal Water and Alco to continue to provide quality water supply and treatment capacity to meet community needs.
	Policy LU-6.1	Actively work with Cal Water and Alco, as well as regional water suppliers and distributors, to ensure that high quality water is available for the community.
	Policy LU-6.2	Review development proposals to ensure that adequate water supplies, treatment, and distribution capacity is available to meet the needs of the development without negatively impacting the existing community,
	Policy LU-6.3	Participate in and support regional programs and projects that target the improvement and conservation of the region's groundwater and surface water supply.
	Policy LU-6.4	Actively promote water conservation by City residents, businesses, and surrounding agricultural producers.
	Policy LU-6.5	Review projects subject, such as residential projects with 500 or more units, for compliance with Section 10910-10915 of the California Water Code.
Conservation	Goal COS-1	Provide a safe and adequate water supply for community uses.
	Policy COS-1.1	Work with regional and local water providers to ensure that adequate supplies of water are available to meet existing and future demand.
	Policy COS-1.2	Cooperate with local, regional, and state water agencies to develop new water sources.
	Policy COS-1.3	Work with local and regional water providers to increase the production, distribution, and use of recycled water,
	Policy COS-1.4	Maintain and restore natural watersheds to recharge the aquifers and ensure the viability of the ground water resources.
	Policy COS-1.5	Cooperate with the Monterey County Water Resources Agency, the State Water Resources Control Board and the Regional Water Quality Control Board to implement programs that address the two primary causes of poor water quality in the planning area: salt water intrusion and nitrate contamination.
	Policy COS-1.6	Enforce national (NPDES) requirements and participate in regional efforts to protect and enhance water quality.
	Goal COS-2	Encourage the conservation of water resources.
	Policy COS-2.1	Participate in and implement local and regional programs that promote water conservation.
	Policy COS-2.2	Work with water providers to institute conservation programs to address water supply problems caused by groundwater overdrafting,
	Policy COS-2.3	Apply standards that promote water conservation in agricultural, residential and non-residential uses.
	Policy COS-2.4	Enforce the City's Water Conservation Ordinance.

3.10.3 City of Gonzales General Plan

Relevant elements of the City of Gonzales General Plan are summarized in Table 3-6.

Table 3-6. City of Gonzales General Plan Summary
(City of Gonzales, 2011)

Element	Goal / Policy	
Land Use	LU-1.2.2	New developments must have adequate water supplies.
	LU-8.3.1:	Modify proposed designs for industrial development to reduce adverse environmental impacts, particularly noise, air, and water pollution, odor, soil, and groundwater contamination, traffic, and visual blight to the degree practicable.
	LU-8.3.2	Plan for Sewer and Water Expansion. Ensure that adequate water and sewer capacity is available to support all areas designated for industrial development
Housing	HE-9.2	Promote Water Conservation. Promote the use of water-saving devices, drought-tolerant landscaping, and other water conservation measures to achieve a reduction in home water bills for residential customers
	HE-9.4.1	Water Conservation. The City will continue to promote ways to reduce monthly home water bills. Such measures already include: (a) requiring new houses to utilize low-flow toilets, low-flow shower heads, and low flow faucets consistent with the requirements of the Monterey County Water Resources Agency, and (b) requiring the use of drought-tolerant landscaping within new developments (as specified in the State Model Landscape Ordinance). The City will also support new water retrofitting programs undertaken by the Monterey County Water Resources Agency, such as providing free low-flow plumbing fixtures to existing customers in Gonzales. Responsibility: Building Department, Public Works Department, Planning Department Timing: Ongoing
Community Health and Safety	Community Health and Safety Element, Paragraph H Water Quality	Groundwater and surface water quality both affect the health of Gonzales residents. Because groundwater is the sole source of domestic water in Gonzales, a healthful supply is essential to the city's future. Surface water pollution creates negative aesthetic and environmental impacts, as well as creating potential health hazards locally and downstream. The Community Health and Safety Element includes policies to reduce the extent of water pollution that could occur from urban development in Gonzales, as well as policies to minimize potential risks if contamination does occur. The groundwater beneath Gonzales is vulnerable to contamination from lawn fertilizer, leaking underground storage tanks, failing septic systems, animal waste, and naturally occurring minerals. High nitrate levels are a persistent problem in the Salinas Valley, with about half of the 58 wells sampled exceeding the State water standard over a testing period of about 30 years. Nitrate problems around Gonzales are most prevalent on the northeast side of the Planning Area, where former greenhouse and dairy operations and the existing feed lot are probably the primary contaminant sources. Elsewhere in the Planning Area, groundwater quality is generally acceptable and meets all water quality standards. The Gonzales Public Works Department conducts regular measurements of water quality for city wells and takes corrective actions if nitrate levels exceed acceptable standards. In the past, well water quality problems have been addressed with special seals which block nitrates from entering the water supply. If activities and land uses around the wells are not properly managed in the future, contamination could result. This would require that wells be relocated or that well-head treatment be introduced.

3.10.4 City of Marina General Plan

The City of Marina General Plan (City of Marina, 2010) recognizes that future water demands will require changes in the management of water resources in the area. The City of Marina's 2020 water demand is projected to be 7,720 AF/yr. The General Plan includes the following measures related to water-supply planning.

- New developments must have identified water sources. [General Plan Section 3.45]
- A 15-percent reserve will be maintained between demand and supply. When demand exceeds 85% of the available supply, no new development will be allowed until supplemental water sources are identified. [General Plan Section 3.47].

3.10.5 Well Permitting

The Public Service element of the Monterey County General Plan addresses permitting of individual wells in rural or suburban areas. New residential or commercial lots in rural or suburban areas with limited utility services must be a minimum area of 2.5 acres if a well is the water source. Existing lots (of any size) can use an on-site well if they are outside of a water system service area. Existing lots within an established water system service area can use wells if they are greater than 2.5 acres or have a connection to a public sewage system. Table 3-7 summarizes the Monterey County General Plan's water supply guidelines for new lots (Monterey County, 2010, Table PS-1). Table 3-8 depicts the decision matrix from the Monterey County General Plan for permitting new wells for existing lots (Monterey County, 2010, Table PS-2).

On August 29, 2018, the State Third Appellate District Court of Appeal published an opinion in *Environmental Law Foundation v. State Water Resources Control Board* (No. C083239), a case that has the potential to impact future permitting of wells near navigable surface waters to which they may be hydrologically connected. The Court of Appeal found that while groundwater itself is not protected by the public trust doctrine, the doctrine does protect navigable waters from harm caused by extraction of groundwater if it adversely affects public trust uses. Further, it found that the County (Siskiyou County in this case), as a subdivision of the State, shares responsibility for administering the public trust. Monterey County is responsible for well permitting. Therefore, it has a responsibility to consider the potential impacts of groundwater withdrawals on public trust resources when permitting wells near areas where groundwater may be interconnected with navigable surface waters.

Table 3-7. Monterey County Water Supply Guidelines for New Lots

Major Land Groups	Water Well Guidelines
Public Lands	Individual Wells Permitted in Areas with Proven Long-Term Water Supply
Agriculture Lands	Individual Wells Permitted in Areas with Proven Long-Term Water Supply
Rural Lands	Individual Wells Permitted in Areas with Proven Long-Term Water Supply
Rural Centers	Public System; Individual Wells Allowed in limited situations
Community Areas	Public System

Table 3-8. Monterey County Well Permitting Guidelines for Existing Lots

Characteristics of Property	Water Connection Existing or Available from the Water System	Not Within a Water System or a Water Connection Unavailable
Greater than or equal to 2.5 Acres connected to a Public Sewage System or an on-site wastewater treatment system	Process Water Well Permit	Process Water Well Permit
Less than 2.5 Acres and connected to a Public Sewage System	Process Water Well Permit	Process Water Well Permit
Less than 2.5 Acres and connected to an on-site wastewater treatment system	Do not Process Water Well Permit	Process Water Well Permit

3.10.6 Land Use Plans Outside of Basin

The Cities of Greenfield and Soledad have general plans with land use elements in the adjoining Forebay Aquifer Subbasin. Because Soledad is a member of the SVBGSA, management actions taken by the SVBGSA will be in alignment with the concerns and plans of that city. If a cooperation agreement is reached with the City of Greenfield, management action taken by the SVBGSA should likewise be in alignment with that City's concerns. Therefore, it is unlikely that these two land use plans will affect the ability of the SVBGSA to achieve sustainable groundwater management.

3.10.7 Effects of Land Use Plan Implementation on Water Demand

The GSA does not have authority over land use planning. However, the GSA will coordinate with the County on General Plans and land use planning/zoning as needed when implementing the GSP.

A lawsuit filed against the County of Monterey's general plan led to a settlement agreement that affects water supplies. The settlement agreement requires the County of Monterey to develop a study of a portion of the Basin's water supplies that includes, among other items:

- An assessment of whether the total water demand for all uses designated in the General Plan for the year 2030 are likely to be reached or exceeded
- An evaluation and conclusions regarding future expected trends in groundwater elevations
- An evaluation and conclusions regarding expected future trends in seawater intrusion

Should the study conclude that:

- Total water demand for all uses is likely to be exceeded by 2030, or
- Groundwater elevations are likely to decline by 2030, or
- The seawater intrusion boundary is likely to advance inland by 2030

Then the study shall make recommendations on how to address those conditions.

The outcomes from this study may affect the GSP implementation. However, the GSP assumes pumping will be limited to the sustainable yield through the measures laid out in Chapter 9. The study and GSP implementation are two parallel efforts, and the results of the County's study will be reviewed when finalized and considered during GSP implementation.

The settlement agreement furthermore required the USGS to develop the SVIHM that will be used during implementation of this GSP. The USGS is currently developing and working on the final calibration of this model and is planning to release it in spring 2020.

3.10.8 Effects of GSP Implementation on Water Supply Assumptions

Implementation of this GSP is not anticipated to affect water supply assumptions of relevant land use plans over the planning and implementation horizon. The water charges framework, one of the main implementation measures described in Chapter 9, will promote voluntary pumping reductions and impose a tiered pumping fee structure. Changes in the cost of groundwater may affect whether surface water or groundwater is used. Land use changes may occur as a result of these activities and based on financial decisions by individual growers. However, there is no direct impact from the GSP implementation on land use management.

4 HYDROGEOLOGIC CONCEPTUAL MODEL

4.1 Subbasin Setting

The 180/400-Foot Aquifer Subbasin is at the northern end of the Salinas Valley Groundwater Basin: an approximately 90-mile long alluvial basin underlying the elongated, intermountain valley of the Salinas River. The Subbasin is oriented southeast to northwest, with the Salinas River draining towards the northwest into the Pacific Ocean at Monterey Bay (Figure 4-1).

The Subbasin slopes at an average grade of approximately 5 feet/mile to the northwest. Elevations in the Subbasin range from approximately 500 feet along the Sierra de Salinas to sea level at Monterey Bay. The colored bands on Figure 4-1 shows the topography of the Subbasin, derived from the USGS Digital Elevation Model (DEM).

4.2 Subbasin Geology

The Subbasin was formed through periods of structural deformation and periods of marine and terrestrial sedimentation in a tectonically active area on the eastern edge of the Pacific Plate. Figure 4-2 presents a geologic map of the basin and vicinity, illustrating both the locations of faults and the geologic formations present at ground surface. This geologic map was adopted from the California Geologic Survey's 2010 statewide geologic map (Jennings, et al., 2010). The locations of cross sections used to define principal aquifers in Section 4.4 are also shown on Figure 4-2. The legend on Figure 4-2 presents the age sequence of the geologic materials from the youngest unconsolidated Quaternary sediments to the oldest pre-Cambrian basement rock.

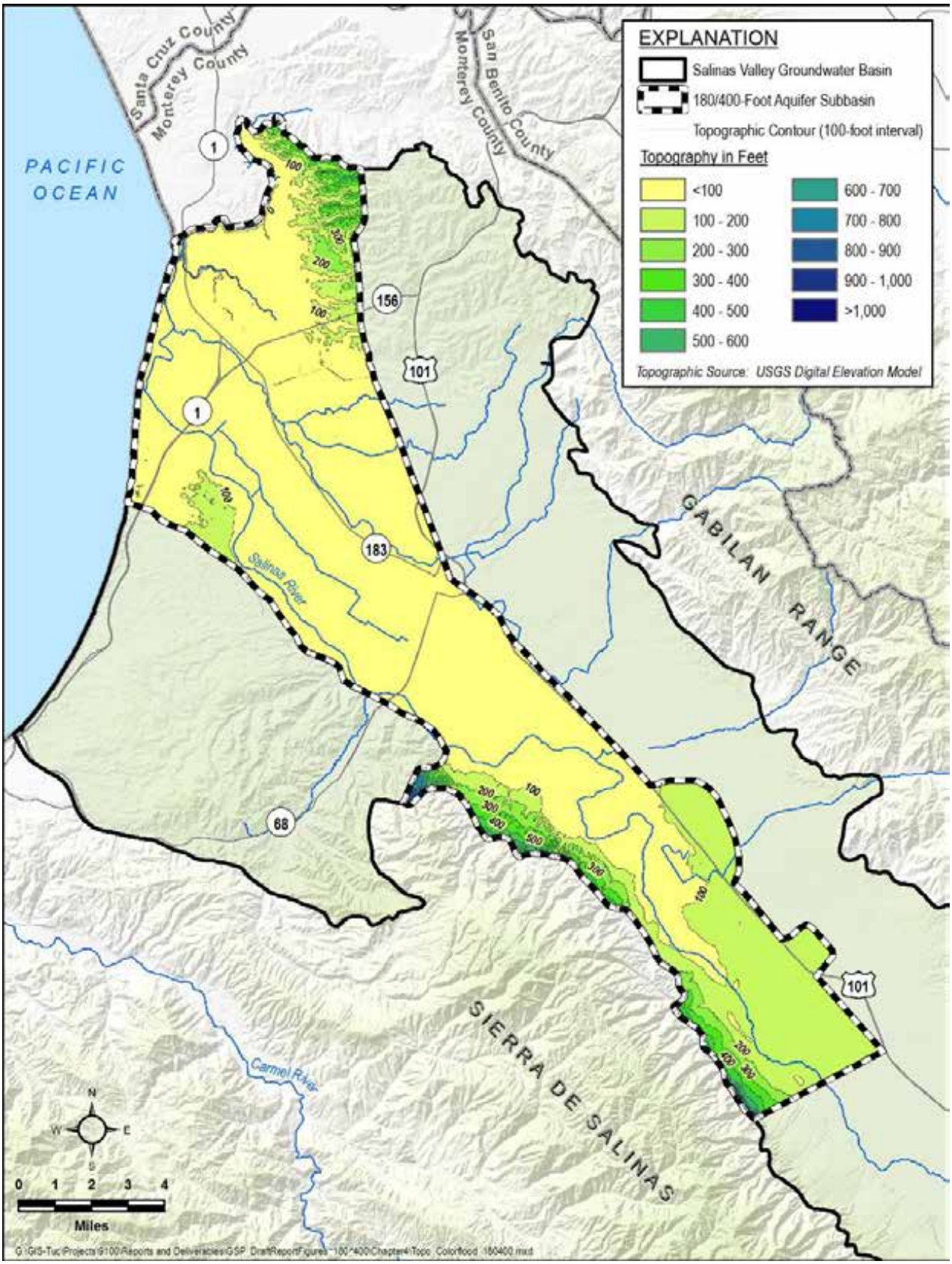


Figure 4-1. Salinas Valley Topography

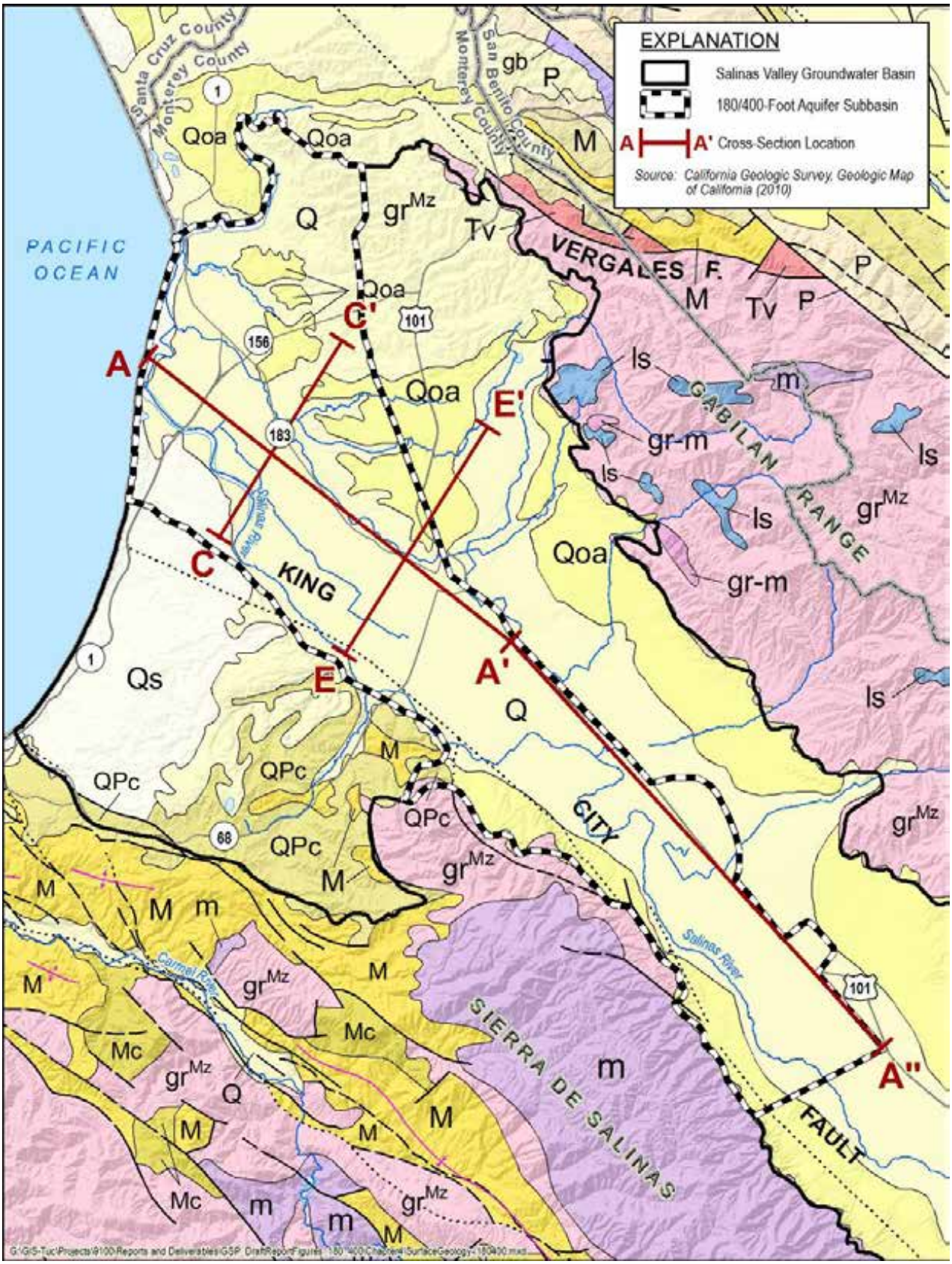


Figure 4-2. Subbasin Geology

FIGURE 4-2. EXPLANATION

QUATERNARY DEPOSITS

Qs	Extensive marine and nonmarine sand deposits, generally near the coast or desert playas
Q	Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated
Qoa	Older alluvium, lake, playa, and terrace deposits
QPc	Pleistocene and/or Pliocene sandstone, shale, and gravel deposits, mostly loosely consolidated

TERTIARY SEDIMENTARY ROCKS

P	Pliocene marine sandstone, siltstone, shlae, and conglomerate, mostly moderately consolidated
M	Miocene marine sandstone, shale, siltstone, conglomerate, and breccia, moderately to well consolidated
Mc	Miocene nonmarine sandstone, shale, conglomerate, and fanglomerate, moderately to well consolidated
O	Oligocene marine sandstone, shale, and conglomerate, mostly well consolidated

TERTIARY VOLCANIC ROCKS

Tv	Tertiary volcanic flow rocks, minor pyroclastic deposits

MESOZOIC SEDIMENTARY AND METASEDIMENTARY ROCKS

ls	Limestone, dolomite, and marble whose age is uncertain but probably Paleozoic or Mesozoic

MESOZOIC MIXED ROCKS

gr-m	Mesozoic to Precambrian granitic and metamorphic rocks, mostly gneiss and other metamorphic rocks injected by granitic rocks

MESOZOIC PLUTONIC ROCKS

grMz	Mesozoic granite, quartz monzonite, granodiorite, and quartz diorite
gb	Gabbro and dark dioritic rocks, chiefly Mesozoic

PALEOZOIC MIXED ROCKS

m	Undivided pre-Cenozoic metasedimentary and metavolcanic rocks of great variety. Mostly slate, quartzite, hornfels, chert, phyllite, mylonite, schist gneiss, and minor marble

GEOLOGIC SYMBOLS

- fault, certain
- fault, approx. located
- fault, concealed
- normal fault, approx. located
- dextral fault, certain
- Plunging anticline, certain
- Syncline, certain

4.2.1 Geologic Formations

Major geologic units present in the 180/400-Foot Aquifer Subbasin are described below, starting at the surface and moving from youngest to oldest. The corresponding designation on Figure 4-2 is provided in parenthesis.

- *Alluvium (Qa)* – This Holocene unit predominately consists of unconsolidated layers of mixed sand, gravel, silt, and clay that were deposited in a fluvial environment by the Salinas River and its tributaries. In this Subbasin, this unit also includes extensive, laterally continuous clay layers that were deposited in a shallow marine to brackish-water estuarine environment during periods when sea level rise caused submergence of the northern portion of the basin (Durham, 1974). The estuarine clay deposits extend throughout most of the Subbasin and the hydrogeologic impact of these extensive clays is one of the defining characteristics of this Subbasin. This unit covers nearly the entire valley floor. The thickness is not well established because the Alluvium is difficult to distinguish from underlying units, but it is likely 100 to 300 feet thick along the axis of the valley (Durham, 1974).

  In some reports, the Alluvium is limited to the shallowest deposits overlying the first estuarine clay layer, and the remaining thickness of Alluvium is combined with the underlying Older Alluvium to form a unit called Valley Fill Deposits (e.g., Harding ESE 2001; Kennedy-Jenks, 2004). These alternative geologic descriptions have not been adopted in this GSP, and do not have a bearing on the identification of principal aquifers in this conceptual model.

- *Older Alluvium (Qoa)* – This Pleistocene unit comprises alternating, interconnected beds of fine-grained and coarse-grained deposits, predominately associated with alluvial fan depositional environments. The Older Alluvium underlies the Alluvium throughout the Subbasin but is not exposed at the ground surface. The alluvial fan deposits have an estimated maximum saturated thickness of 500 feet (Durham, 1974).

- *Aromas Sand (QPc)* – This Pleistocene unit is composed of cross-bedded sands containing some clayey layers (Harding ESE, 2001). This unit was deposited in a combination of eolian, high-energy alluvial, alluvial fan, and shoreline environments (Harding ESE, 2001; Greene, 1970; Dupre, 1990). The Aromas Sand Formation likely extends into the northern portion of the 180-400 Foot Aquifer Subbasin (MCWRA, 2017b).

- *Paso Robles Formation (Tc)* – This Pliocene to lower Pleistocene unit is composed of lenticular beds of sand, gravel, silt, and clay from terrestrial deposition (Thorup, 1976; Durbin, et al., 1978). The depositional environment is largely fluvial but also includes alluvial fan, lake and floodplain deposition (Durbin, 1974; Harding ESE,

2001; Thorup, 1976; Greene, 1970). The individual beds of fine and coarse materials typically have thicknesses of 20 to 60 feet (Durbin, et al., 1978). Durham (1974) reports that the thickness of the Formation is variable due to erosion of the upper part of the unit; and that the Formation is approximately 1,500 feet thick near Spreckels and 1,000 feet thick near the City of Salinas. The Paso Robles Formation underlies the entire Subbasin but is rarely exposed at the surface. Through most of the Subbasin, this is the deepest unit and the underlying marine deposits typically do not yield high rates of fresh water.

- *Purisima Formation (P)* – This Pliocene unit consists of interbedded siltstone, sandstone, conglomerate, clay and shale deposited in a shallow marine environment (Greene, 1977; Harding ESE, 2001). The Purisima Formation is ranges from 500 to 1,000 feet in thickness (WRIME, 2003). It underlies most of the Subbasin.

- *Santa Margarita Sandstone and Monterey Formation (M)* – Two Miocene units generally underlie the Subbasin. The Santa Margarita Formation is a friable arkosic sandstone. The Monterey Formation is a shale or mudstone deposited in a shallow marine environment (Harding ESE, 2001; Greene, 1977). In some areas, the Santa Margarita Sandstone directly underlies the Paso Robles Formation where the Purisima Formation is absent (Greene, 1977).

4.2.2 Structural Restrictions to Flow

There are no known structural features such as faults or anticlines that restrict groundwater flow in the 180/400-Foot Aquifer Subbasin.

4.2.3 Soils

The soils of the Subbasin are derived from the underlying geologic formations and influenced by the historical and current patterns of climate and hydrology. Soil types can influence groundwater recharge and the placement of recharge projects. Productive agriculture in the Subbasin is supported by deep, dark, fertile soils. The arable soils of the Subbasin historically were classified into four groups (Carpenter and Cosby 1925): residual soils, old valley-filling soils, young valley-filling soils, and recent-alluvial soils. In addition, five classes of miscellaneous soils were mapped that included tidal marsh, peat, coastal beach, and dune sands.

More recent surveys classify the soils into categories based on detailed soil taxonomy (U.S. Department of Agriculture, 2019). Figure 4-3 is a composite soil map of soils in the Subbasin from the USDA Natural Resources Conservation Service (NRCS) and the Gridded Soil Survey Geographic (gSSURGO) Database that is produced by the National Cooperative Soil Survey (NCSS).

The Subbasin is dominated by four soil orders: mollisols, entisols, vertisols, and alfisols.

- Mollisols are the most widespread soil order in the Salinas Valley Groundwater Basin. Mollisols are characterized by a dark surface horizon, indicative of high organic content. The organic content often originates from roots of surficial grasses or similar vegetation. They are highly fertile and often alkaline rich. Mollisols can have any moisture regime, but enough available moisture to support perennial grasses is typical.

- Entisols are the predominant soil order along the river corridor. Entisols are mineral soils without distinct soil horizons because they have not been in place long enough for distinct horizons to develop. These soils are often found in areas of recent deposition such as active flood plains, river basins, and areas prone to landslides. Nearly all the soils along active river corridor are entisols.

- Vertisols are present over large areas on the valley lowlands in the central and northern Salinas Valley Groundwater Basin. Vertisols are predominantly clayey soils with high shrink-swell potential. Vertisols are present in climates that have distinct wet and dry seasons. During the dry season these soils commonly have deep, wide cracks. During the wet season these soils trend to have water pooling on the surface due to the high clay content.

- Alfisols are present along portions of the margin of the management area. Alfisols are known to have natural fertility both from clay acumination in the subsurface horizons and from leaf litter when under forested conditions. This order of soils is commonly associated with high base minerals such as calcium, magnesium, sodium, and potassium.

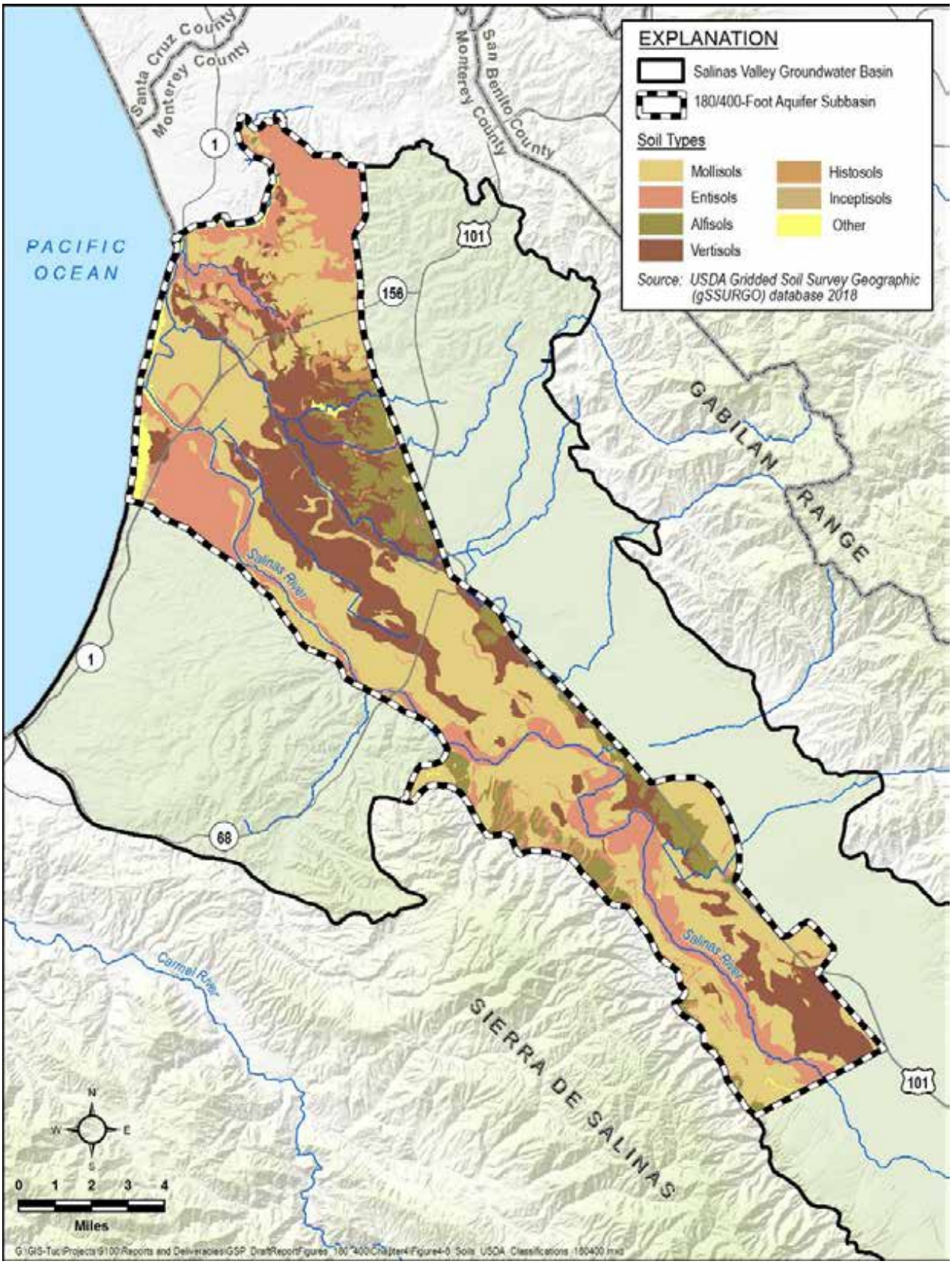


Figure 4-3. Composite Soils Map

4.3 Subbasin Extent

The 180/400-Foot Aquifer Subbasin extents are defined by the California Department of Water Resources (DWR) and are documented in Bulletin 118, (DWR, 2003; DWR, 2016a). Figure 1-1 illustrates the extent of the Subbasin.

4.3.1 Lateral Subbasin Boundaries

The 180/400-Foot Aquifer Subbasin is bounded by a combination of subbasin boundaries and physical boundaries of the Salinas Valley Grounwater Basin, all shown on Figure 1-1.

4.3.1.1 Boundaries with Adjacent Subbasins

The 180/400-Foot Aquifer Subbasin abuts four other subbasins of the Salinas Valley Groundwater Basin.

- **The Forebay Subbasin**. The southeastern boundary with the adjacent Forebay Subbasin is approximately located near the southern limit of the regional clay layers that are characteristic of the 180/400-Foot Aquifer Subbasin. Previous studies of groundwater flow across this boundary indicate there is is reasonable hydraulic connectivity with the Forebay Subbasin, although the principal aquifers change from relatively unconfined to confined near this boundary.
- **The Eastside Subbasin**. The northeastern boundary with the adjacent Eastside Subbasin generally follows the trace of Highway 101 and coincides with the northeastern limit of confining conditions in the 180/400-Foot Aquifer Subbasin. An analysis of stratigraphic correlations concluded that there is a change in the depositional facies near this boundary, with tributary alluvial fan deposits on the east side of the boundary and Salinas River fluvial deposits on the west side of the boundary (Kennedy-Jenks, 2004). Previous studies of groundwater flow across this boundary indicate that there is restricted hydraulic connectivity between the subbasins.
- **The Langley Subbasin.** The boundary with the Langley Subbasin is based on a topographic change from the valley floor to an elevated foothill area. This boundary generally coincides with the northeastern limit of confining conditions in the 180/400-Foot Aquifer Subbasin. Although the Langley Subbasin is not on the valley floor, there are no reported hydraulic barriers separating these two subbasins.
- **The Monterey Subbasin**. The boundary with the Monterey Subbasin is based on topographic rise that coincides with a buried trace of the King City-Reliz fault. This fault may act as a groundwater flow barrier between subbasins beneath a cover of Holocene sand dunes (Durbin, et al., 1978). Although a groundwater divide is commonly found

near the Subbasin boundary, there is potential for groundwater flow between these two subbasins.

4.3.1.2 Physical Basin Boundaries

Physical basin boundaries surrounding the 180/400-Foot Aquifer Subbasin include:

- **The Monterey Bay shoreline**. The northern Subbasin boundary is defined by the Monterey Bay shoreline. The Subbasin aquifers extend across this boundary into the subsurface underlying Monterey Bay and there are no hydrogeologic barriers limiting groundwater flow across this coastal boundary.
- **Elkhorn Slough**. The northern boundary of the Subbasin follows the current course of Elkhorn Slough; corresponding to a paleo-drainage of the Salinas River (DWR, 2003). Elkhorn Slough separates the 180/400-Foot Aquifer Subbasin from the Pajaro Valley Groundwater Basin. This paleo-drainage is a 400-Foot deep, buried, clay-filled boundary that limits groundwater flow between these basins (Durbin, et al., 1978).
- **The Sierra de Salinas**. The southwest extension of the King City fault corresponds to the contact between the Quaternary deposits and the low-permeability granitic and metamorphic basement rock of the Sierra de Salinas. This geologic contact creates a groundwater flow barrier and the southwestern hydrogeologic boundary of the Subbasin.

4.3.2 Vertical Subbasin Boundaries

Investigators have estimated the sedimentary sequence in the Salinas Valley Groundwater Basin to be between 10,000 to 15,000 feet thick. However, productive fresh water principal aquifers occur only at shallower depths, with the effective thickness of the groundwater Subbasin being approximately 1,500 feet. With increasing depth, two factors limit the viability of the sediments as productive, principal aquifers:

1. Deeper strata show increased consolidation and cementation of the sediments, which decreases aquifer yields; and
2. Deeper strata contain poor-quality brackish water unsuitable for most uses.

Because these factors gradually change with depth, there is not a sharp well-defined base to the Subbasin. The SVBGSA has adopted the base of the aquifer defined by the USGS (Durbin, et al., 1978) and extrapolated that surface to the edges of the Subbasin. Figure 4-4 shows a map of elevation contours of the base of the Subbasin. Figure 4-5 shows a contour map of depth to base of the Subbasin based on the base elevation and ground surface elevation.

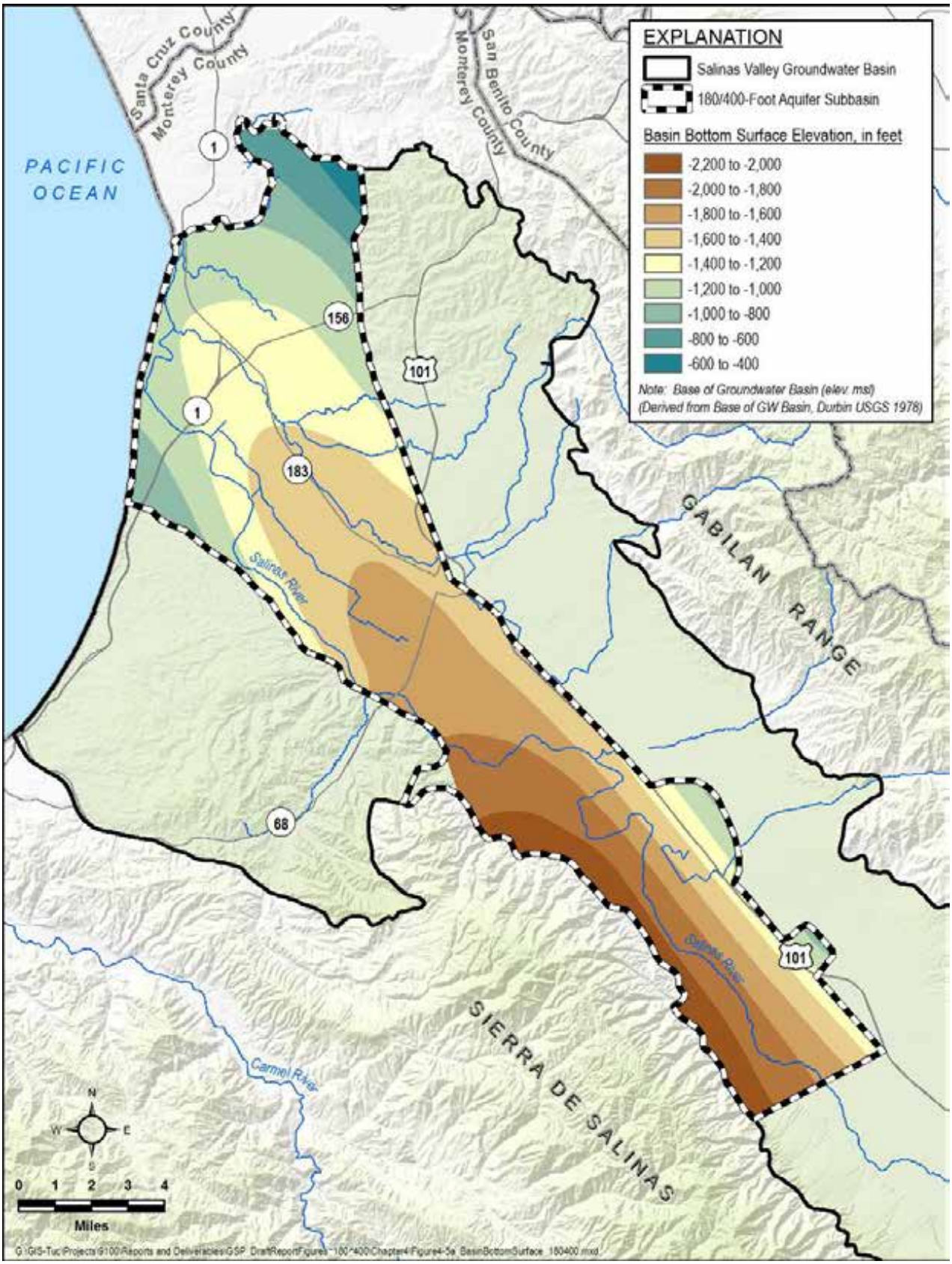


Figure 4-4. Elevation of the Base of the 180/400-Foot Aquifer Subbasin

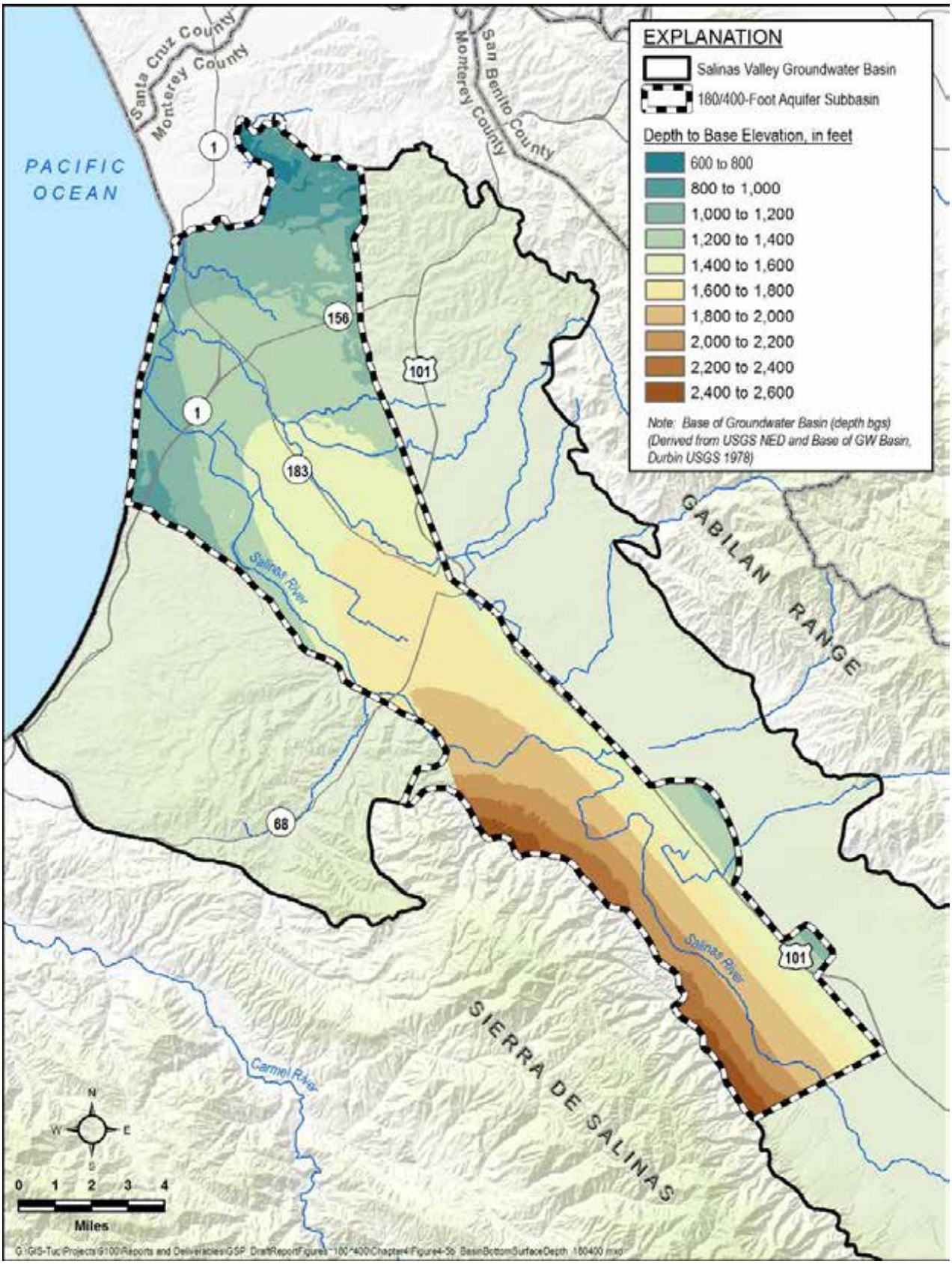


Figure 4-5. Depth Below Ground Surface of the Base of the 180/400-Foot Aquifer Subbasin

4.4 Subbasin Hydrogeology

Groundwater in the 180/400-Foot Aquifer Subbasin is primarily produced from alluvial deposits belonging to three geologic units: the Holocene Alluvium, the Quaternary Older Alluvium, and the Pliocene Paso Robles Formation described above. Although these three geologic formations differ in age, they have similar distributions of sediment type and layering; and in practice it is difficult to distinguish between these formations during borehole drilling. For purposes of groundwater development in the Subbasin, these geologic units are collectively referred to as alluvium. The principal aquifers and aquitards have been historically identified and recognized based not on geologic characteristics, but rather on their depth, influence on groundwater production, groundwater elevations, and groundwater quality.

Groundwater can be found in most of the sedimentary units described above. However, not all groundwater is part of a principal aquifer, which is defined in SGMA as "…aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems" (CCR, 2016). All of the groundwater encountered is a part of the overall groundwater system, but the focus of this GSP is on the principal aquifers.

The most recent, detailed hydrostratigraphic analysis of the 180/400-Foot Aquifer Subbasin was published in 2004 with an update in 2015 (Kennedy-Jenks, 2004; Brown and Caldwell, 2015). Three cross-sections parallel and perpendicular to the long axis of the Subbasin are shown on Figure 4-6, Figure 4-7, and Figure 4-8. The cross-section on Figure 4-6 is adopted from the *State of the Salinas River Groundwater Basin* report (Brown and Caldwell, 2015). The cross-sections on Figure 4-7 and Figure 4-8 are adapted from the *Final report, hydrostratigraphic analysis of the Northern Salinas Valley* (Kennedy-Jenks, 2004). The locations of these cross-sections are depicted on Figure 4-2. The hydrogeologic cross-sections are based on geologic logs provided in California Department of Water Resources Water Well Drillers Reports filed by the well drillers. Geologic log descriptions were grouped into generalized sedimentary groups:

- Fine-grained sediments (e.g., clay, silt, sandy clay, and gravelly clay) are shown as aquitards;
- Coarse-grained sediments (e.g., sand, gravel, and sand-gravel mixtures) are shown as aquifers; and
- Sediments logged as gravel/clay, sand/clay, and sand/gravel/clay are interpreted to consist of interbedded coarse-grained and fine-grained deposits and are included with aquifer materials.

In some cases, the logs may be old, the depth resolution poor, or the lithologic distinction suspect, and therefore the lithology shown on the well logs should not be viewed as precise (Kennedy-Jenks, 2004).

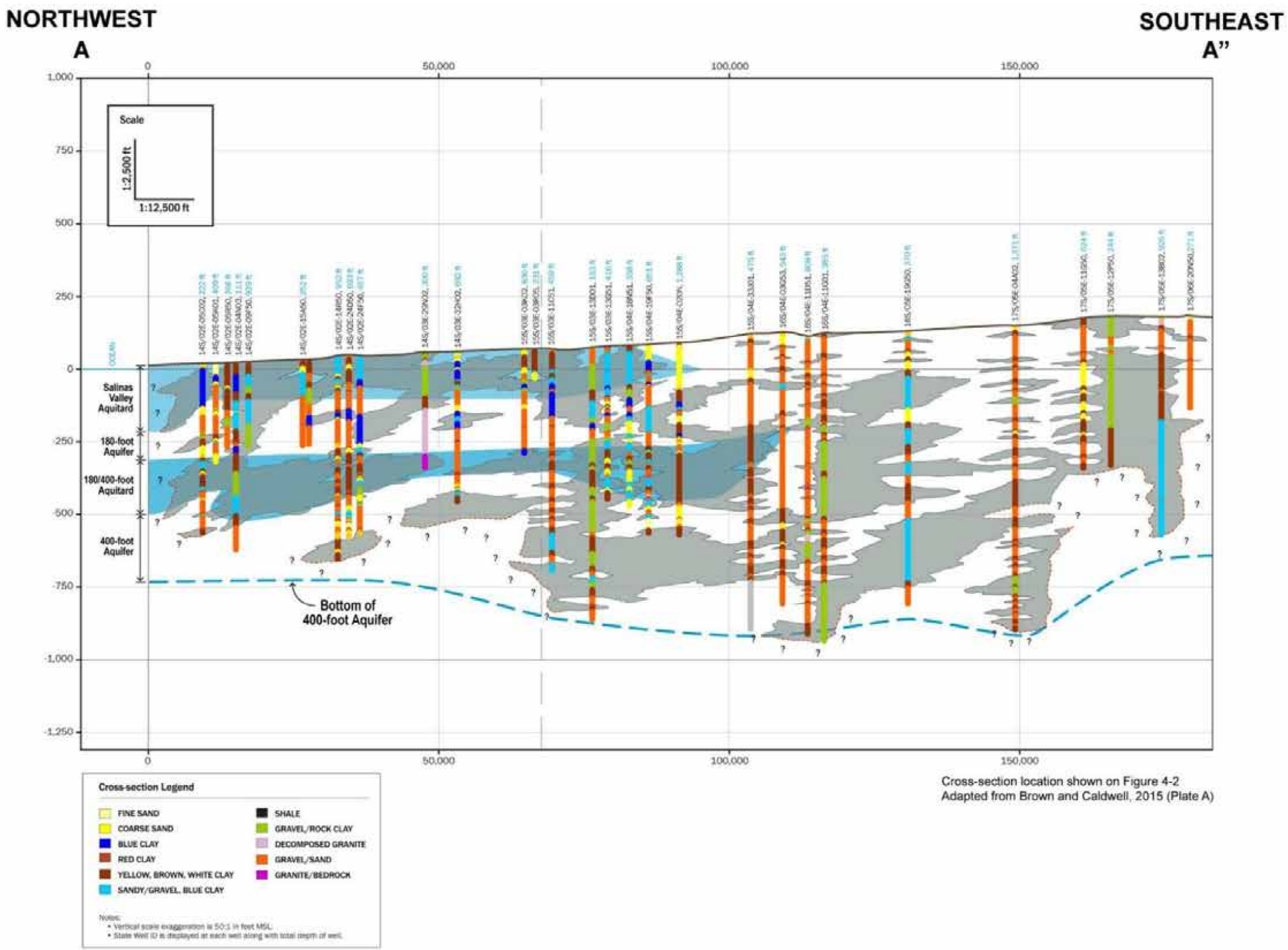


Figure 4-6. Cross-Section A-A'

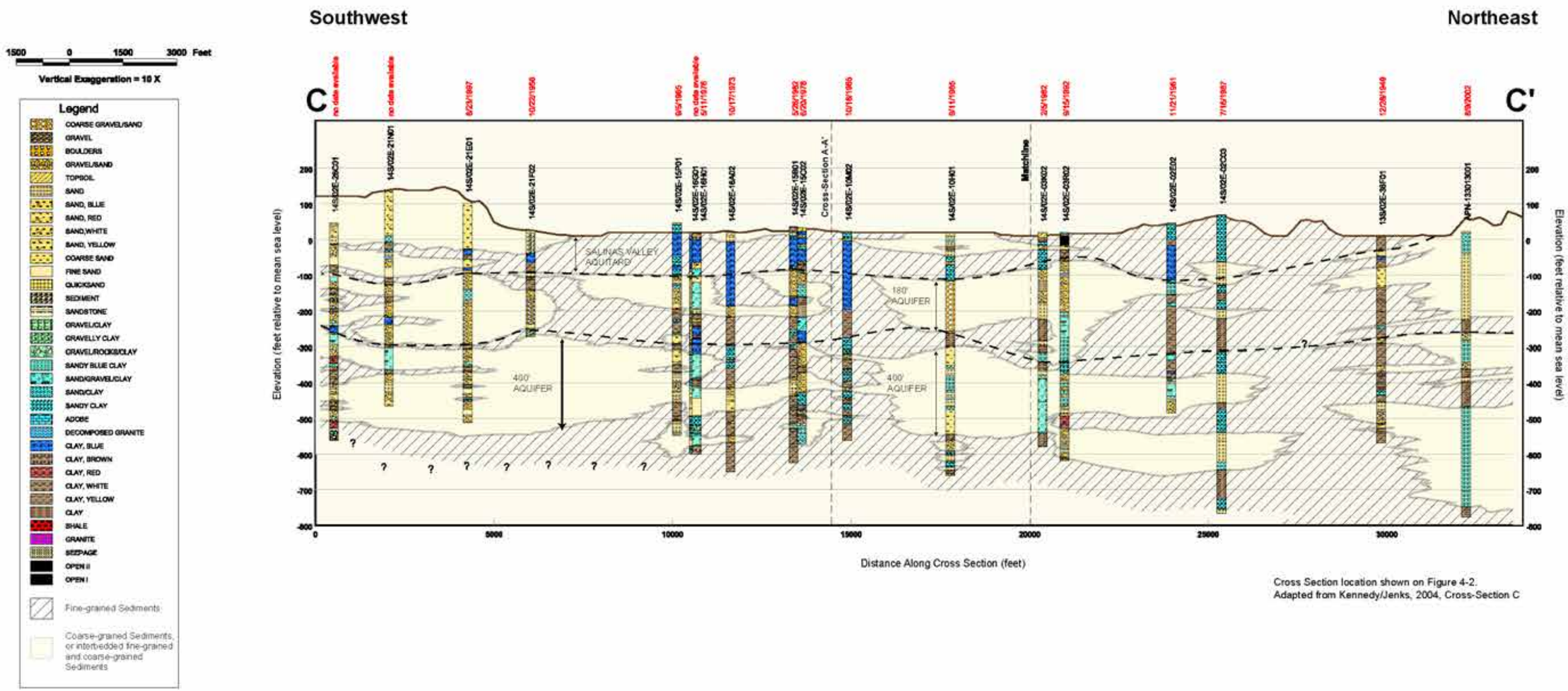


Figure 4-7. Cross-Section C-C'

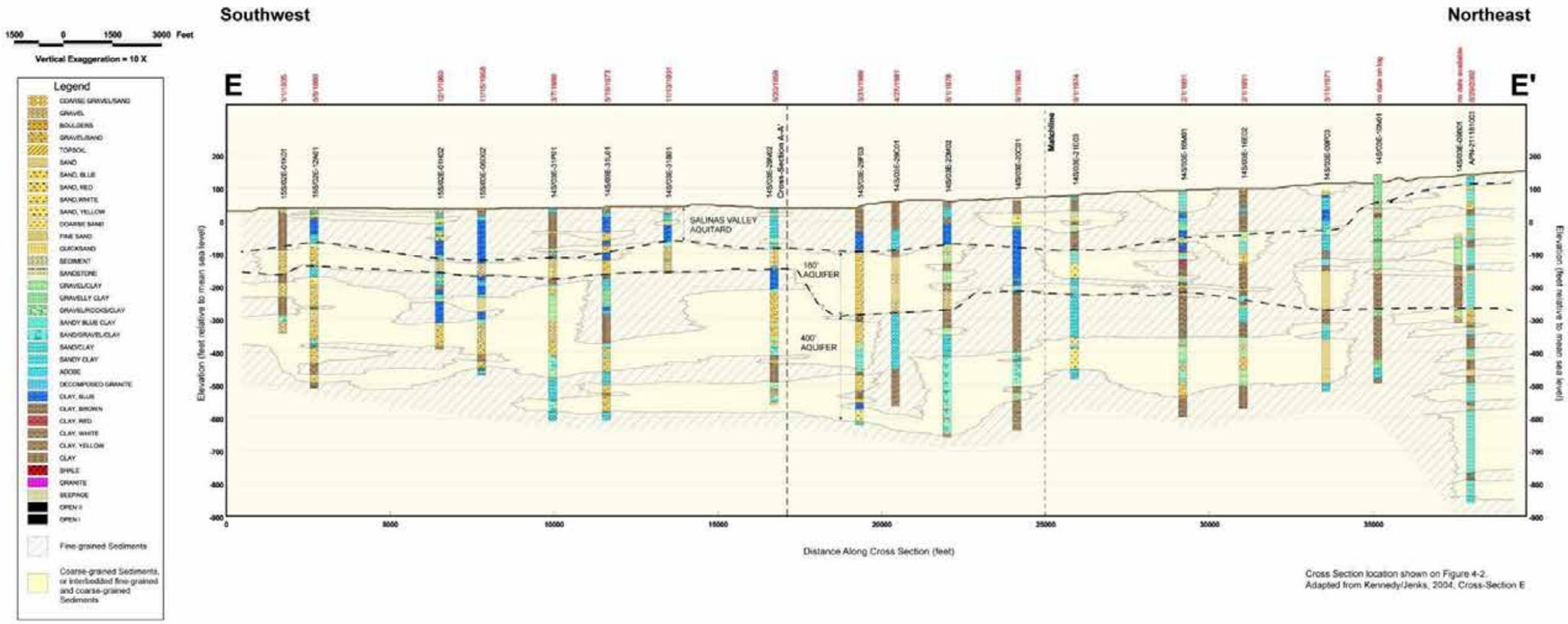


Figure 4-8. Cross-Section E-E'

4.4.1 Principal Aquifers and Aquitards

The shallowest water-bearing sediments are thin, laterally discontinuous, and do not constitute a significant source of water for the Subbasin. These shallow sediments are therefore not considered a principal aquifer. These sediments are less than 100 feet thick and are part of the Holocene Alluvium unit. Although these sediments are a minor source of water due to their poor quality and low yield, some small domestic wells draw water from this zone (Kennedy-Jenks, 2004; DWR, 2003; Showalter, 1984). Groundwater in these sediments is hydraulically connected to the Salinas River but is assumed to be relatively poorly connected to the underlying productive principal aquifers due to the presence of the underlying Salinas Valley Aquitard.

Beneath the shallow seidments, the following series of aquitards and principal aquifers have long been recognized in a multitude of studies and reports. They are the distinguishing hydrostratigraphic features of this Subbasin.

- Salinas Valley Aquitard
- 180-Foot Aquifer
- 180/400-Foot Aquitard
- 400-Foot Aquifer
- 400-Foot/Deep Aquitard
- Deep Aquifers

4.4.1.1 Salinas Valley Aquitard

The Salinas Valley Aquitard is the shallowest, relatively continuous hydrogeologic feature in the Subbasin. The aquitard is composed of blue or yellow sandy clay layers with minor interbedded sand layers (DWR, 2003). The Salinas Valley Aquitard correlates to the Pleistocene Older Alluvium stratigraphic unit and was deposited in a shallow sea during a period of relatively high sea level.

Laterally, the Salinas Valley Aquitard extends from Monterey Bay in the north to Chualar in the south, and to an irregular contact in the east that is roughly represented by the DWR-designated boundary with the Eastside Subbasin (DWR, 2003). The Salinas Valley Aquitard is generally encountered at depths of less than 150 feet. Close to Monterey Bay, the Salinas Valley Aquitard is over 100 feet thick but thins to 25 feet near the City of Salinas, eventually pinching out near Chualar and east of the City of Salinas (DWR, 1975). While this clay layer is relatively continuous in the northern portion of the Valley, it is not monolithic. The clay layer is missing in some areas and pinches out in certain areas.

4.4.1.2 180-Foot Aquifer

The Salinas Valley Aquitard overlies and confines the 180-Foot Aquifer. The 180-Foot Aquifer is the shallowest laterally extensive aquifer in the 180/400-Foot Aquifer Subbasin. This aquifer consists of interconnected sand and gravel beds that are from 50 to 150 feet thick. The sand and gravel layers are interlayered with clay lenses. This aquifer is correlated to the Older Alluvium or upper Aromas Sand formations (Harding ESE, 2001; Kennedy-Jenks, 2004). The 180-Foot Aquifer is exposed on the floor of the Monterey Bay (Todd Engineers, 1989).

The primary uses of the 180-Foot Aquifer are for domestic, irrigation, and municipal water supply.

4.4.1.3 180/400-Foot Aquitard

The base of the 180-Foot Aquifer is an aquitard consisting of interlayered clay and sand layers, including a marine blue clay layer similar to the Salinas Valley Aquitard (DWR, 2003). This aquitard is known as the 180/400-Foot Aquitard. It is widespread in the Subbasin but varies in thickness and quality, and areas of hydrologic connection between the 400-Foot and 180-Foot Aquifers are known to exist (Kennedy-Jenks, 2004). In areas where the 180/400-Foot Aquitard is thin or discontinuous, seawater in the 180-Foot Aquifer can migrate downward into the 400-Foot Aquifer in response to pumping (Kennedy-Jenks, 2004).

4.4.1.4 400-Foot Aquifer

The 180/400-Foot Aquitard overlies and confines the 400-Foot Aquifer. The 400-Foot Aquifer is a hydrostratigraphic layer of sand and gravel with varying degrees of interbedded clay layers. It is usually encountered between 270 and 470 feet below ground surface. This hydrogeologic unit correlates to the Aromas Red Sands and the upper part of the Paso Robles Formation. Near the City of Salinas, the 400-Foot Aquifer is a single permeable bed approximately 200 feet thick; but in other areas the aquifer is split into multiple permeable zones by clay layers (DWR, 1973). The upper portion of the 400-Foot Aquifer merges and interfingers with the 180-Foot Aquifer in some areas where the 180/400-Foot Aquitard is missing (DWR, 1973).

The primary uses of the 180-Foot Aquifer are for domestic, irrigation, and municipal water supply.

4.4.1.5 400-Foot/Deep Aquitard and Deep Aquifers

The base of the 400-Foot Aquifer is the 400-Foot/Deep Aquitard. The 400-Foot/Deep Aquitard is a blue marine clay layer. This aquitard can be several hundred feet thick (Kennedy-Jenks, 2004).

The 400-Foot/Deep Aquitard overlies and confines the Deep Aquifers. The Deep Aquifers, also referred to as the 900-Foot and 1500-Foot Aquifers, are up to 900 feet thick and have alternating

sandy-gravel layers and clay layers which do not differentiate into distinct aquifer and aquitard units (DWR, 2003). The Deep Aquifers correlate to the lower Paso Robles, Purisima, and Santa Margarita formations. The Deep Aquifers overlie the low permeability Monterey Formation. While the Deep Aquifers are relatively poorly studied, some well owners have indicated that there are different portions of the Deep Aquifers with different water qualities. No public data exists to substantiate these statements.

The Deep Aquifers are used primarily for irrigation and municipal water supply.

4.4.2 Aquifer Properties

The magnitude and distribution of hydrogeologic properties of the principal aquifers in the Subbasin have not been well characterized or documented. The relatively sparse amount of measured aquifer properties from the Subbasin's principal aquifers is a data gap that will be addressed during implementation of this GSP.

Although hydrogeologic properties have not been measured at many specific locations in the Subbasin, the aquifer properties have been estimated through the process of model calibration. Aquifer property calibration has been completed for numerous published modeling studies including studies by Durbin (1974); Yates (1988); WRIME (2003); and the unpublished SVIHM developed by USGS.

There are two general types of aquifer properties relevant to groundwater management:

- **Aquifer storage properties**: these properties control the relationship between the volume of groundwater stored in the aquifer and the water elevation measured in the aquifer, and
- **Groundwater transmission properties**: these properties control the relationship between hydraulic gradients and the rate of groundwater flow.

4.4.2.1 Aquifer Storage Properties

The aquifer properties that characterize the relation between water elevation and volume of water in storage are specific yield for unconfined aquifers, and specific storage for confined aquifers. Storativity is equal to specific storage times aquifer thickness. Both specific yield and specific storage are measured in units of cubic feet of water per cubic feet of aquifer material. These ratios are often expressed as a percent.

- Specific yield is the amount of water that drains from pores when an unconfined aquifer is dewatered. Often specific yield values range from 8% to 20%. Estimated specific yield values complied by DWR for the Subbasin range from 6% to 16%.
- Specific storage is the amount of water derived from a cubic foot of confined aquifer due to the pressure changes in the aquifer. Often specific storage values are on the order of

$5x10^{-4}$ to $1x10^{-5}$. Estimated specific storage values compiled by the USGS for the Subbasin range from $1.2x10^{-4}$ to $2.9x10^{-4}$.

Detailed aquifer property values for each aquifer were not available at the time of this GSP development. This is a data gap that will be filled during implementation.

4.4.2.2 Groundwater Transmission Properties

Hydraulic conductivity measures the ability of an aquifer to transmit water. Hydraulic conductivity is measured in units of feet per day. Units with higher hydraulic conductivities, such as sands and gravels, transmit groundwater more easily than units with lower hydraulic conductivities. Transmissivity is equivalent to the hydraulic conductivity of an aquifer times the thickness of an aquifer. Unfortunately, very few estimates of hydraulic conductivity or transmissivity exist for the Subbasin.

Specific capacity of a well is sometimes used as a surrogate for estimating aquifer transmissivity. The specific capacity of a well is the ratio between the well production rate in gallons per minute (gpm) and the water level drawdown in the well during pumping, measured in feet. Specific capacity is moderately well correlated, and approximately proportional to, aquifer transmissivity. Durbin, et al. (1978) reported the following well yields and specific capacity estimates:

- Fluvial deposits that constitute the shallowest productive zones in most of the Subbasin, including the 180-Foot aquifer, have well yields of 500 to 4,000 gpm and an average specific capacity of approximately 70 gpm/ft.
- In the 400-Foot aquifer, well yields range from 300 to 4,000 gpm and average 1,200 gpm, with specific capacity averaging about 30 gpm/ft.

These values suggest that the principal aquifers have relatively high transmissivities and hydraulic conductivities. Wells completed in the principal aquifers can produce substantial amounts of water with limited drawdown.

4.4.3 Natural Recharge Areas

Areas of significant, natural, areal recharge and discharge within the Subbasin are discussed below. Quantitative information about all natural and anthropogenic recharge and discharge is provided in Chapter 6. Natural recharge to the overall groundwater system, which includes both the shallow sediments and principal aquifers, occurs through the following processes:

- Infiltration of surface water from the Salinas River and tributary channels
- Deep percolation of excess applied irrigation water
- Deep percolation of infiltrating precipitation

The capacity for recharge to the groundwater system is a dependent on a combination of factors, including steepness of grade, surface condition such as paving or compaction, and ability of soil to transmit water past the root zone. To assist agricultural communities in California with assessing groundwater recharge potential, a consortium of researchers at UC Davis developed a Soil Agricultural Groundwater Banking Index (SAGBI) and generated maps of recharge potential in agricultural areas of California (O'Geen, et al., 2015). Figure 4-9 presents the SAGBI index map for the Subbasin. This map ranks soil suitability to accommodate recharge to the groundwater system based on five major factors that affect recharge potential including: deep percolation, root zone residence time, topography, chemical limitations, and soil surface condition. Areas with excellent surficial recharge properties are shown in green. Areas with poor surficial recharge properties are shown in red. Not all land is classified, but this map provides good guidance on where natural recharge to the groundwater system likely occurs.

Although Figure 4-9 shows some areas of good potential recharge in the 180/400-Foot Aquifer Subbasin, recharge to the principal aquifers of the Subbasin is very limited because of the low permeability Salinas Valley Aquitard. It is likely that only limited surficial recharge in the 180/400-Foot Aquifer Subbasin reaches the productive 180-Foot Aquifer or the 400-Foot Aquifer. This demonstrates the limited utility of potential recharge maps that are based on soil properties. This map should not be used as the sole data source for identifying recharge areas that will directly benefit the extensive principal aquifers in the 180/400-Foot Aquifer Subbasin.

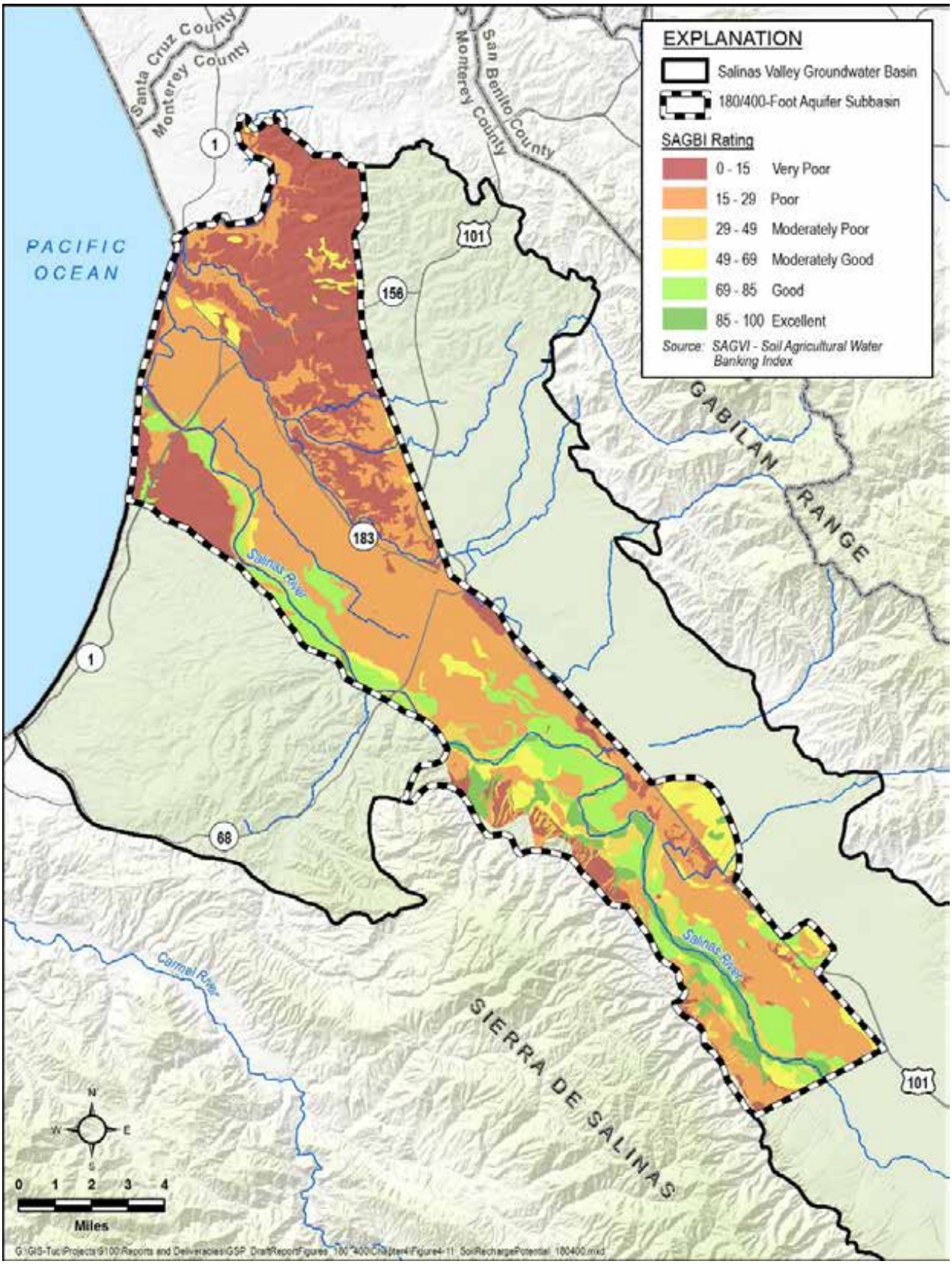


Figure 4-9. SAGBI Soils Map for Areas of Good Potential Recharge in the 180/400-Foot Aquifer Subbasin

4.4.4 Natural Discharge Areas

Natural groundwater discharge areas within the Subbasin include groundwater discharge to surface water bodies, and evapotranspiration (ET) by phreatophytes. There are no springs and seeps in the Subbasin as identified in the National Hydrology Dataset (NHD). Natural groundwater discharge to streams, primarily, the Salinas River and its tributaries, has not been mapped to date. Areas of potential groundwater discharge to streams will be identified using the SVIHM, which will be available in 2020. Therefore, identifying all natural discharge areas is a data gap that will be resolved in a future GSP update.

Figure 4-10 shows the distribution of potential groundwater-dependent ecosystems (GDEs), also referred to as Natural Communities Commonly Associated with Groundwater (NCCAG), within the Subbasin area. In areas where the water table is sufficiently high, groundwater discharge may occur as ET from phreatophyte vegetation within these potential GDEs. Potential GDEs were identified based on the methodology proposed by The Nature Conservancy (TNC). Appendix 4A describes methods used to determine the extent and type of potential GDEs. Figure 4-10 shows only potential GDEs. There has been no verification that the locations shown on this map constitute verified groundwater dependent ecosystems. Additional field reconnaissance is necessary to verify the existence of these potential GDEs.

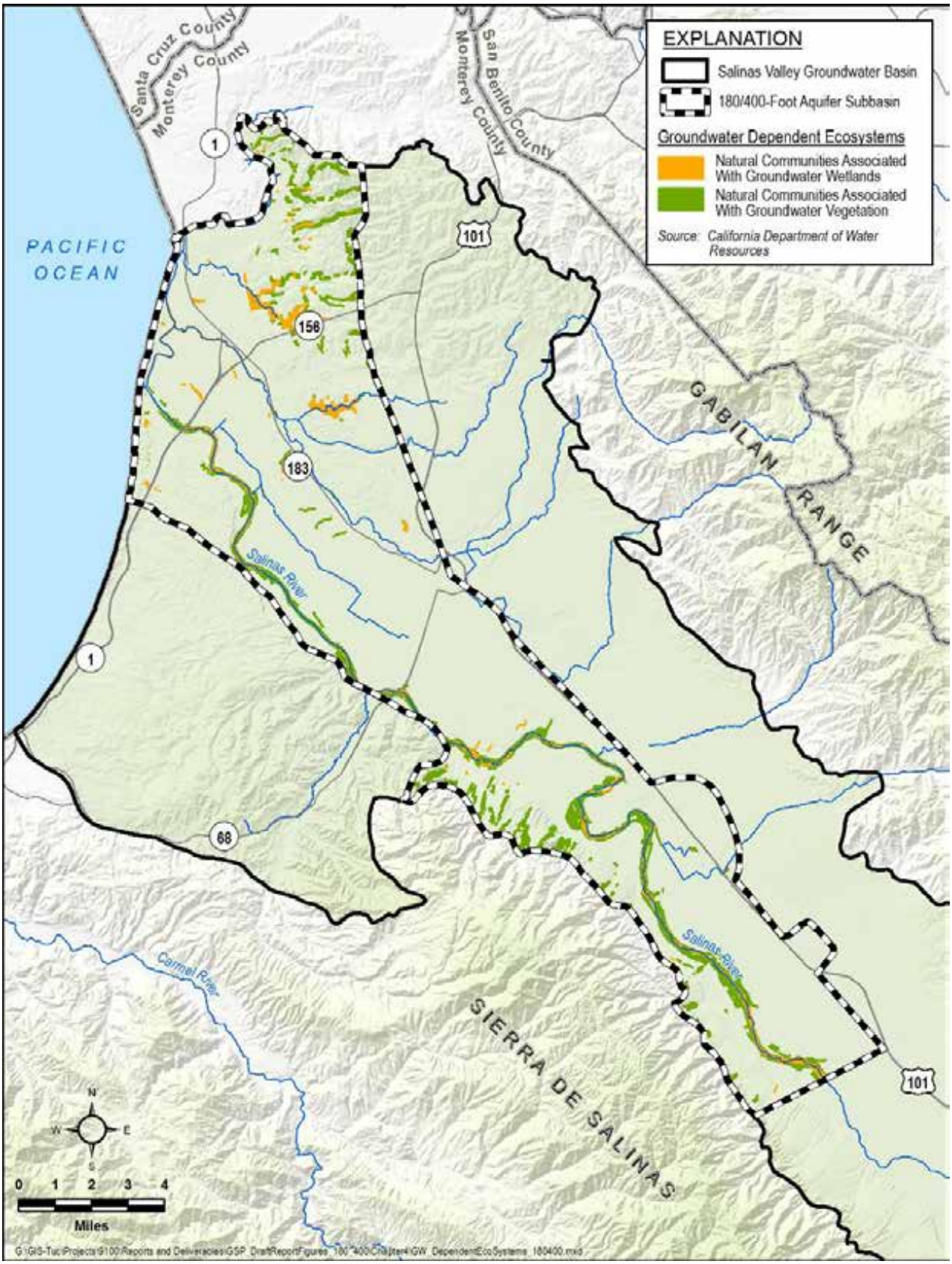


Figure 4-10. Potential Groundwater Dependent Ecosystems

4.5 Surface Water Bodies

The primary surface water body in the Subbasin is the Salinas River. This river runs the entire length of the Subbasin and is fed by local tributaries (Figure 4-11). The following surface water bodies are located outside of the Subbasin but are important controls on the rate and timing of Salinas River flows in the Subbasin:

- Two reservoirs constructed to control flooding and to increase recharge from Salinas River to groundwater including:
    - Lake Nacimiento, in San Luis Obispo County, was constructed in 1957 and has a storage capacity of 377,900 AF (MCWRA, 2015b).
    - Lake San Antonio, in Monterey County, was constructed in 1967 and has a storage capacity of 335,000 AF.
- Arroyo Seco, a tributary with a 275 square mile drainage area that has no dams in its drainage basin and is characterized by both very high flood flows and extended dry periods.

Agricultural diversions and the construction of dams on the Salinas River and its tributaries have altered the river's hydrology, and the river no longer exhibits the seasonal variation in flows that were observed before the mid-20th century. The restoration of natural flows to the Salinas River is not within the scope of this GSP.

Within the Subbasin, two constructed canals convey surface water across the valley floor, as shown on Figure 4-11. Reclamation Ditch #1665 (Rec Ditch) was originally constructed in 1917 and is operated in part by MCWRA for flood management. The ditch flows southeast to northwest and drains the stormwater detention from Smith Lake and Carr Lake before flowing northwest towards Castroville, discharging into Tembladero Slough, and then flowing into the Old Salinas River Channel and ultimately into Moss Landing Harbor. The Blanco Drain, also known as Storm Maintenance District No. 2, is a drainage system that covers approximately 6,400 acres of farmland, predominately receiving agricultural return flow from tile drains in the dry season and stormwater runoff in the wet season. The Blanco Drain discharges into the Salinas River.

The mouth of the Salinas River forms a lagoon; and its outflow to Monterey Bay is blocked by sand dunes except during winter high-water flows. MCWRA operates a slide-gate to transfer water through a culvert from the lagoon into Old Salinas River during the wet season for flood control (MCWRA, 2014). The Old Salinas River discharges through tide gates at Potrero Road into Moss Landing Harbor and ultimately the Monterey Bay.

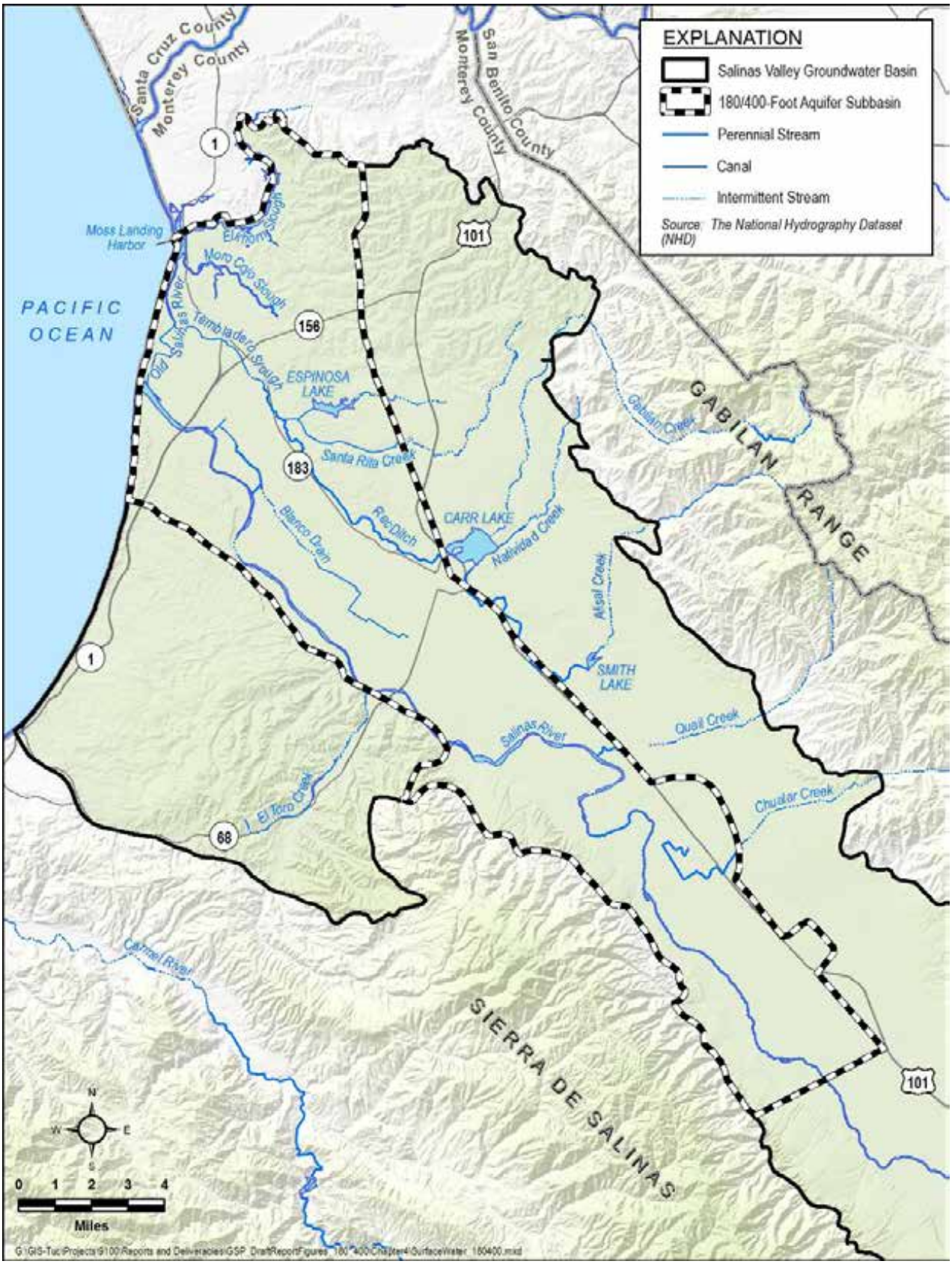


Figure 4-11. Surface Water Bodies in the 180/400-Foot Aquifer Subbasin

4.5.1 Imported Water Supplies

There is no water imported into the 180/400-Foot Aquifer Subbasin from outside the Salinas River watershed.

4.6 Water Quality

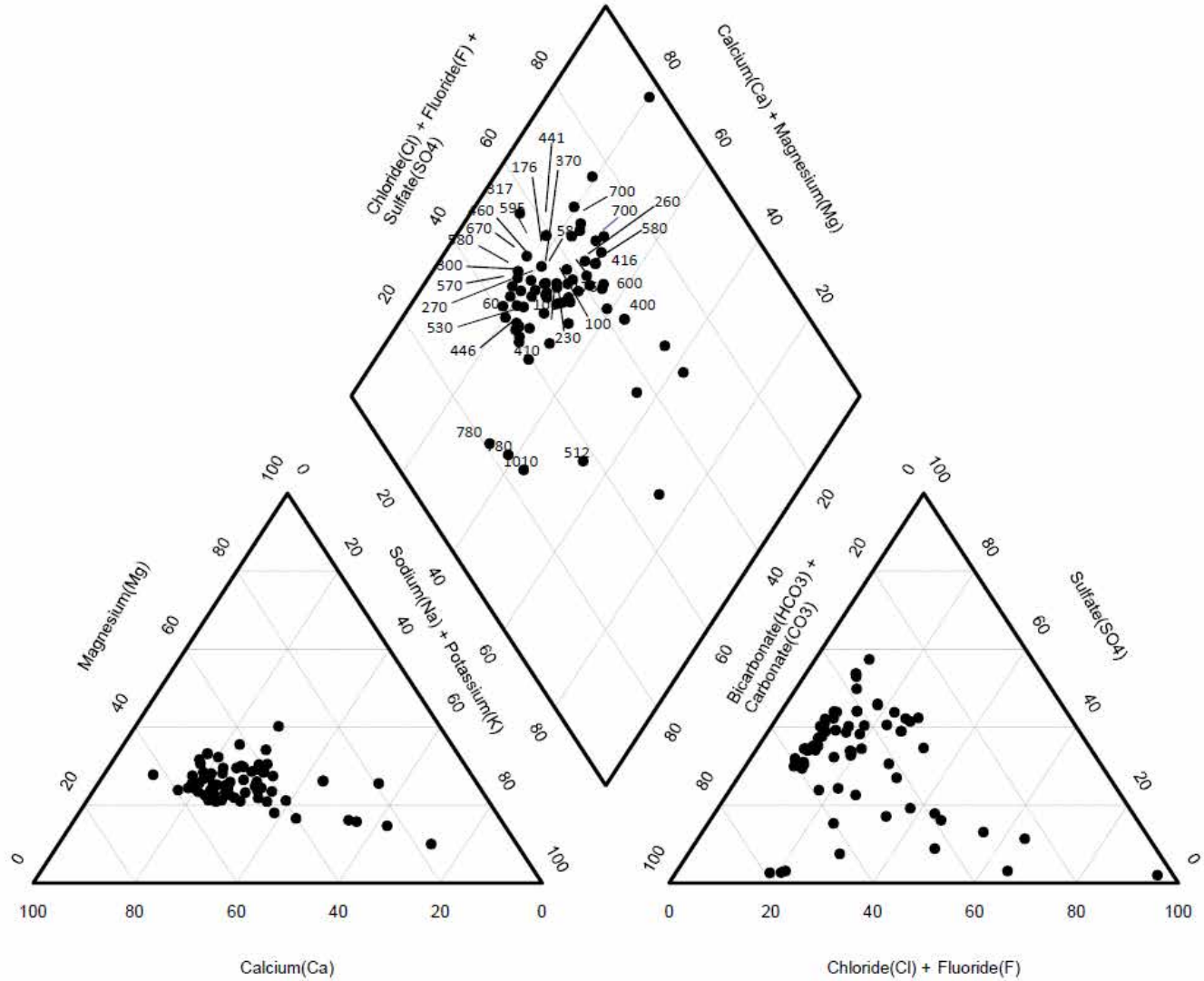
This section presents a general discussion of the natural groundwater quality in the Subbasin, focusing on general minerals. This discussion is based on data from previous reports. The distribution and concentrations of specific constituents of concern is presented in Chapter 5.

4.6.1 General Mineral Chemistry

The major ion chemistry of the Salinas Valley Groundwater Basin's groundwater was characterized in a report prepared for the CCGC titled *Distribution of groundwater nitrate concentrations, Salinas Valley, California* (HydroFocus, 2014). The purpose of the report was to respond to the Regional Board requirement for monitoring elevated nitrate concentrations near drinking water supply wells. The report included the results of extensive groundwater quality sampling and thus provided a good characterization of the general mineral water quality.

General water chemistry provides a baseline of understanding of the water by showing major ions that are dissolved in the groundwater. The major ions that are dissolved can inform users if the water is more alkaline or more acidic. In many areas with more alkaline water, which has more dissolved cations such as calcium, magnesium, and sodium, many users report their water as being 'hard'.

Figure 4-12 presents a piper diagram from the CCGC report that plots major ion data from within and near the Subbasin. The diagram provides a means of representing the proportions of major anions and cations in water samples. The lower left triangle of the piper diagram plots the relative abundance of cations in groundwater samples. The lower right triangle of the piper diagram plots the relative abundance of anions in groundwater samples. The diamond in the middle of the diagram combines the cation and anion abundances into a single plot. Groundwater samples with similar general mineral chemistries will group together on these diagrams. The data plotted on Figure 4-12 show that most groundwater samples are of a similar type and plot in a single cluster. The samples are generally of a magnesium bicarbonate type, which is a more alkaline type of water. However, there are outlier samples that are higher in sodium and potassium than the other samples, and are most noticeable in the dots that plot in the middle and right portions of the cation triangle. Piper diagrams do not provide spatial information about groundwater samples, and therefore it is difficult to assess the source of the sodium and/or potassium in the outlier samples.



Note: Well depths indicated when available.

Figure 4-12. Piper Diagram of Groundwater General Mineral Chemistry for the 180/400-Foot Aquifer Subbasin

4.6.2 Seawater Intrusion

Groundwater pumping has lowered groundwater elevations to an point that allows seawater to flow into the Subbasin from the Monterey Bay. Increased salt concentrations from seawater intrusion, measured as TDS or chloride concentration, are considered a nuisance for domestic or municipal uses rather than a health or toxicity concern. Additionally, increased salt concentrations from seawater intrusion may impact the ability to use groundwater for irrigation.

The impact of seawater intrusion on the beneficial uses of groundwater occurs at concentrations much lower than that of seawater. The TDS of seawater is approximately 35,000 mg/L. The State of California has adopted a recommended Secondary Maximum Contaminant Level (SMCL) for TDS of 500 mg/L, and a short term maximum SMCL of 1,500 mg/L. Groundwater with total dissolved solids of 3,000 mg/L or less, however, is considered to be suitable, or potentially suitable, for beneficial uses in accordance with SWRCB Resolution No. 88-63 as adopted in its entirety in the Central Coast Regional Water Quality Control Board's Basin Plan. The TDS limit for agricultural use is crop dependent: a 10% loss of yield in lettuce crops has been observed at a TDS of 750 mg/L; a 10% loss of yield in tomatoes has been observed at a TDS of 1,150 mg/L (Ayers and Westcot, 1985).

The current seawater intrusion conditions are described more fully in Chapter 5.

4.7 Data Gaps

Due to decades of extensive study and groundwater development, the structure and boundaries of the hydrogeologic conceptual model in the 180/400-Foot Aquifer Subbasin is relatively well developed. However, there are notable data gaps including:

- There are very few measurements of aquifer properties such as hydraulic conductivity and specific yield in the Subbasin.
- The hydrostratigraphy, vertical and horizontal extents, and potential recharge areas for the Deep Aquifers are poorly known.
- Areas of Salinas River recharge and discharge have not been mapped.

These data gaps have led to some minor uncertainties in how the principal aquifers function, and the SVBGSA will minimize these uncertainties by filling data gaps. As described in Chapter 7, the GSP will include ongoing data collection and monitoring that will allow continued refinement and quantification of the groundwater system. Chapter 10 includes activities to address the identified data gaps and improve the hydrogeologic conceptual model.

5 GROUNDWATER CONDITIONS

This chapter describes the current and historical groundwater conditions in the 180/400-Foot Aquifer Subbasin. In this GSP, current conditions are any conditions occurring after January 1, 2015. By implication, historical conditions are any conditions occurring prior to January 1, 2015. The chapter focuses on information required by the GSP regulations and information that is important for developing an effective plan to achieve sustainability. This chapter provides a description of current and historical groundwater conditions at a scale and level of detail appropriate for meeting the GSP sustainability requirements under SGMA.

This chapter is organized to align the groundwater conditions descriptions with the six sustainability indicators, including:

1. Chronic lowering of groundwater levels
2. Changes in groundwater storage
3. Seawater intrusion
4. Subsidence
5. Groundwater quality
6. Depletion of interconnected surface waters

5.1 Groundwater Elevations

5.1.1 Data Sources

The assessment of groundwater elevation conditions is largely based on data collected by MCWRA from 1944 through the present. At the time of this report, MCWRA regularly collects groundwater elevation measurements from 166 locations in the 180/400-Foot Aquifer Subbasin for various monitoring programs. The groundwater elevation data are primarily obtained from private well owners that have provided data on a confidential basis. Therefore, the contoured groundwater elevations are available for public release as raw data, but the underlying elevation data and well locations are not publicly available and are not used as a basis for the GSP.

MCWRA collects groundwater elevation data at specific times of the year to understand seasonal changes and monitor longer term trends. Some of the monitored wells are equipped with pressure transducers that take automated measurements hourly. Other wells are measured monthly, annually for the fall measurement program, and/or annually for the August trough measurement program (MCWRA, 2018a).

From mid-November to mid-December, MCWRA conducts its fall measurement program to observe groundwater elevations after the irrigation season ends but before the rainy season

begins (Brown and Caldwell, 2015). The fall measurements are intended to provide the most representative year-to-year comparison because the groundwater elevations are not greatly influenced by either drawdown due to irrigation pumping or the rise in groundwater elevations associated with each wet season. The fall measurements provide insight into long-term storage trends in the aquifers (Brown and Caldwell, 2015).

During August, MCWRA conducts a localized August Trough measurement program in the 180/400-Foot Aquifer Subbasin and the Eastside Aquifer Subbasin to observe groundwater elevations at the peak of the irrigation pumping season. Groundwater elevations in August represent the lowest groundwater elevations of the year. The August Trough measurements provide insight into how groundwater pumping affects groundwater head gradients and seawater intrusion.

In addition to the fall and August Trough groundwater elevation measurement programs, MCWRA is the primary local Monitoring Entity for the Subbasin under CASGEM. Created by the State of California in 2009, CASGEM is a statewide program to collect groundwater elevations and make the data accessible to the public.

In the 180/400-Foot Aquifer Subbasin, 23 wells are monitored for the CASGEM program. The locations of these wells are shown on Figure 5-1. Wells were selected for the CASGEM program based on their distribution throughout Monterey County, the availability of detailed and reliable well construction data, and relative ease of data collection (MCWRA, 2015b). Fifteen wells are equipped with transducers that record groundwater elevations hourly; eight others are monitored manually on a monthly basis (MCWRA, 2015b). The average period of record for these wells is 10 years. The earliest groundwater elevations were recorded in 2003.

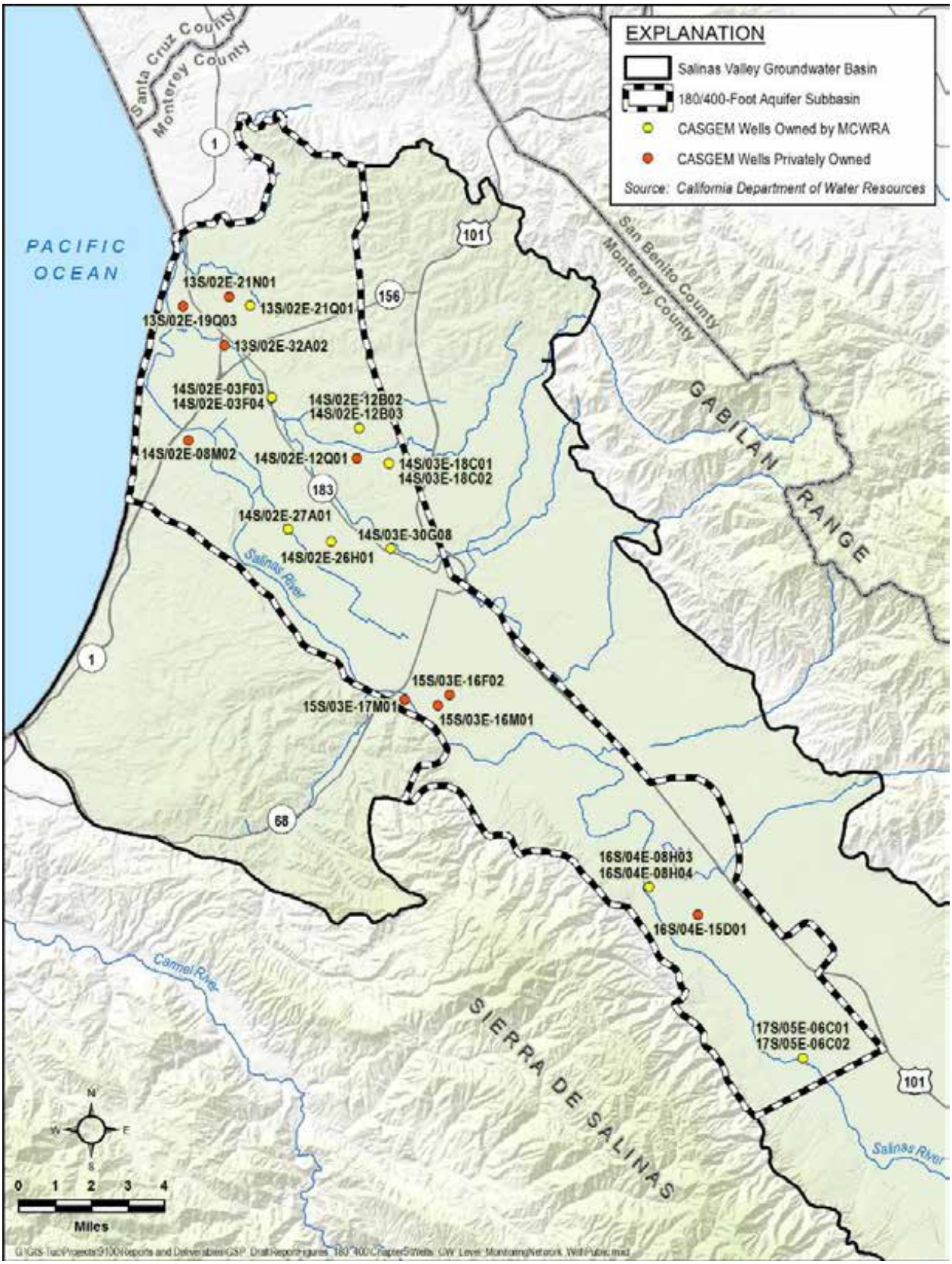


Figure 5-1. CASGEM Well Locations

Given the various regional and local influences on groundwater elevations, it is illustrative to characterize the Basin groundwater elevation conditions through at least three distinct methodologies:

- Maps of groundwater elevation contours that show the geographic distribution of groundwater elevations at a specific time. These contours represent the elevation of the groundwater in feet, using the NAVD88 vertical datum. The contour interval is 10 feet, meaning each blue line represents an area where groundwater elevations are either 10 feet higher or 10 feet lower than the nearby blue line.
- Hydrographs of individual wells that show the variations in groundwater elevations at individual wells over an extended period.
- Vertical hydraulic gradients in a single location that assess the potential for vertical groundwater flow direction.

For this GSP, all three approaches are used to develop the current and historical groundwater elevation conditions.

5.1.2 Groundwater Elevation Contours and Horizontal Groundwater Gradients

MCWRA produces groundwater elevation contour maps for the Salinas Valley Groundwater Basin in odd-numbered years using data from the August trough and fall measurement programs. It does not produce groundwater elevation contour maps in the spring. MCWRA's August trough and fall measurements are the best available data. The lack of spring contour maps is a data gap, and spring contour maps will be produced during GSP implementation. In the 180/400-Foot Aquifer Subbasin, MCWRA produces separate contour maps for the 180-Foot and 400-Foot Aquifers.

The following eight maps present the Current (2017) and Historical (1995) groundwater elevation contours developed by MCWRA.

Table 5-1. Figures Showing Current and Historical Groundwater Elevation Contours

Figure #	Year	Season	Aquifer
Figure 5-2	Current (2017)	Fall	180-Foot
Figure 5-3	Current (2017)	August Trough	180-Foot
Figure 5-4	Current (2017)	Fall	400-Foot
Figure 5-5	Current (2017)	August Trough	400-Foot
Figure 5-6	Historical (1995)	Fall	180-Foot
Figure 5-7	Historical (1995)	August Trough	180-Foot
Figure 5-8	Historical (1995)	Fall	400-Foot
Figure 5-9	Historical (1995)	August Trough	400-Foot

The contours on each of these eight maps originated from contours developed by MCWRA. Therefore, the contours only cover the portions of the basin monitored by MCWRA. Contours do not always extend to the basin margins; nor do they cover the entire 180/400-Foot Aquifer Subbasin. This is a data gap that will be addressed during GSP implementation.

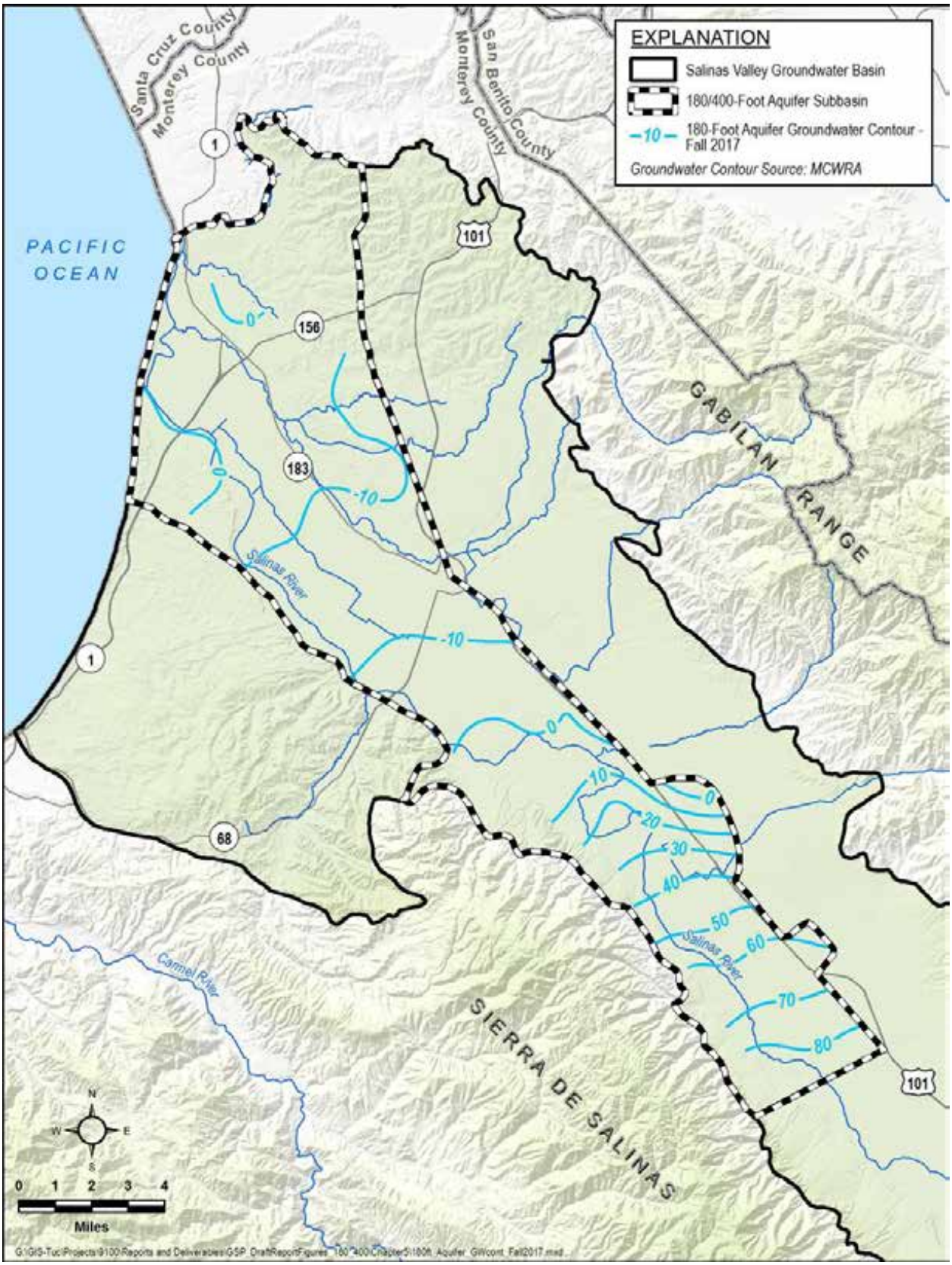


Figure 5-2. Fall 2017 180-Foot Aquifer Groundwater Elevation Contours

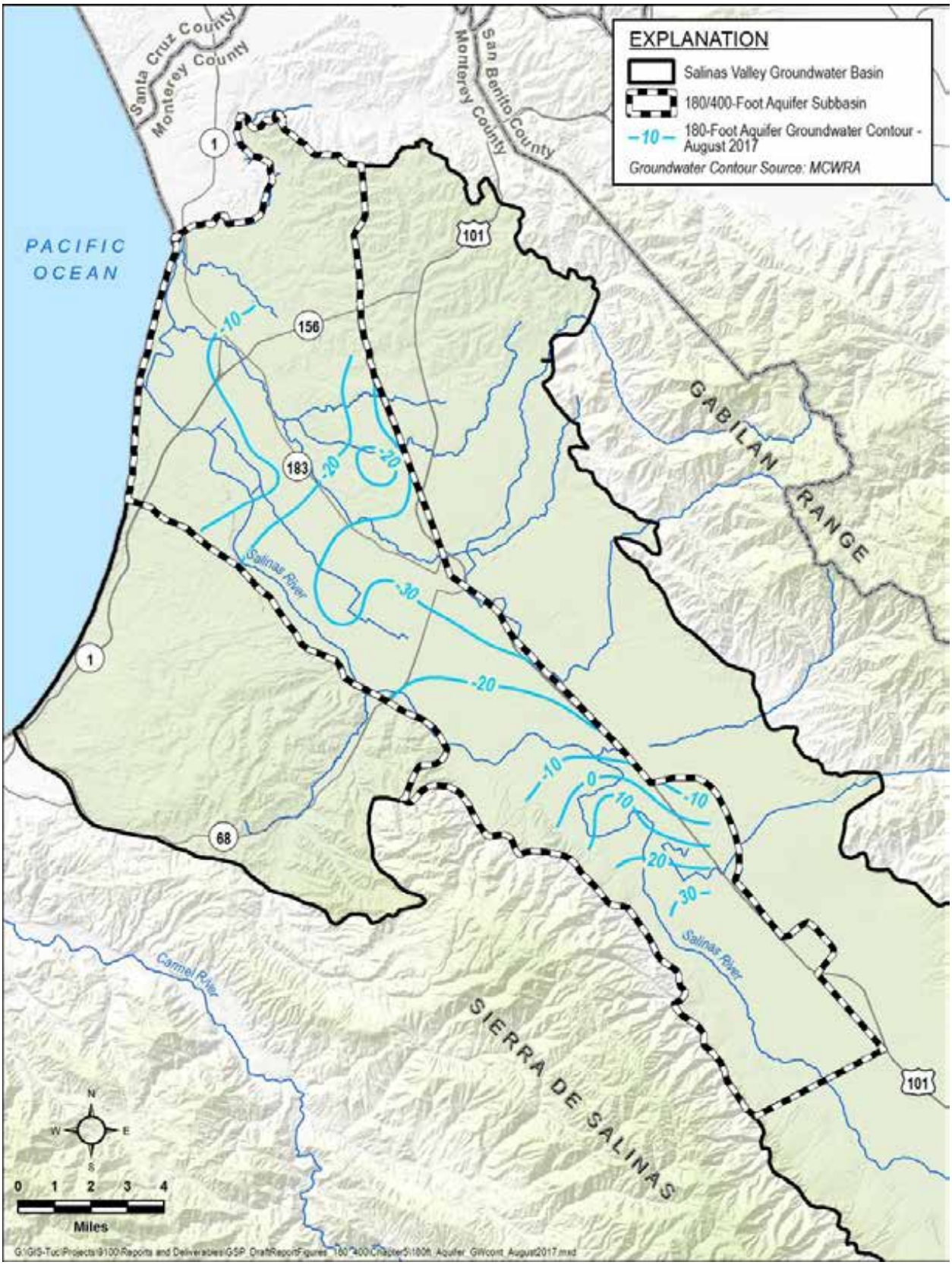


Figure 5-3. August 2017 180-Foot Groundwater Elevation Contours

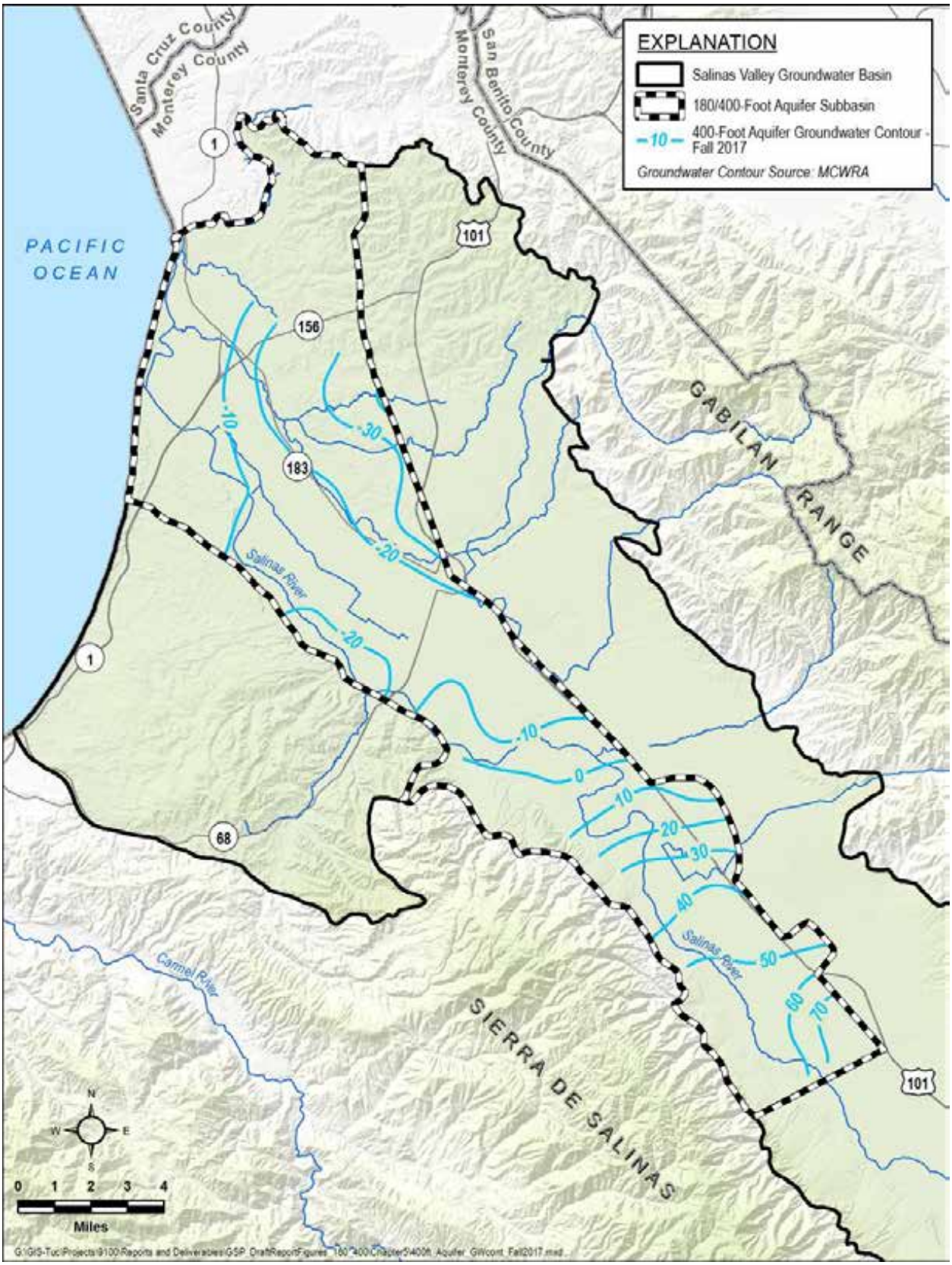


Figure 5-4. Fall 2017 400-Foot Aquifer Groundwater Elevation Contours

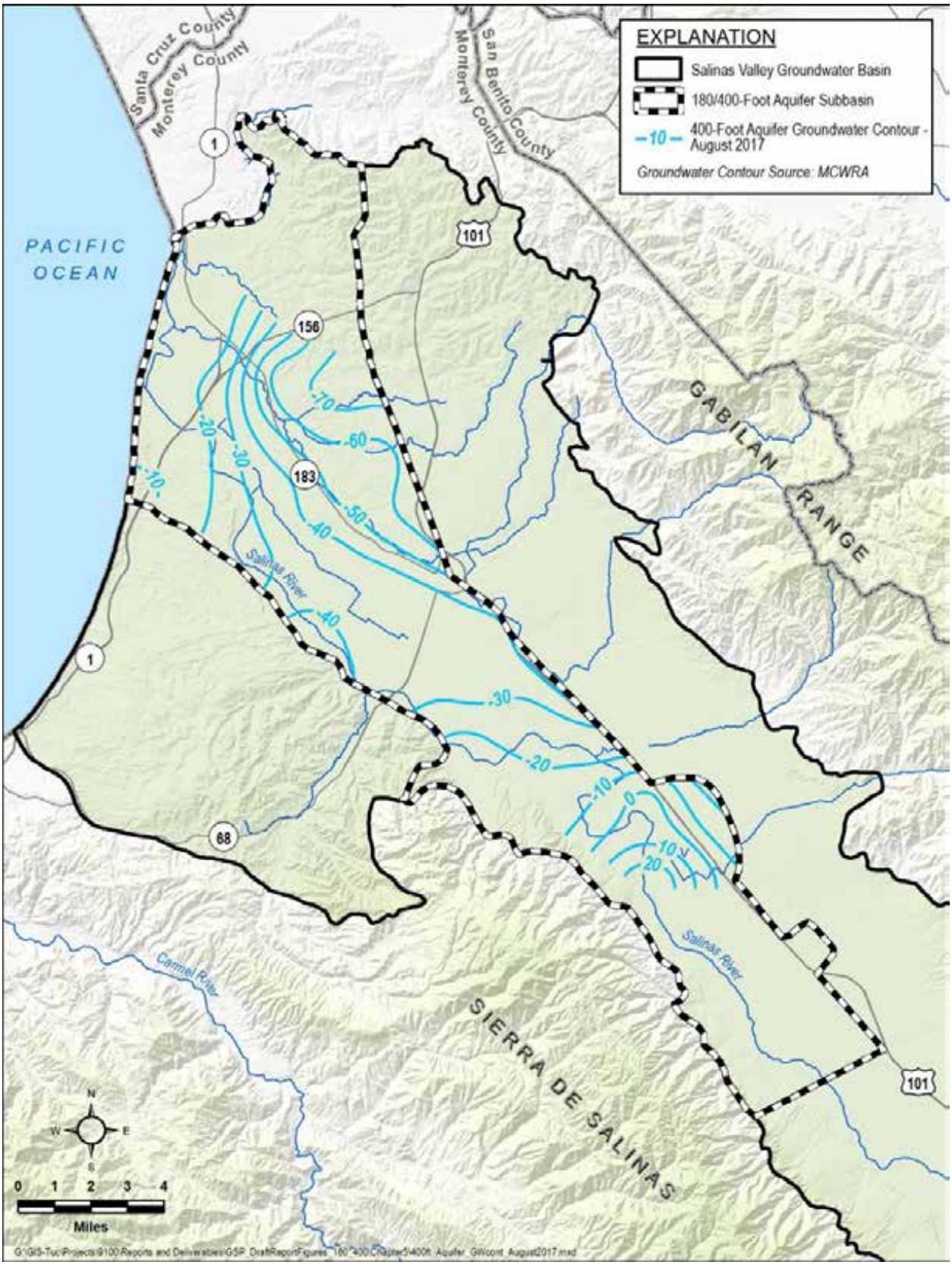


Figure 5-5. August 2017 400-Foot Aquifer Groundwater Elevation Contours

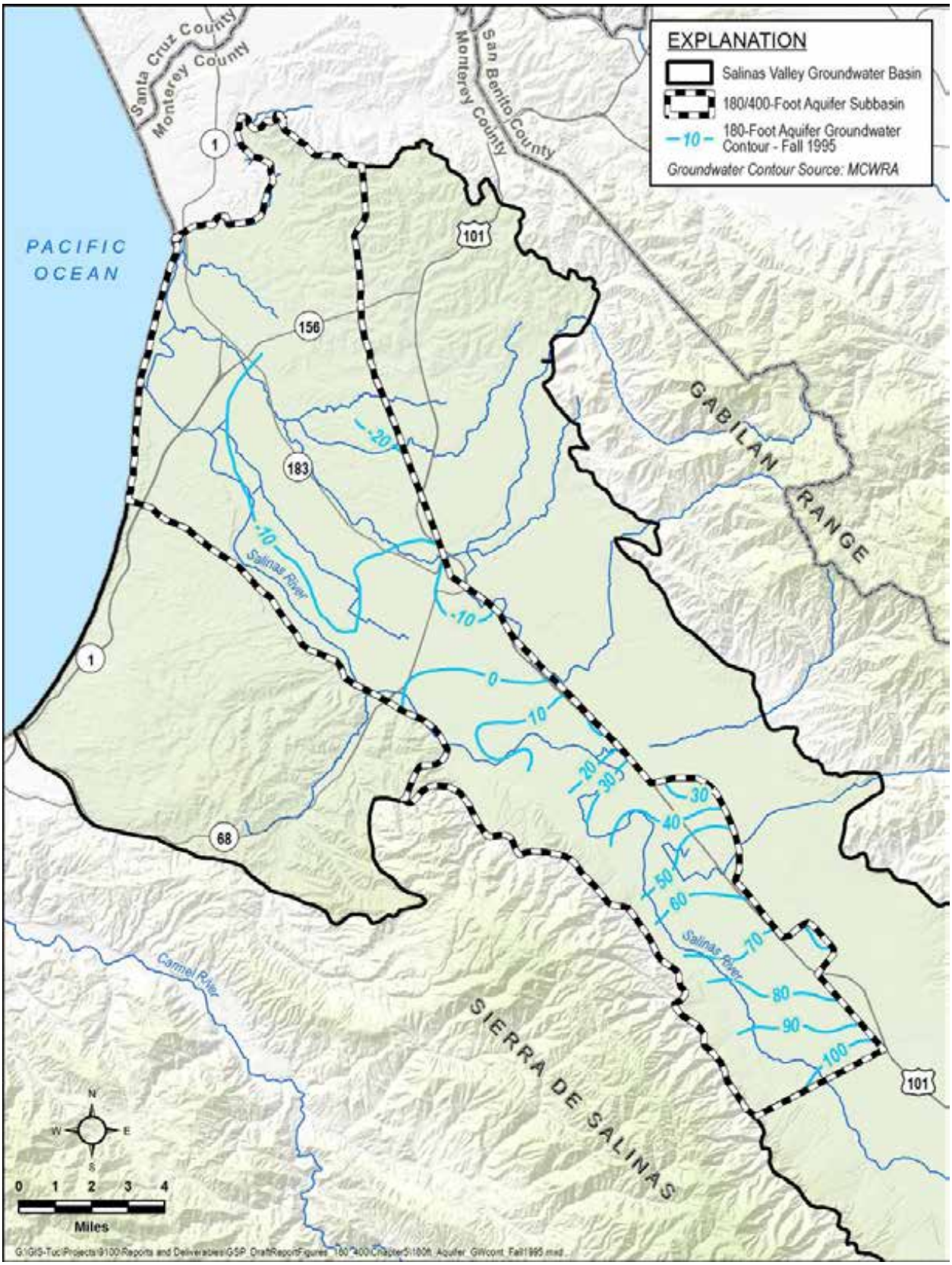


Figure 5-6. Fall 1995 180-Foot Aquifer Groundwater Elevation Contour

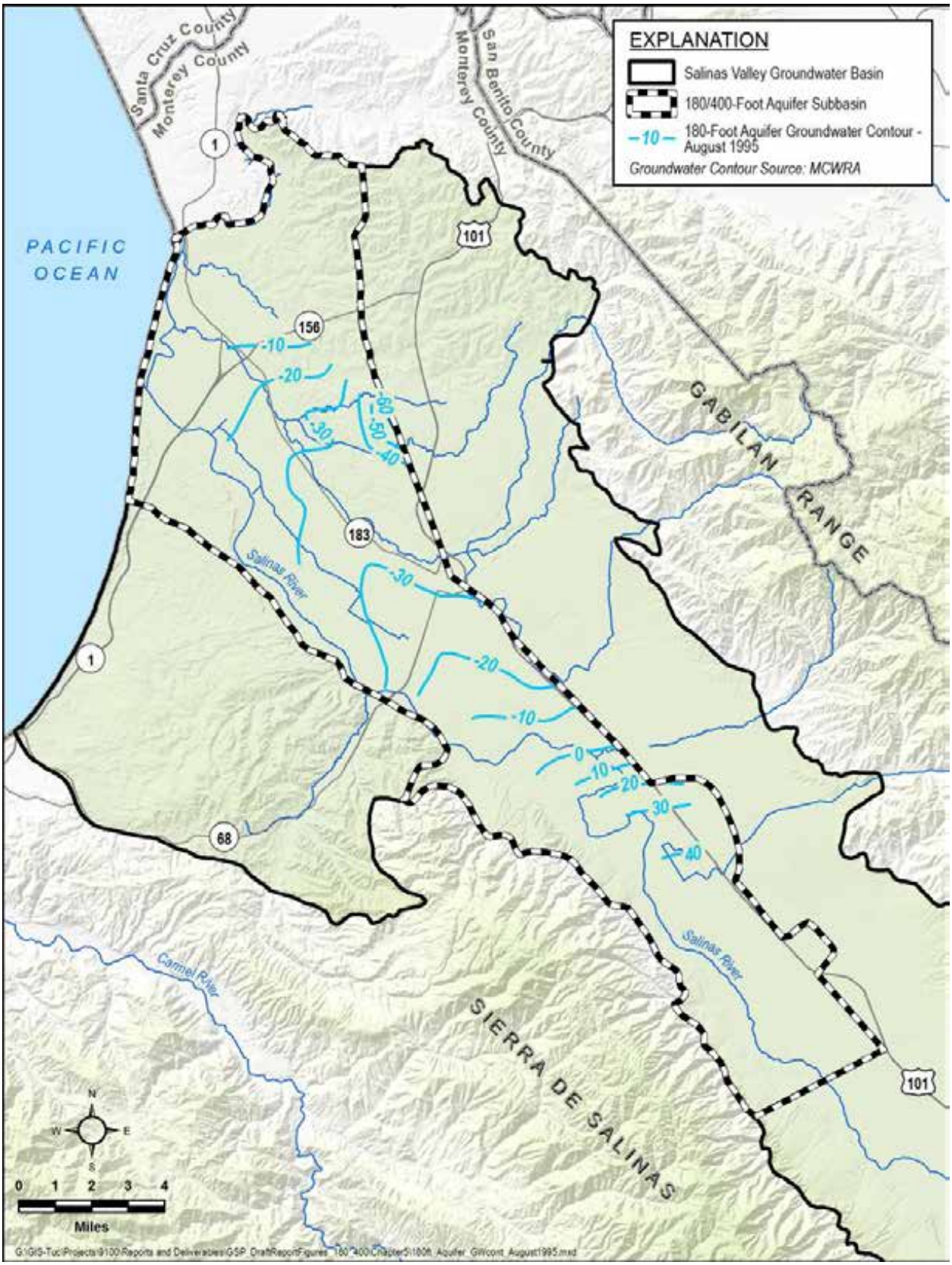


Figure 5-7. August 1995 180-Foot Aquifer Groundwater Elevation Contours

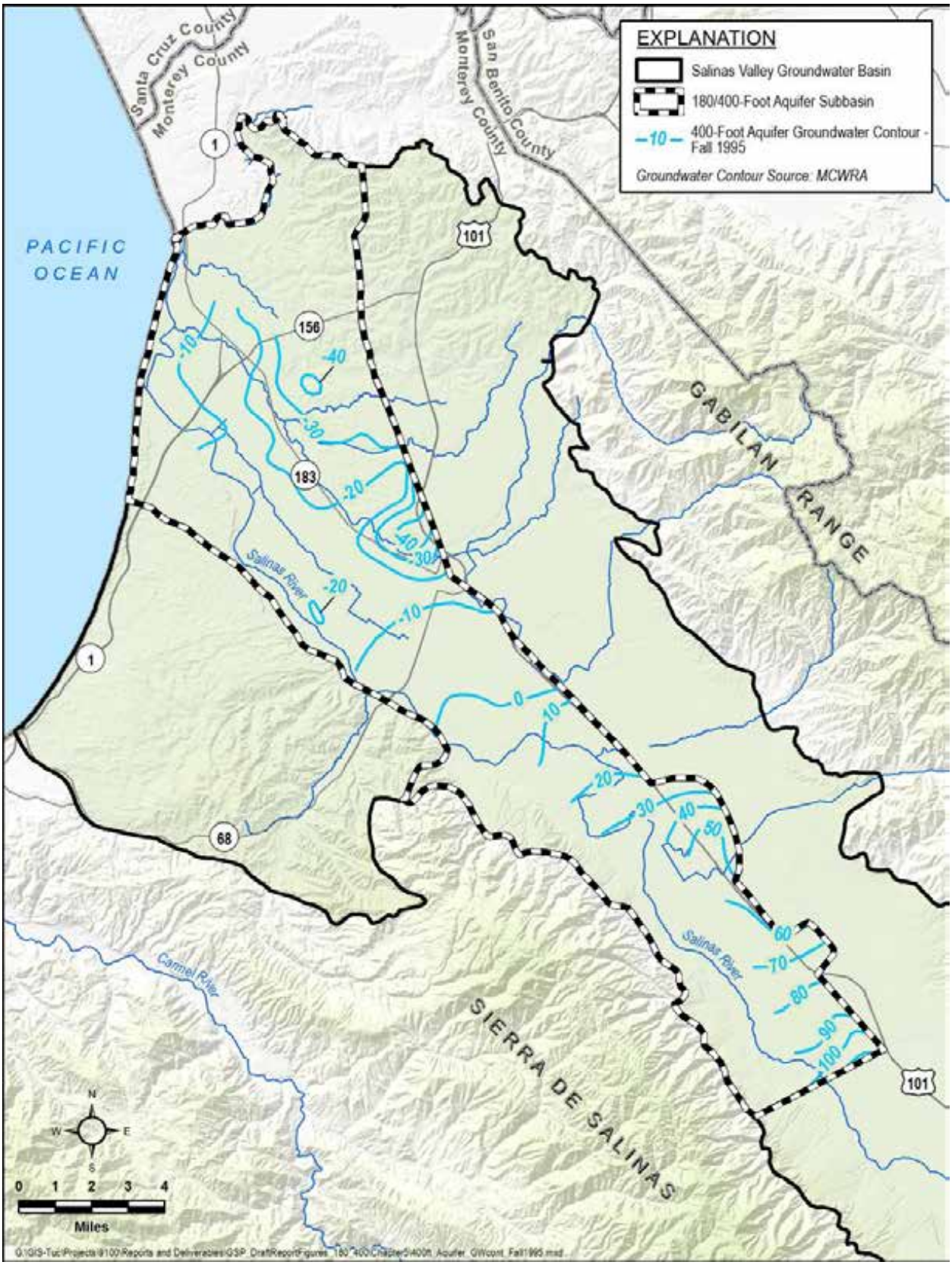


Figure 5-8. Fall 1995 400-Foot Aquifer Groundwater Elevation Contours

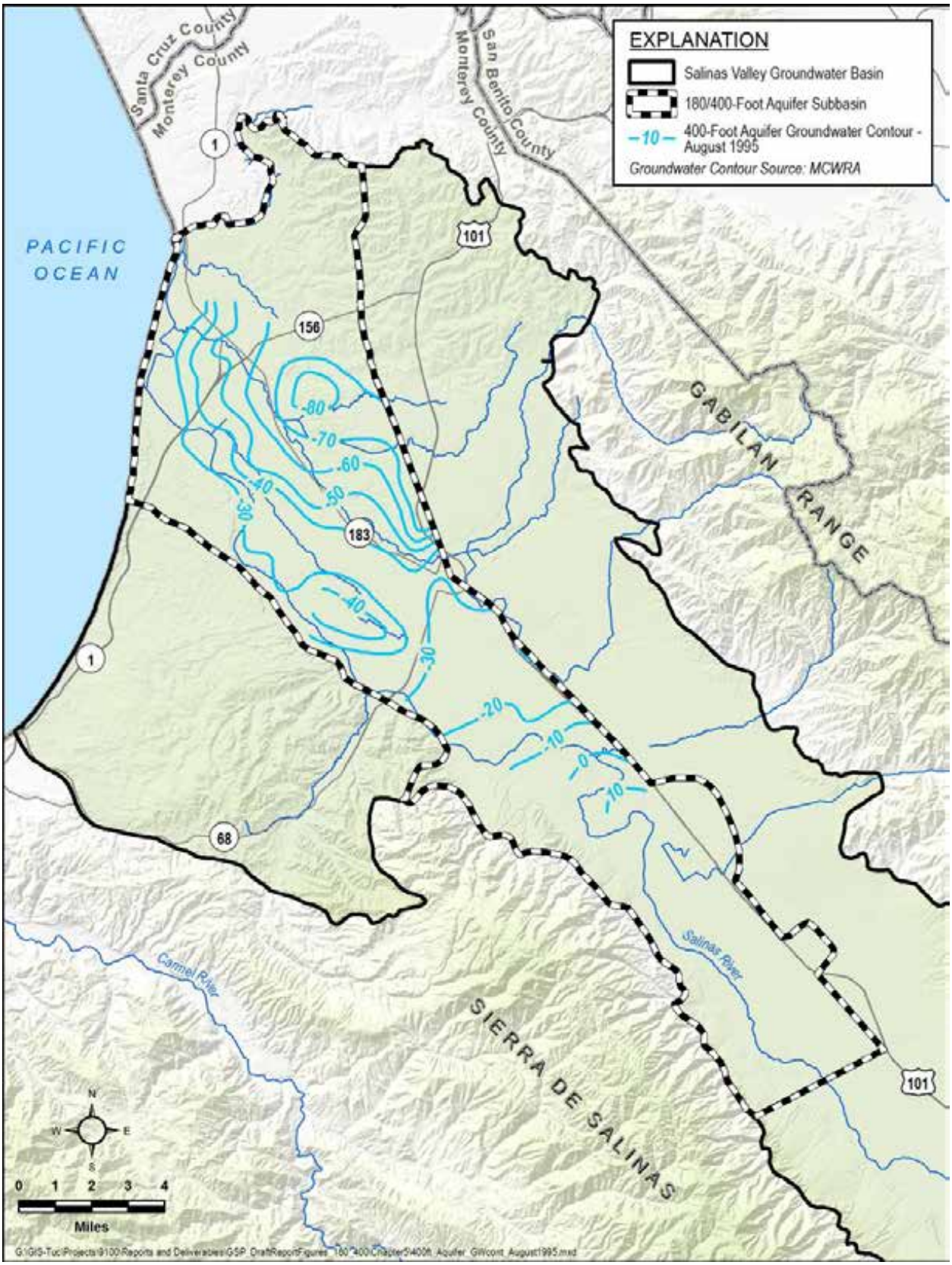


Figure 5-9. August 1995 400-Foot Aquifer Groundwater Elevation Contours

The contours indicate that groundwater flow directions are similar in the 180- and 400-Foot Aquifers. However, groundwater elevations in the 400-Foot Aquifer are lower than groundwater elevations in the 180-Foot Aquifer during both 1995 and 2017.

Under current conditions (Figure 5-2 through Figure 5-4), groundwater elevations in the Subbasin are below sea level (zero feet NAVD88) as indicated by the negative values on the contour lines in the northern two-thirds of the Subbasin. The lowest groundwater elevations in the Subbasin are along the boundary with the Eastside Subbasin near the City of Salinas. In the 180-Foot Aquifer, minimum groundwater elevations are approximately -20 ft NAVD88 during the fall measurements and -40 ft NAVD88 during the August measurements. In the 400-Foot Aquifer, minimum groundwater elevations are approximately -30 ft NAVD88 during the fall measurements and -70 ft NAVD88 during the August measurements. These low groundwater elevations are related to a pumping trough centered north of Salinas in the Eastside Subbasin. In this area, groundwater flow gradients are not parallel to the Valley's long axis, but rather are cross-valley towards the pumping trough. The hydraulic gradient steepens in the vicinity of the pumping trough, with observed gradients of approximately 0.003 ft/ft, or 16 ft/mile.

Groundwater elevations increase toward the northwestern boundary of the Subbasin until they are near sea level near the Monterey Bay coastline. As described in Sections 5.2 and 5.3.2, the groundwater elevations near the coast are maintained near sea level through the hydraulic connection to the ocean. The process of seawater intrusion counteracts the lowering groundwater elevations in both the 180-Foot and the 400-Foot Aquifers and creates an influx of high salinity water into the Subbasin.

Groundwater elevations also increase toward the southern boundary, with groundwater elevations of approximately 90 ft NAVD88 and 75 ft NAVD88 in the 180-Foot and 400-Foot Aquifers at the boundary with the Forebay Subbasin.

Under the historical conditions of 1995, the same flow pattern was present in both aquifers; however, the magnitude of the pumping trough has varied over time. A discussion of historical groundwater elevation changes is presented in Section 5.1.3.

The MCWRA does not produce groundwater elevation maps of the Deep Aquifers. Insufficient data currently exist to map flow directions and groundwater elevations in the Deep Aquifers. This is a data gap that will be addressed in GSP implementation.

5.1.3 180/400-Foot Aquifer Subbasin Hydrographs

Representative temporal trends in groundwater elevations can be assessed with hydrographs that plot changes in groundwater elevations over time. Groundwater elevation data from wells within the Subbasin are available from monitoring conducted and reported by MCWRA.

Figure 5-10 depicts the locations and hydrographs of representative wells monitored by MCWRA in the 180-Foot Aquifer and their hydrographs. Larger versions of the hydrographs shown on Figure 5-10 are included on Figure 5-11 through Figure 5-13. Figure 5-14 depicts the locations and hydrographs of representative wells monitored by MCWRA in the 400-Foot Aquifer. Larger versions of the hydrographs shown on Figure 5-14 are included on Figure 5-15 through Figure 5-18. MCWRA only monitors one well in the Deep Aquifers. Figure 5-19 and Figure 5-20 depict the location and hydrograph of this representative well within the Deep Aquifers.

Representative wells were chosen based on their distribution across the Subbasin, and the length and continuity of their monitoring record. Hydrographs for all wells in the Subbasin that are monitored by MCWRA and not limited by confidentiality agreements are included in Appendix 5A. The locations of all of these wells are shown on Figure 5-21.

These climatic variations influenced groundwater elevations much more than the benefits realized from the projects.

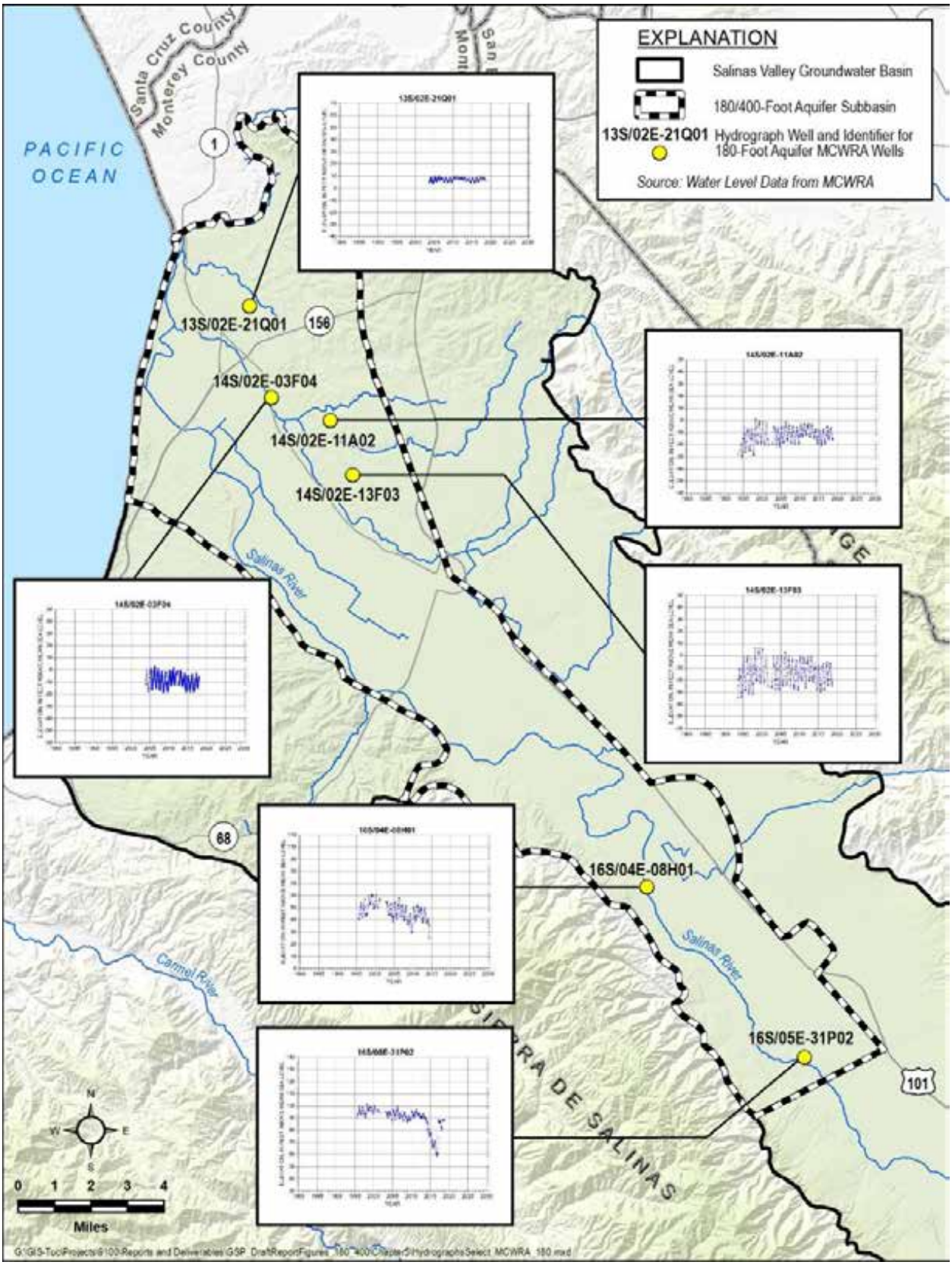
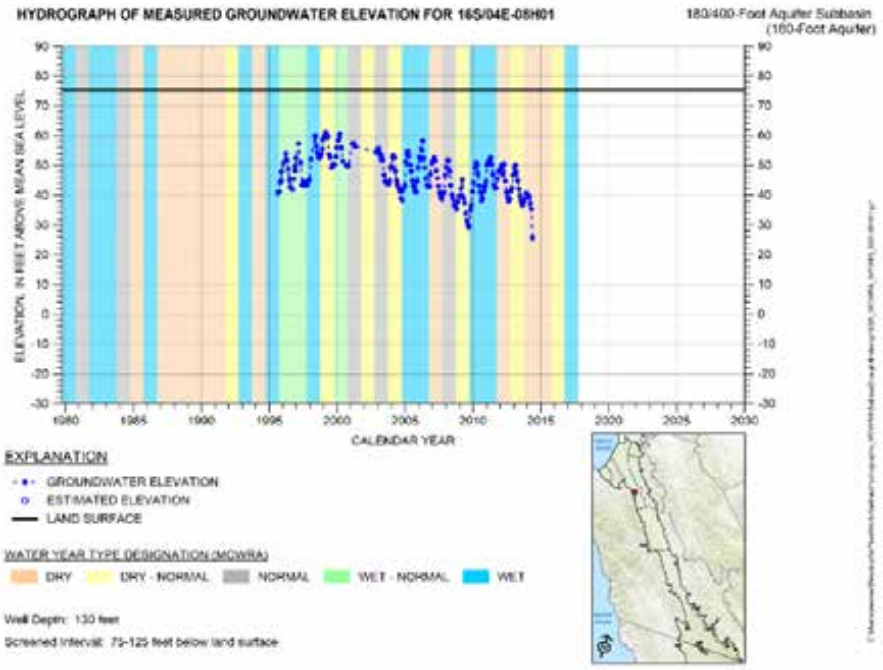


Figure 5-10. Map of Representative Hydrographs in the 180-Foot Aquifer



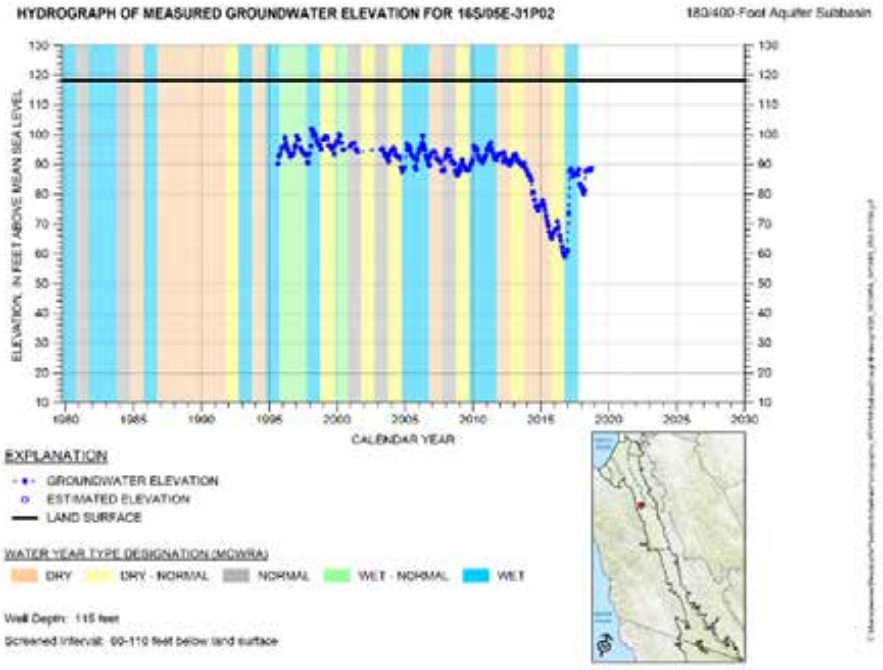
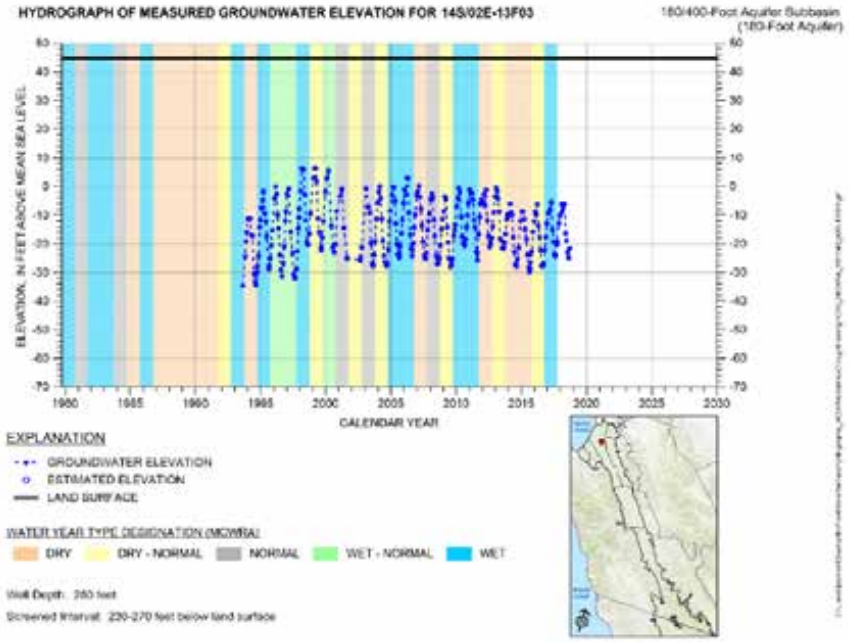


Figure 5-11. Representative Hydrographs Shown on the 180-Foot Aquifer Map (1)



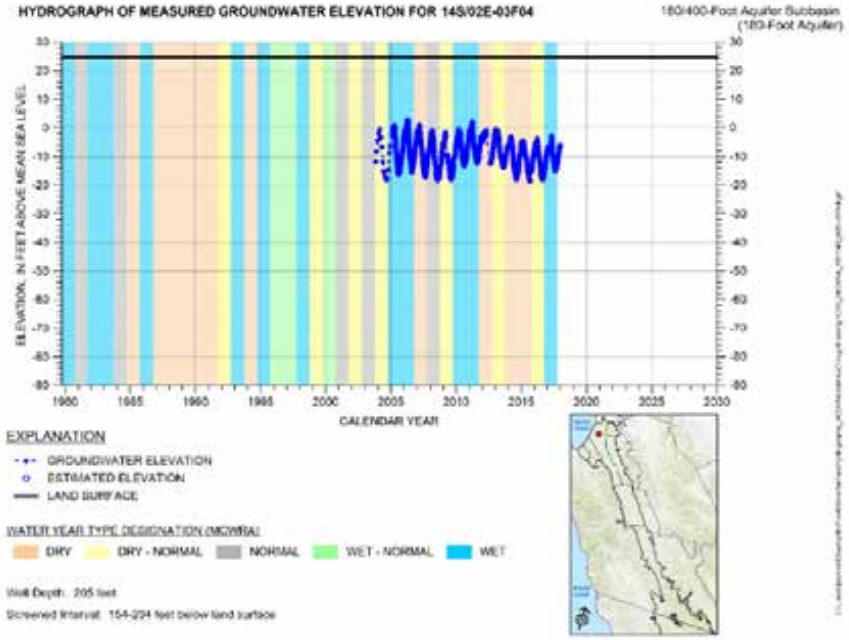
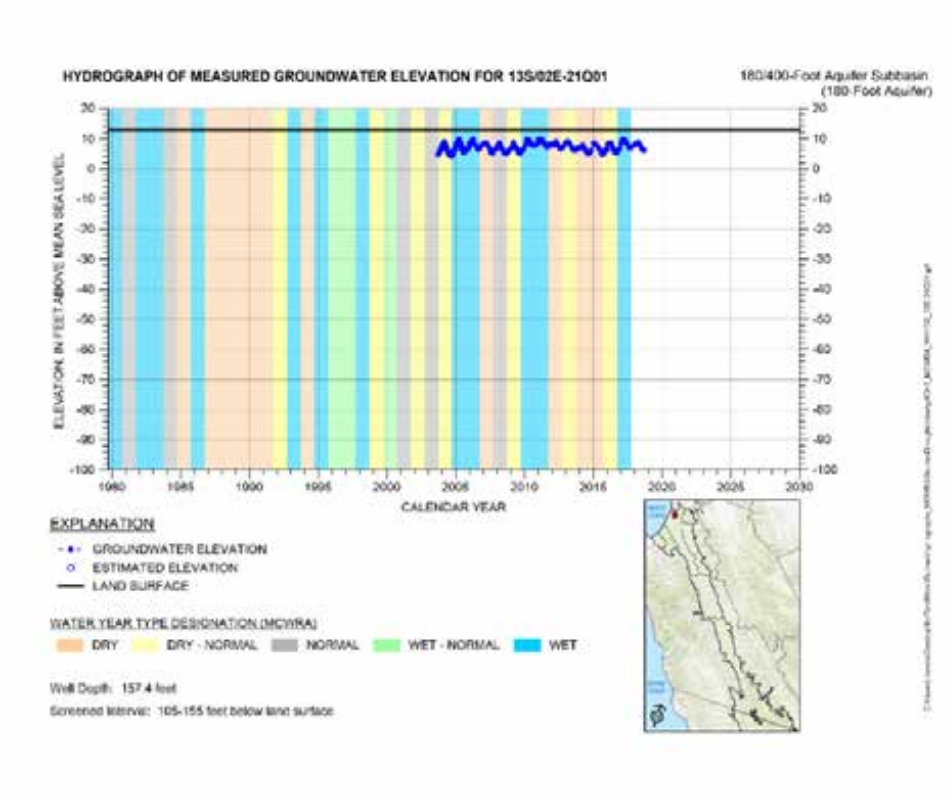


Figure 5-12. Representative Hydrographs Shown on the 180-Foot Aquifer Map (2)



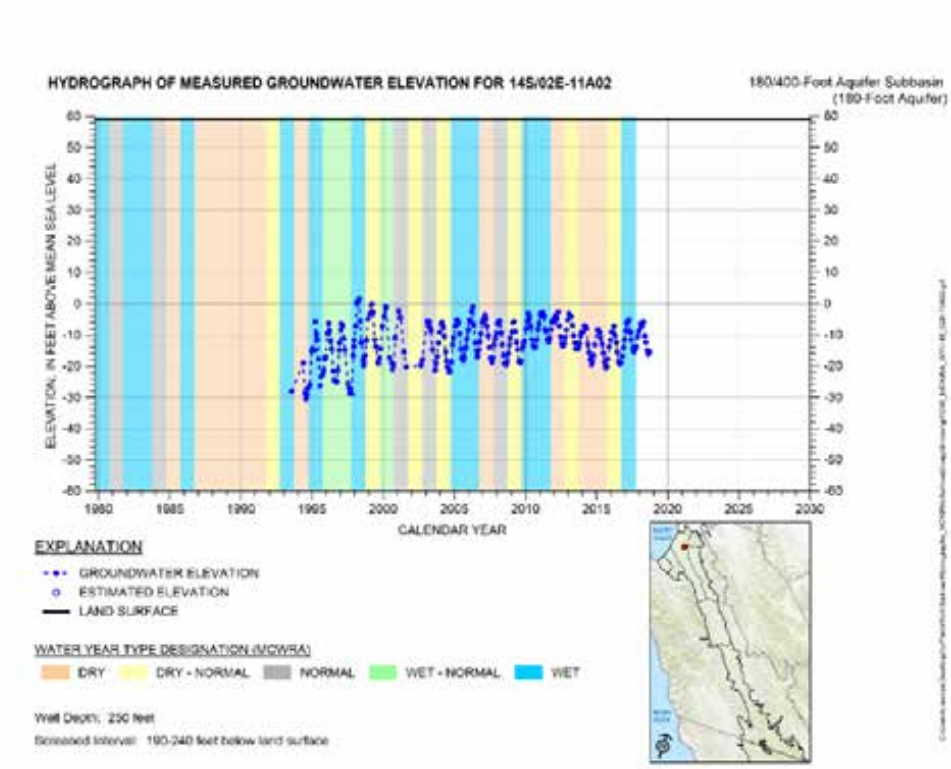


Figure 5-13. Representative Hydrographs Shown on the 180-Foot Aquifer Map (3)

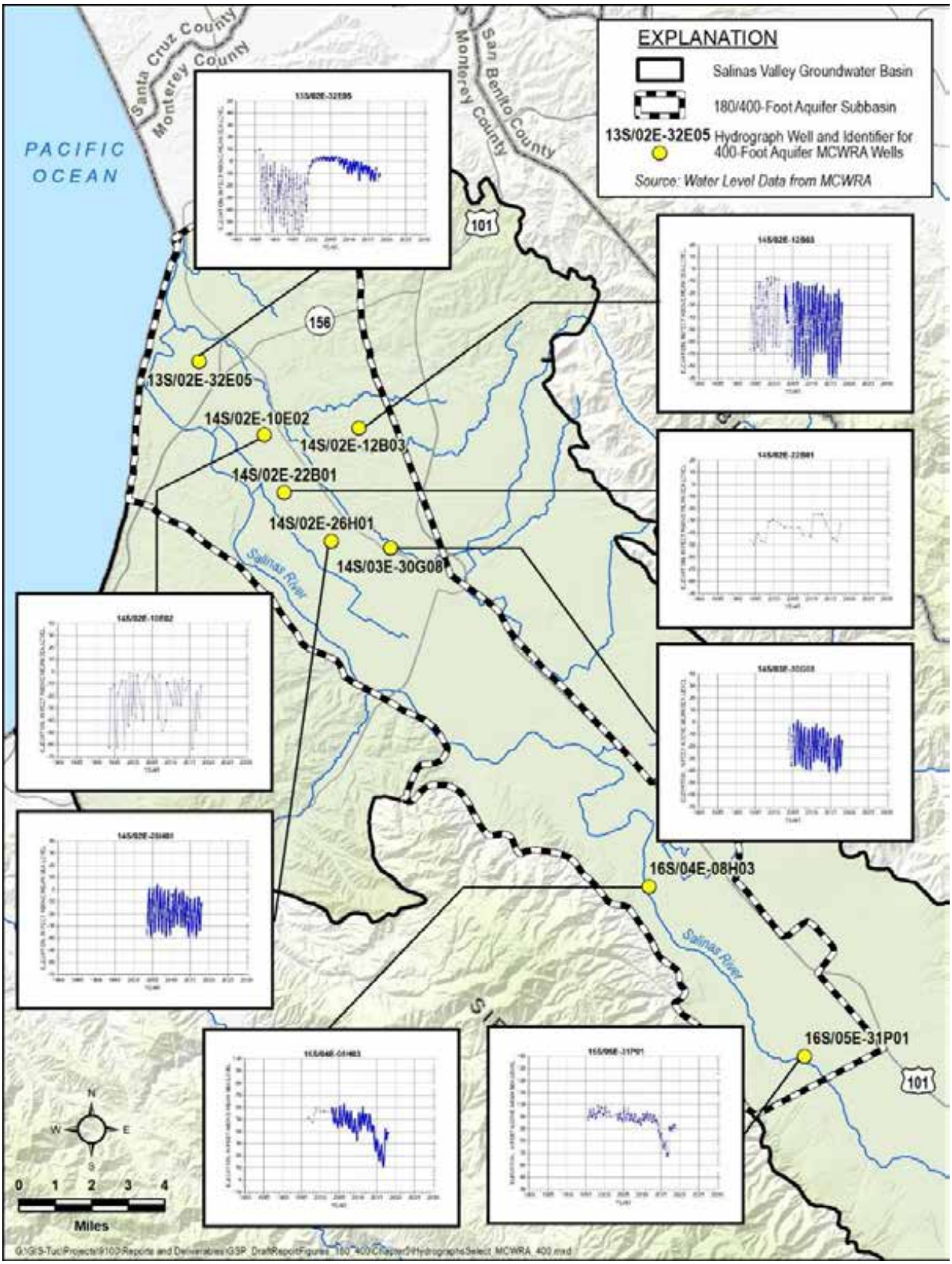
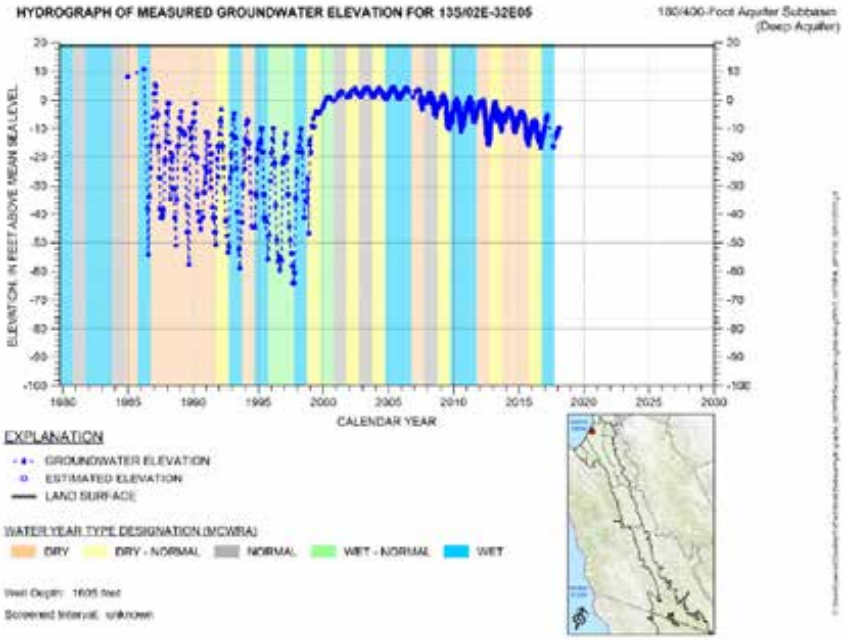


Figure 5-14. Map of Representative Hydrographs in the 400-Foot Aquifer



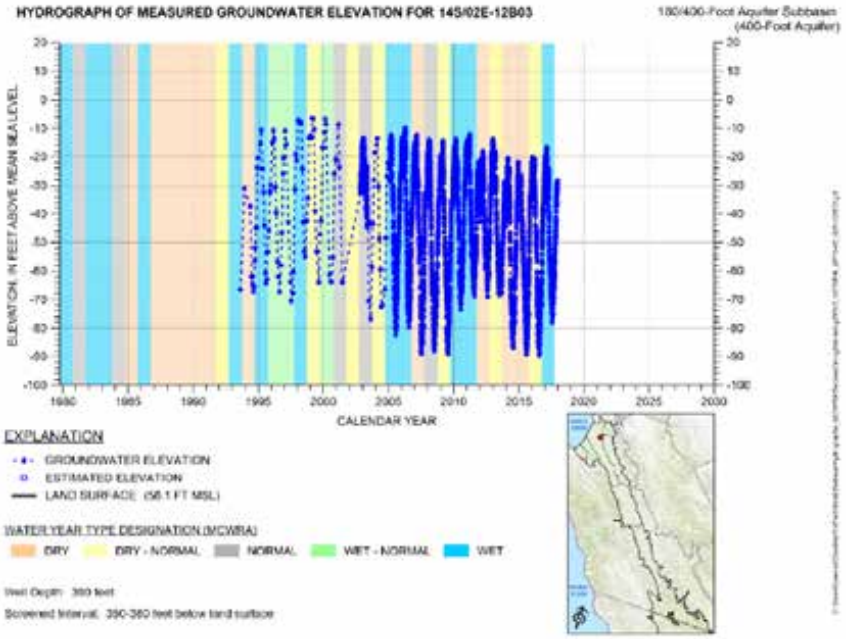
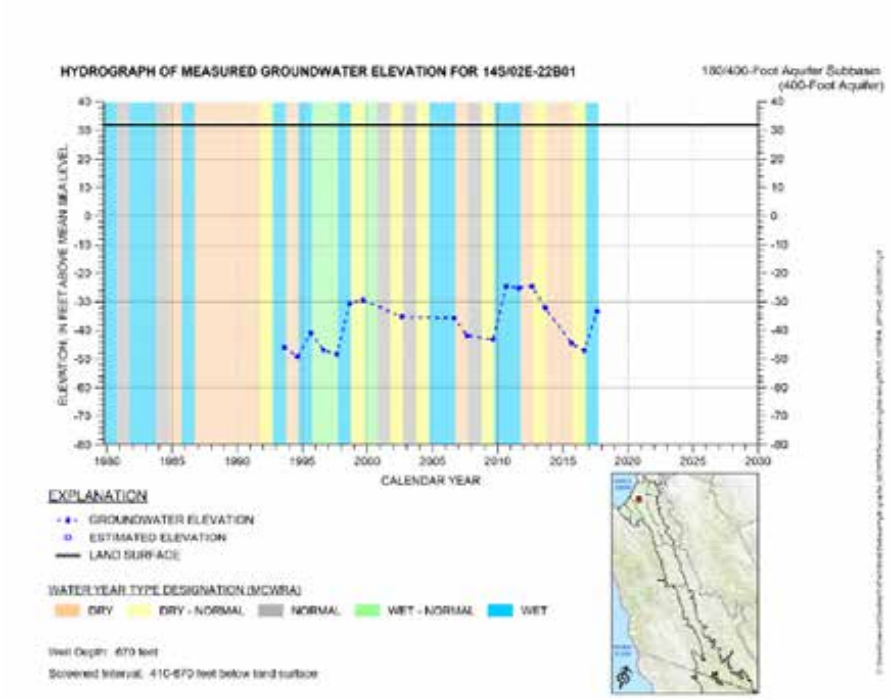


Figure 5-15. Representative Hydrographs Shown on the 400-Foot Aquifer Map (1)



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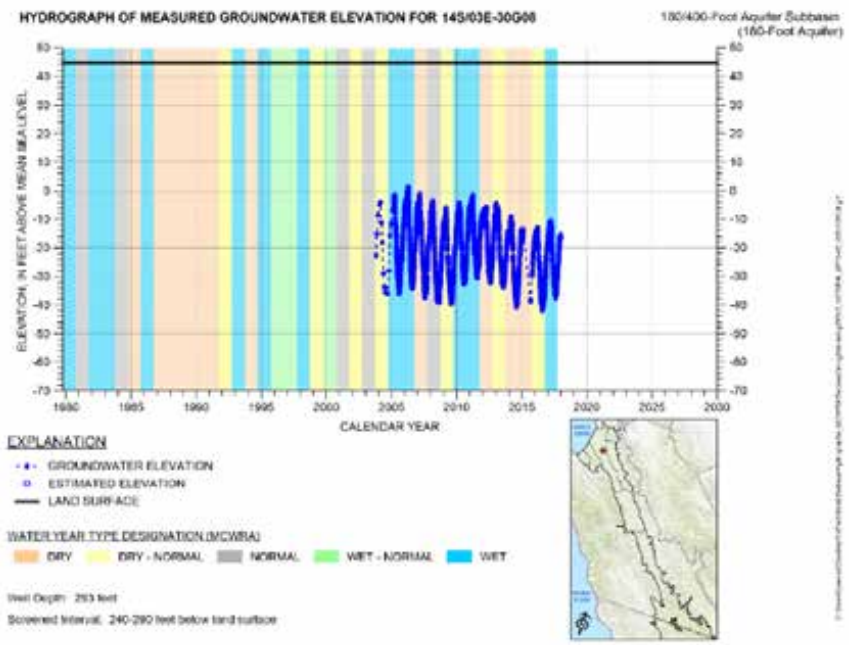
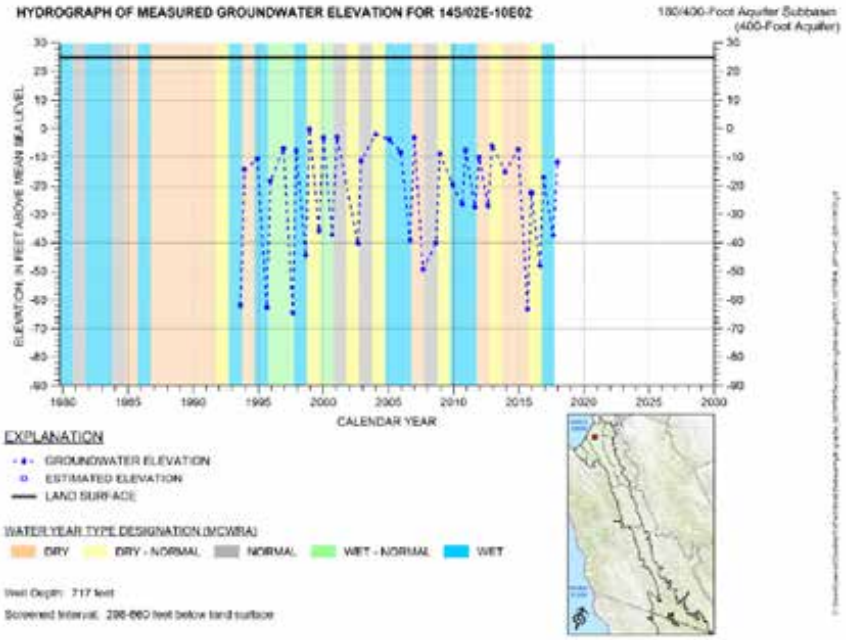


Figure 5-16. Representative Hydrographs Shown on the 400-Foot Aquifer Map (2)



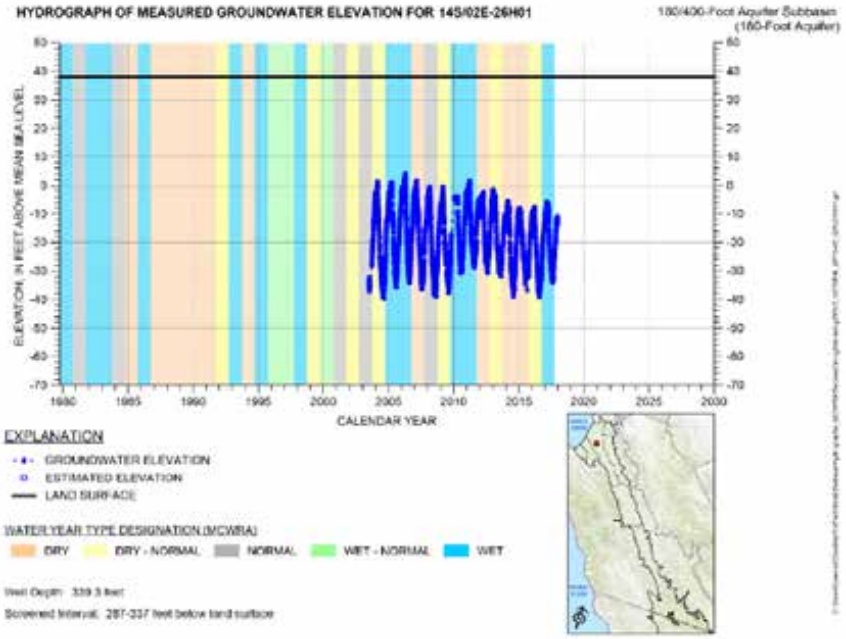


Figure 5-17. Representative Hydrographs Shown on the 400-Foot Aquifer Map (3)

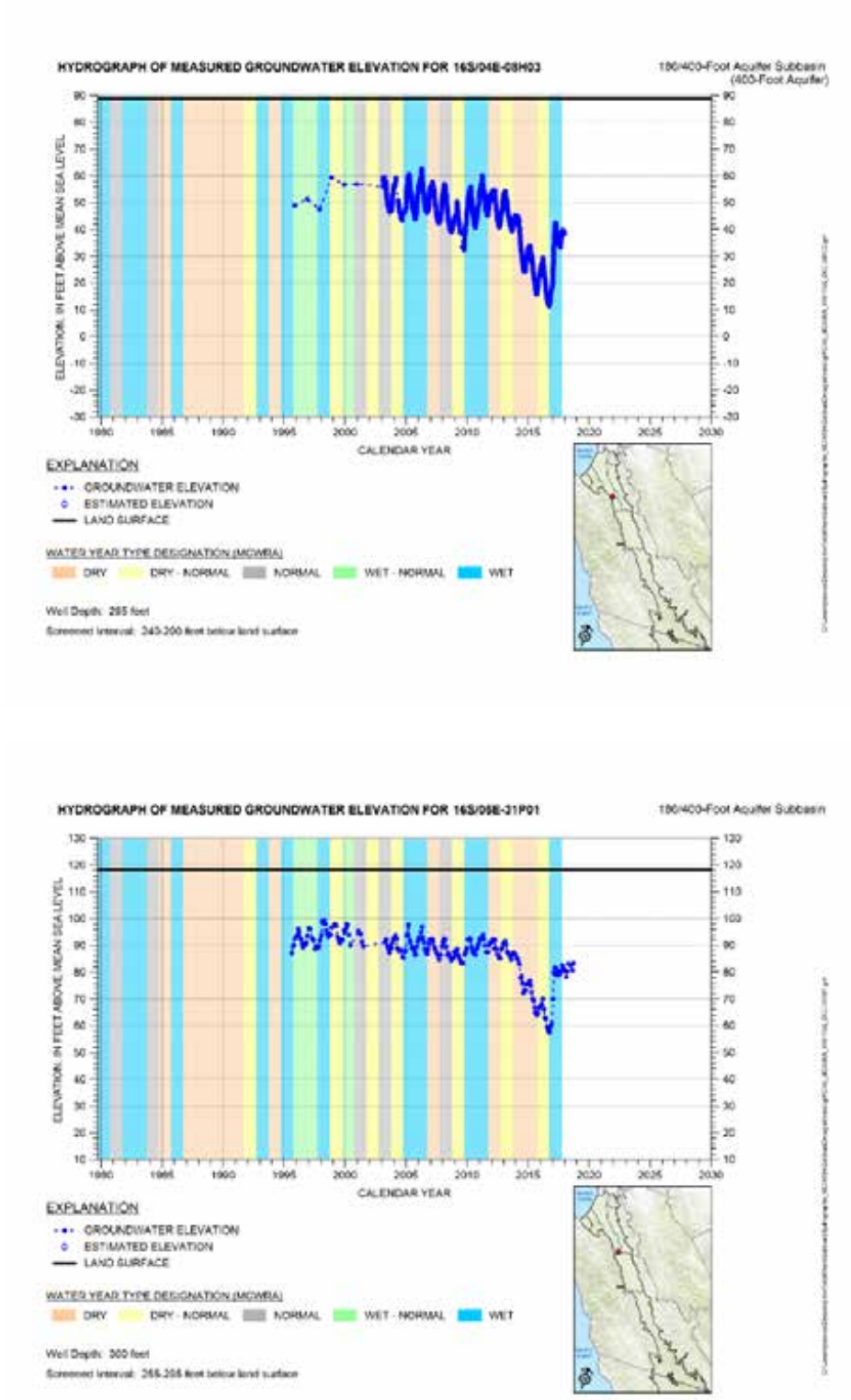


Figure 5-18. Representative Hydrographs Shown on the 400-Foot Aquifer Map (4)

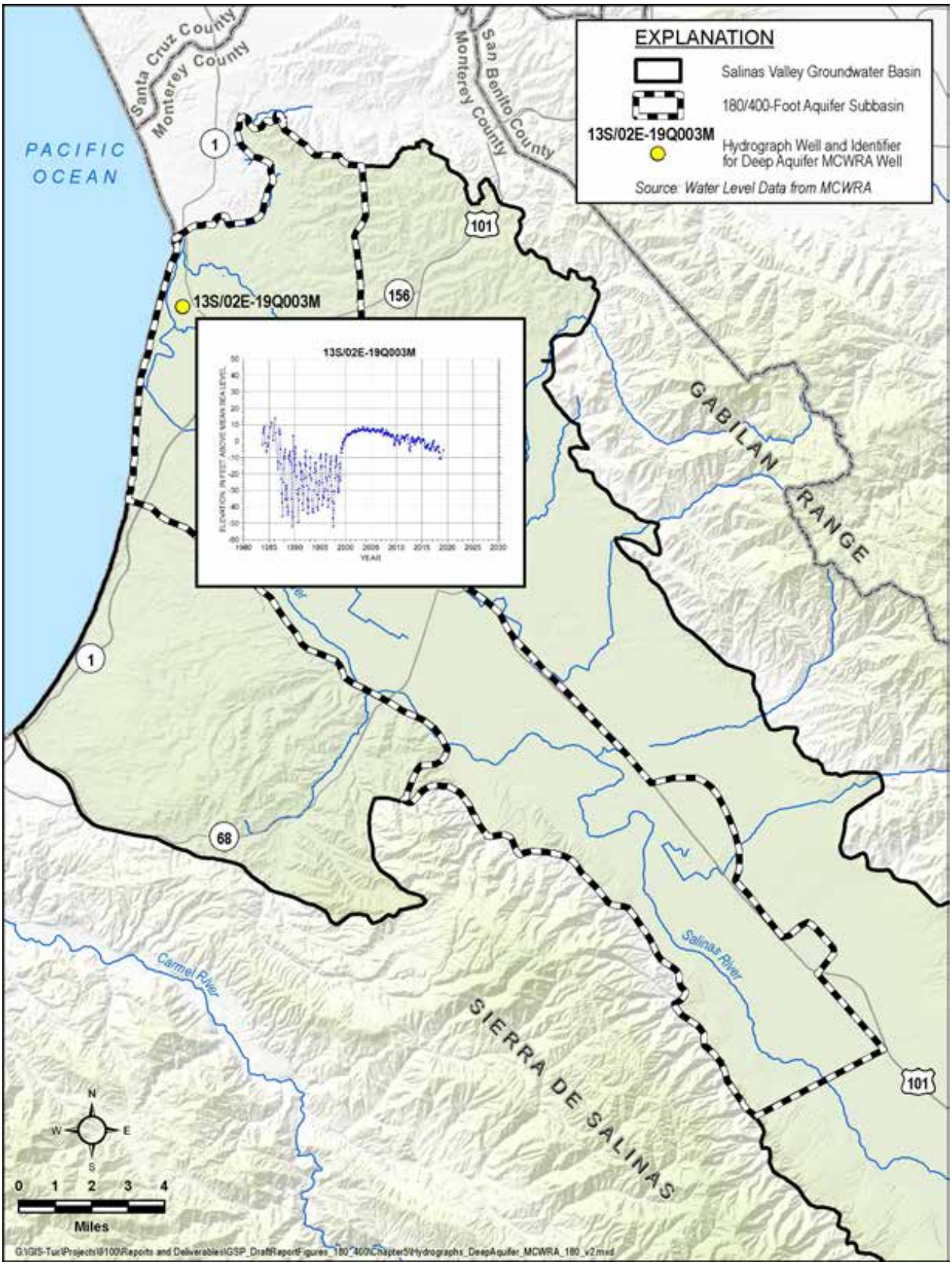


Figure 5-19. Map of Representative Hydrograph in the Deep Aquifers

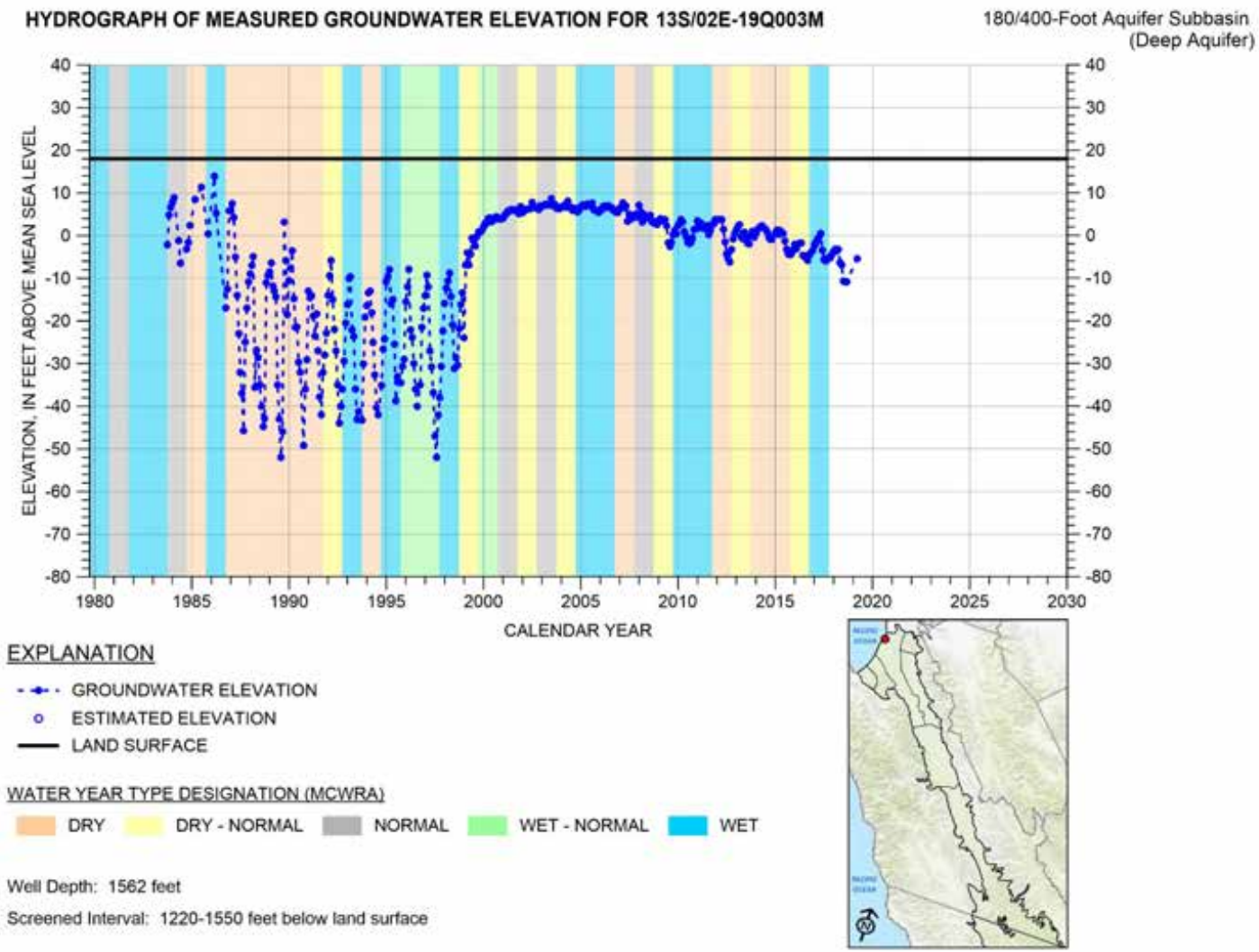


Figure 5-20. Representative Hydrograph Shown on the Deep Aquifers Map

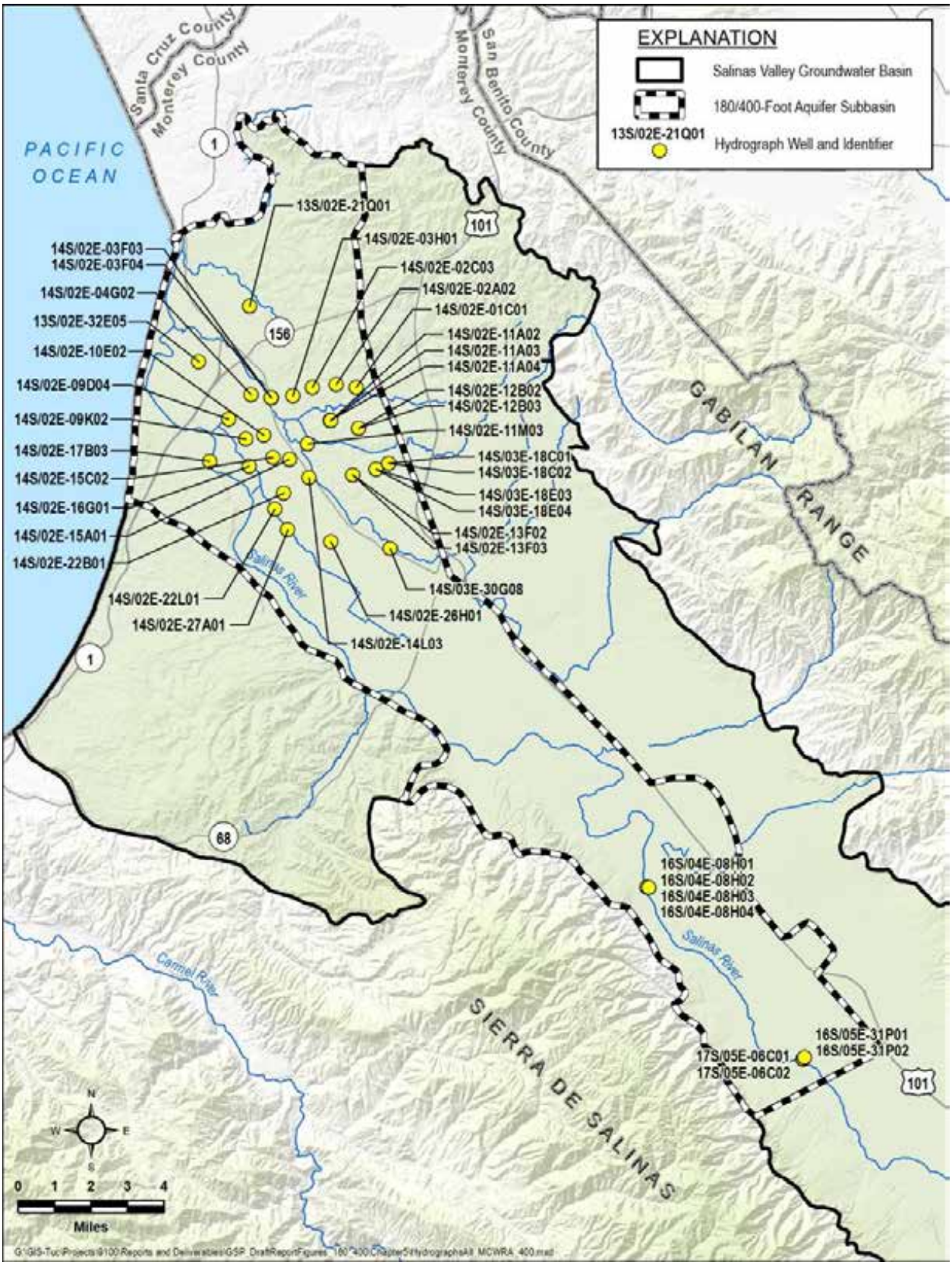


Figure 5-21. Locations of Wells with Hydrographs Included in Appendix 5A

In addition to the hydrographs of the representative wells, there is value in looking at representative average groundwater elevation at the subbasin scale. Figure 5-22 presents the graph of cumulative groundwater elevation change for the MCWRA-designated Pressure subarea. The Pressure subarea used by MCWRA for its analyses overlaps the 180/400-Foot Aquifer Subbasin, along with most of the Monterey Subbasin and part of the adjudicated Seaside Subbasin (Figure 5-23).

The plot on Figure 5-22 is based on calculations performed by MCWRA where the annual change in groundwater elevation is averaged for all wells in the subarea each year, beginning in 1945. The cumulative groundwater elevation change plot is therefore an estimation of the average hydrograph for the subarea. Although this plot does not reflect the groundwater elevation change at any specific location, it provides a clear illustration of how the average groundwater elevation in the subarea changes in response to changes in climatic cycles, groundwater extraction, and water-resources management at the subbasin scale.

The cumulative data presented on Figure 5-22, and the specific hydrographs presented above show that groundwater elevations in the 180/400-Foot Aquifer Subbasin show a general decline over time, with a fairly steady decline since 1998. MCWRA's subarea cumulative groundwater elevation change calculations include groundwater elevations measured in privately-owned wells. As these data are considered confidential, they are not presented in this document.

The cumulative groundwater elevation change graph shown on Figure 5-22 shows an apparent drop in average groundwater elevations following activation of the CSIP system in 1998; and another apparent drop in average groundwater elevations following activation of the SVWP in 2010. These apparent drops in average groundwater elevations are not the result of either of these projects but are rather the result of natural climatic variation. The water year type information shown behind the hydrographs on Figure 5-11 through Figure 5-13 indicate that there was a dry period between 2000 and 2005, soon after the CSIP project was initiated. Similarly, the SVWP project came online during an alternating climatic period, and just before an extended dry period.

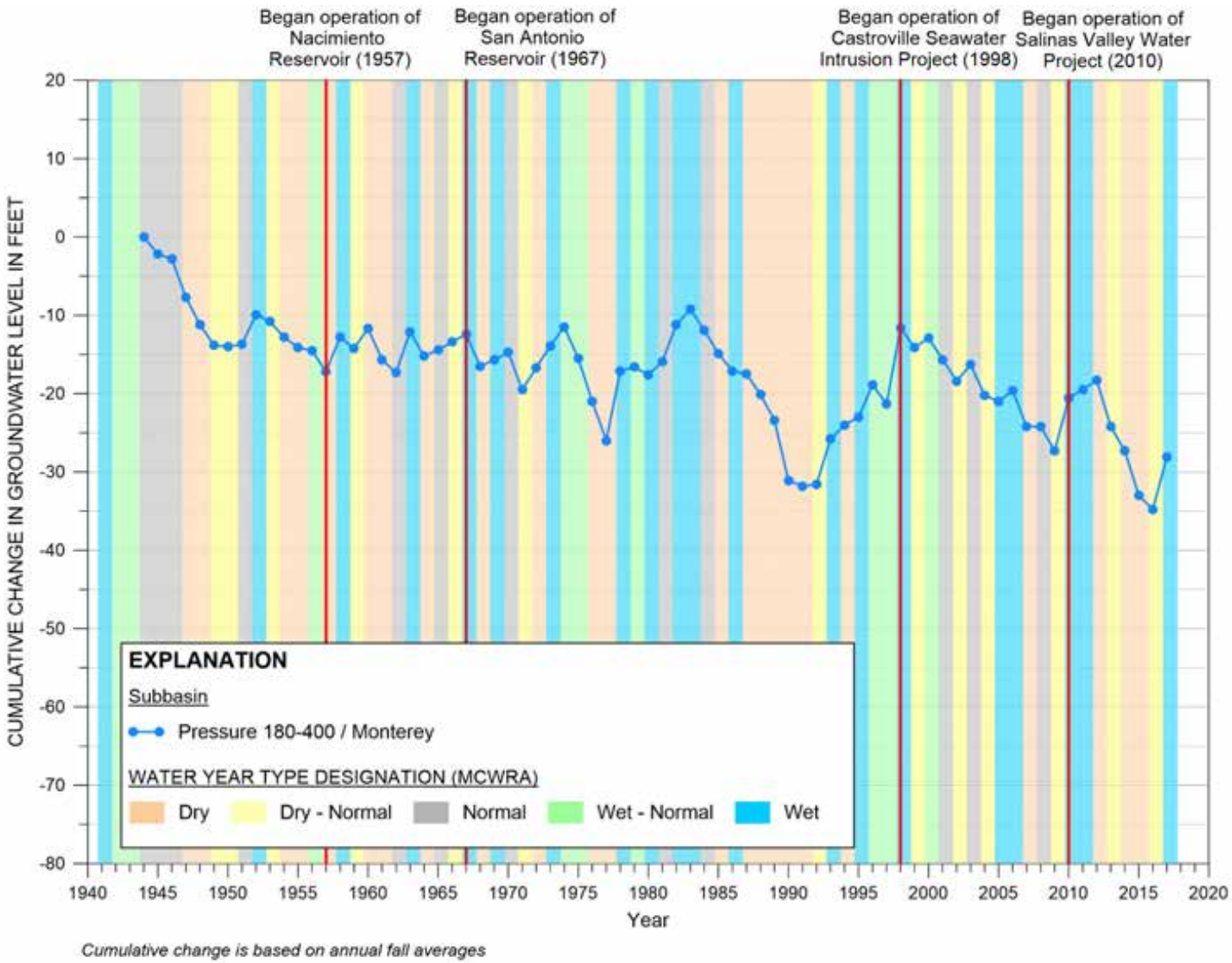


Figure 5-22. Cumulative Groundwater Elevation Change Graph for the MCWRA Pressure Subarea (from MCWRA, 2018, personal communication)

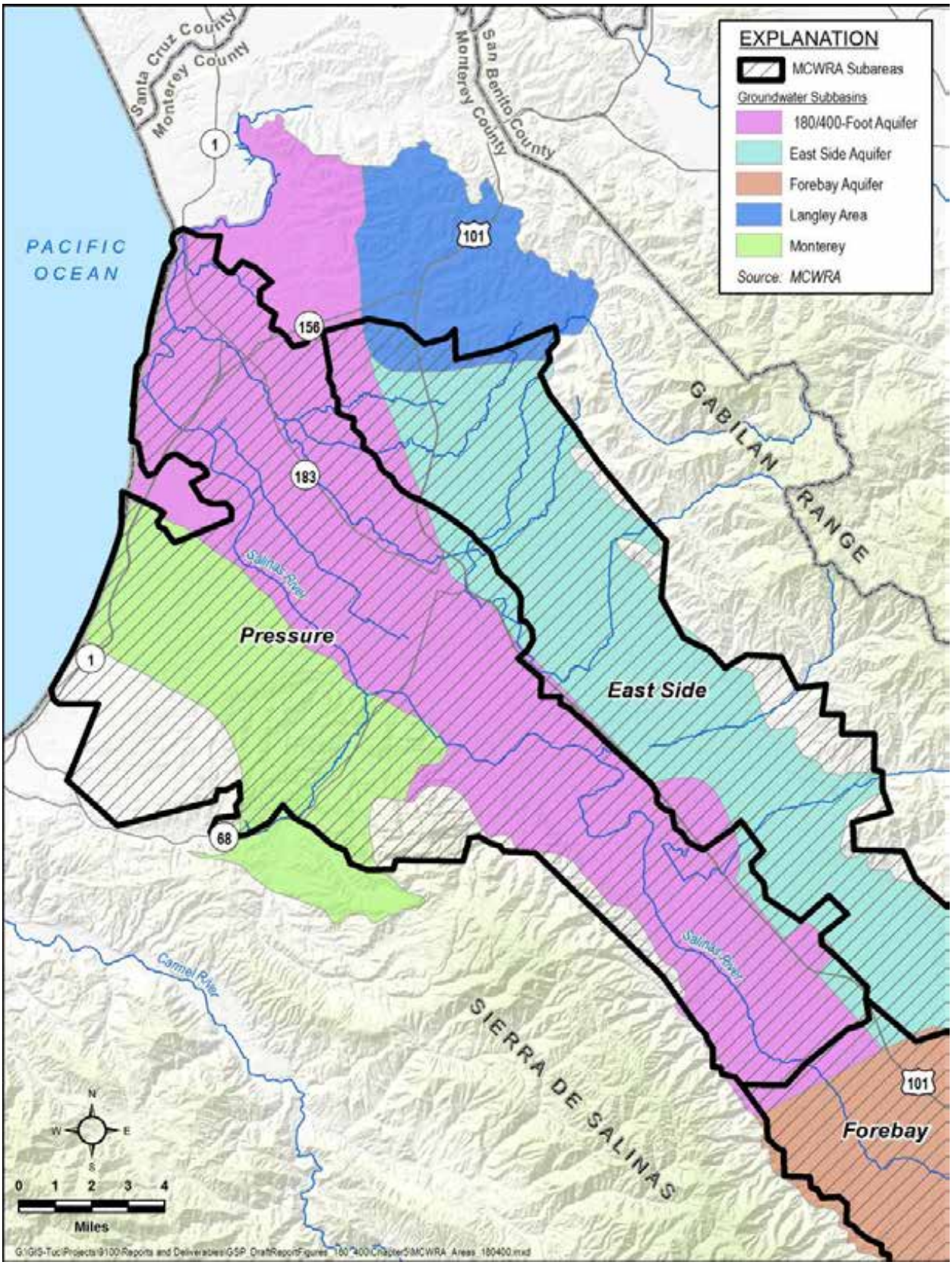


Figure 5-23. MCWRA Management Areas

5.1.4 Vertical Groundwater Gradients

In addition to the horizontal hydraulic gradients discussed above, there are vertical hydraulic gradients in the Subbasin. With groundwater recharge occurring at the ground surface and groundwater withdrawal from wells at depth, there is a basin-wide vertical downward hydraulic gradient. The practical impact of the vertical gradients is that wells completed at deeper depths, such as the 400-Foot Aquifer, may have lower groundwater elevations than shallower wells completed in the 180-Foot Aquifer. These vertical groundwater gradients can impact the location and amount of natural groundwater discharge to groundwater dependent ecosystems.

In the 180/400-Foot Aquifer Subbasin, the laterally extensive aquitards result in notable vertical hydraulic gradients: in some places groundwater elevations are approximately 20 to 50 feet lower in deeper wells than in shallower wells. Because the downward vertical gradients are caused by pumping, the magnitudes of the vertical gradients in many areas are greater during the irrigation season. Currently, there is very little data for the Deep Aquifers to establish vertical gradients between the Deep Aquifers and either the 400-Foot or 180-Foot Aquifers.

Figure 5-24 illustrates how vertical gradients at representative well pairs vary throughout the Subbasin. Each representative well pair consists of two adjacent wells with different well depths. The hydrographs for each well pair illustrate the difference in groundwater potentiometric elevation between wells of different depths at the same location. Well pair 1, in the northern portion of the Subbasin, has noticeably different groundwater potentiometric elevations at the two depths, while well pair 3, in the southern portion of the Subbasin shows no appreciable groundwater elevation difference between wells.

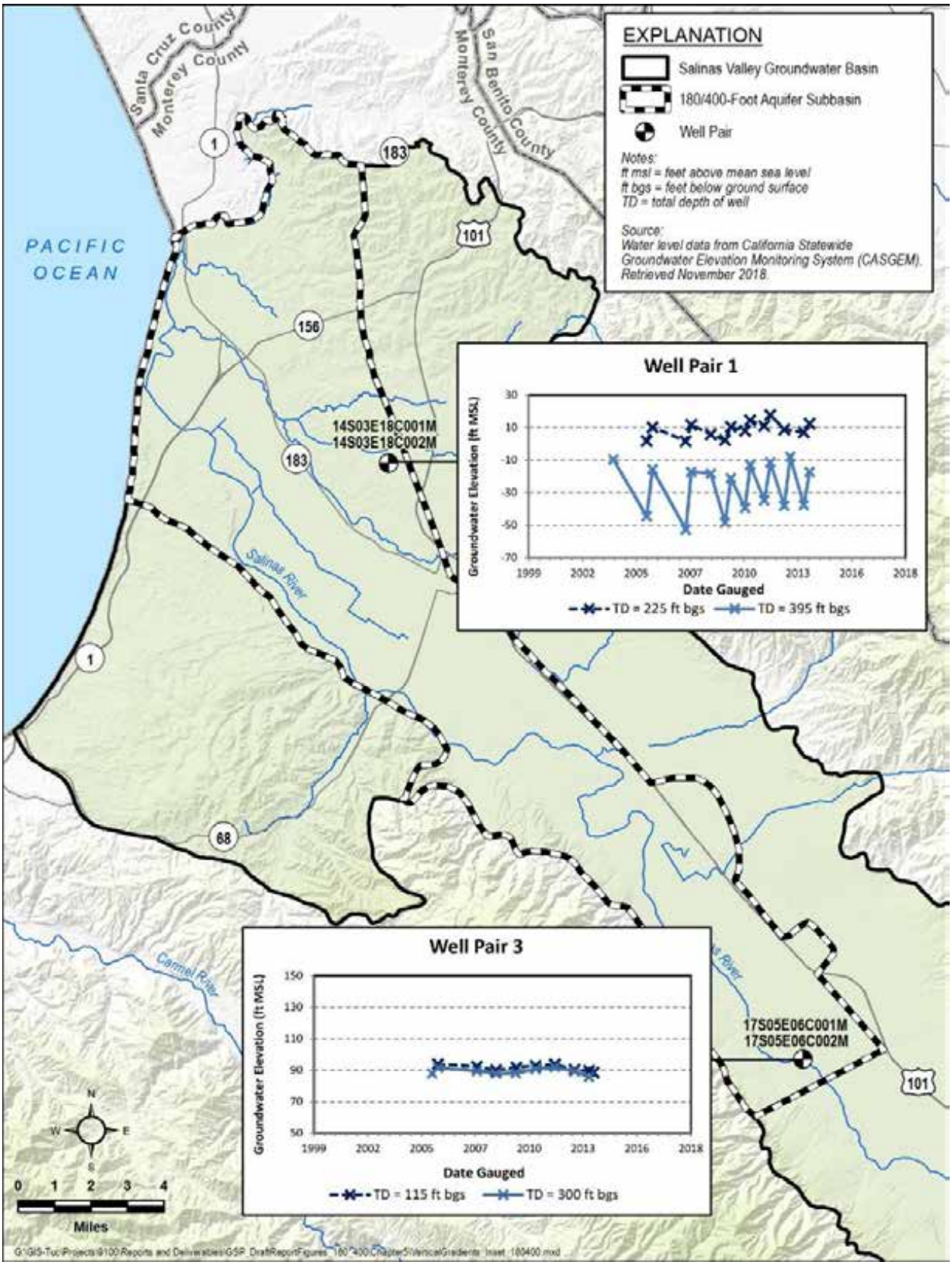


Figure 5-24. Vertical Gradients

5.2 Change in Groundwater Storage

This GSP adopts the concept of change in usable groundwater storage: defined as the annual average increase or decrease in groundwater that can be safely used for municipal, industrial, or agricultural purposes. Change in usable groundwater storage is the sum of change in storage due to groundwater elevation changes and the change in storage due to seawater intrusion.

5.2.1 Data Sources

MCWRA estimates average annual change in groundwater elevation for each Salinas Valley Groundwater subarea (Figure 5-22). These change in groundwater elevation plots are used to estimate change in groundwater storage due to elevation changes. Changes in groundwater storage due to seawater intrusion was estimated from previously published reports.

5.2.2 Change in Groundwater Storage Due to Groundwater Elevation Changes

One component of the change in groundwater storage is calculated from groundwater elevations in the Subbasin. The observed groundwater elevation changes provide a measure of the amount of groundwater that has moved into and out of storage during each year, not accounting for seawater intrusion. The change in storage can be calculated by multiplying a change in groundwater elevation by a storage coefficient. Storage coefficients depend on the hydraulic properties of the aquifer materials and are commonly measured through long-term pumping tests or laboratory tests.

The average groundwater elevation change that is shown on Figure 5-22 is used to estimate annual changes in water storage through the following relationship:

$$\Delta S = \Delta WL \times A \times SC$$

Where: ΔS = Annual change in storage volume in the Subbasin (AF/yr.)

ΔWL= Annual change in average groundwater elevation in the Subbasin (ft/yr.)

A = Land area of Subbasin (acres)

SC = Storage coefficient (ft^3/ft^3)

The storage coefficient for the 180/400 Foot Aquifer Subbasin was estimated at 0.04 based on the *State of the Basin Report* (Brown and Caldwell, 2015). The area of the 180/400-Foot Aquifer Subbasin is approximately 89,700 acres.

Figure 5-25 presents a time series graph from 1944 through 2017 showing the estimated cumulative change in groundwater storage in the 180/400-Foot Aquifer Subbasin. It is based on groundwater levels collected by MCWRA in the fall of each year, which were the best available data.

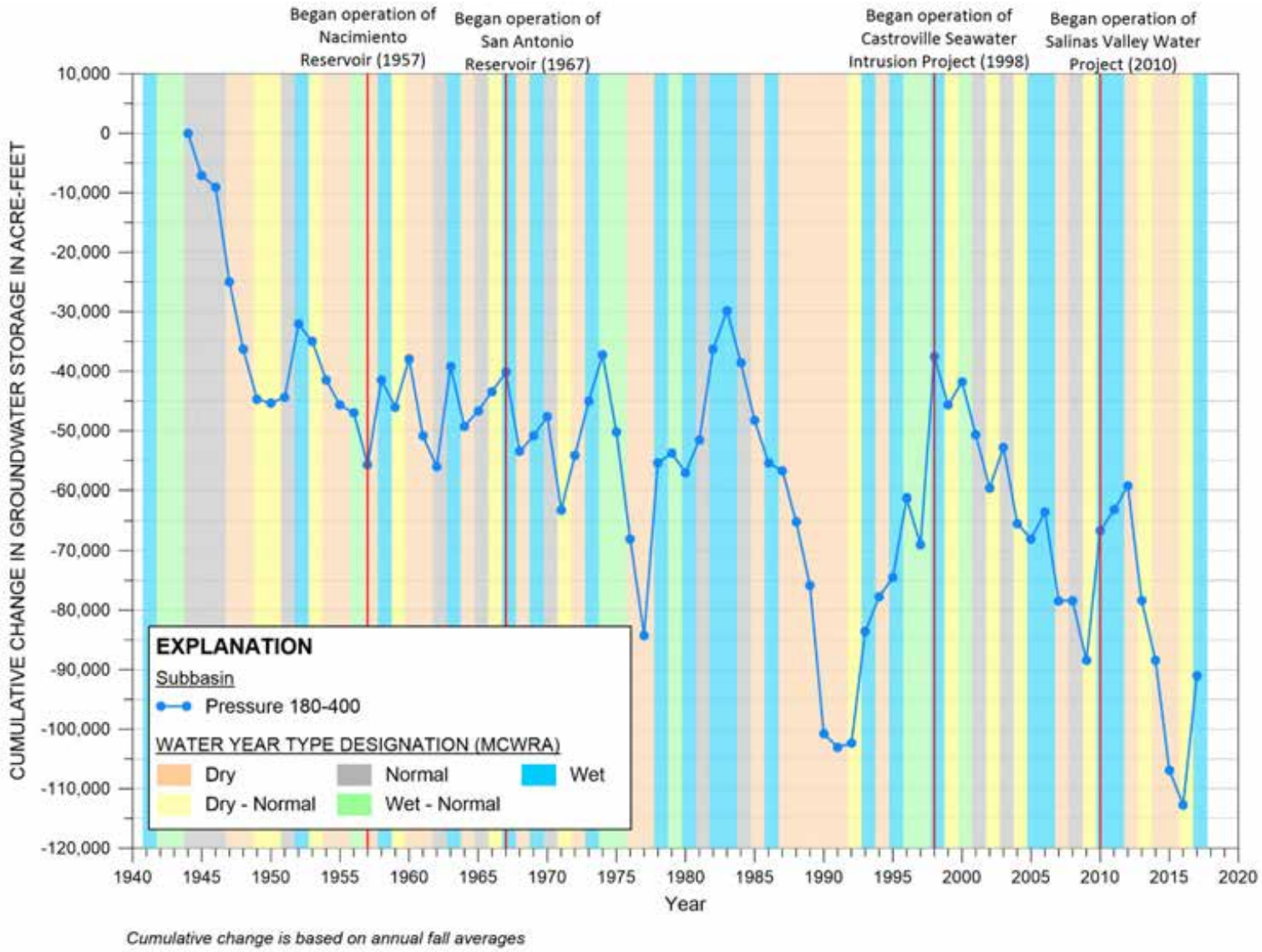


Figure 5-25. Cumulative Change in Groundwater Storage in the Pressure Subarea, Based on Groundwater Elevations (From MCWRA, 2018, personal communication)

The timing of groundwater storage declines and recovery match the groundwater elevation patterns described in Section 5.1.3. However, the magnitudes of the groundwater storage changes are scaled by the storage coefficient and size of the Subbasin.

Figure 5-25 shows that the 180/400-Foot Aquifer Subbasin has experienced a long-term decline in groundwater storage due to lowering groundwater elevations. The average annual storage loss due to lowering groundwater elevation in the 180/400-Foot Aquifer Subbasin between 1944 and 2017 is approximately 1,200 AF/yr. Changes in the total basin groundwater storage can be divided into the following three periods:

- 1944 to 1948: decrease of 40,000 AF in groundwater storage
- 1947 to 1998: trend of steadily decreasing groundwater storage in most years with marked increases in 1974, 1983, and 1997
- 1998 to 2017: decrease of approximately 50,000 AF in groundwater storage.

5.2.3 Change in Groundwater Storage due to Seawater Intrusion

Estimates of groundwater storage losses due to seawater intrusion have ranged from 8,000 to 14,000 AF/yr. This GSP adopts a mid-range estimate of 10,500 AF/yr. of storage loss due to seawater intrusion in the 180/400-Foot Aquifer Subbasin. The sources of these estimates are discussed further in Section 5.3.3. This storage loss is in addition to the change in groundwater storage due to changes in groundwater elevations.

5.2.4 Total Annual Average Change in Groundwater Storage

The total annual average change in groundwater storage is the sum of the changes in groundwater storage due to groundwater elevation changes and seawater intrusion. The total annual loss in groundwater storage for the entire period of record is therefore:

- Annual storage loss due to groundwater elevation decrease 1,200 AF/yr.
- Annual loss due to seawater intrusion 10,500 AF/yr.
- Total annual loss of storage 11,700 AF/yr.

5.3 Seawater Intrusion

The 180-Foot and 400-Foot Aquifers have been subject to seawater intrusion for more than 70 years, as demonstrated by increased salt concentrations in wells near the Monterey Bay coastline. The negative impact of seawater intrusion on local water resources and the agricultural economy has been the primary motivation for many studies dating back to 1946 (DWR, 1946). MCWRA and others have implemented a series of engineering and management projects including well construction moratoriums, developing the (CSIP system, and implementing the Salinas Valley Water Project (SVWP), among other actions to halt seawater intrusion. Although

those actions have managed to slow the advance of intrusion and reduce its impacts, seawater intrusion remains an ongoing threat.

5.3.1 Data Sources

The extent and advance of seawater intrusion has been monitored and reported by MCWRA. Monitoring seawater intrusion has been on-going since the Agency formed in 1947 and currently includes a network of 96 agricultural wells and 25 dedicated monitoring wells that are sampled twice annually: in June and August. The water samples are analyzed for general minerals; and the analytical results are used by MCWRA to analyze and report the following:

- Maps and graphs of historical chloride and specific conductivity trends
- Stiff diagrams and Piper diagrams
- Plots of chloride concentration vs. Na/Cl molar ratio trends

MCWRA publishes estimates of the extent of seawater intrusion every 2 years. The MCWRA maps define the extent of seawater intrusion as the inferred location of the 500 mg/L chloride concentration isocontour. This chloride concentration is significantly lower than the 19,000 mg/L chloride concentration typical of seawater, but it represents a concentration that may begin to impact use of the water. The 500 mg/L threshold is considered the Upper Limit Secondary Maximum Contaminant Level (SMCL) for chloride as defined by the EPA, and is approximately ten times the concentration of naturally occurring groundwater in the Subbasin.

5.3.2 Seawater Intrusion Maps and Cross Section

Figure 5-26 and Figure 5-27 present the MCWRA maps of the most current and historical extent of seawater intrusion for the 180-Foot Aquifer and the 400-Foot Aquifer, respectively. In each of the two figures, the extent of the shaded contours represents the extent of groundwater with chloride exceeding 500 mg/L during the 2017 monitoring period. The historical progression of the 500 mg/L extent is also illustrated on these figures through the colored overlays that represent the extent of seawater intrusion observed during selected years.

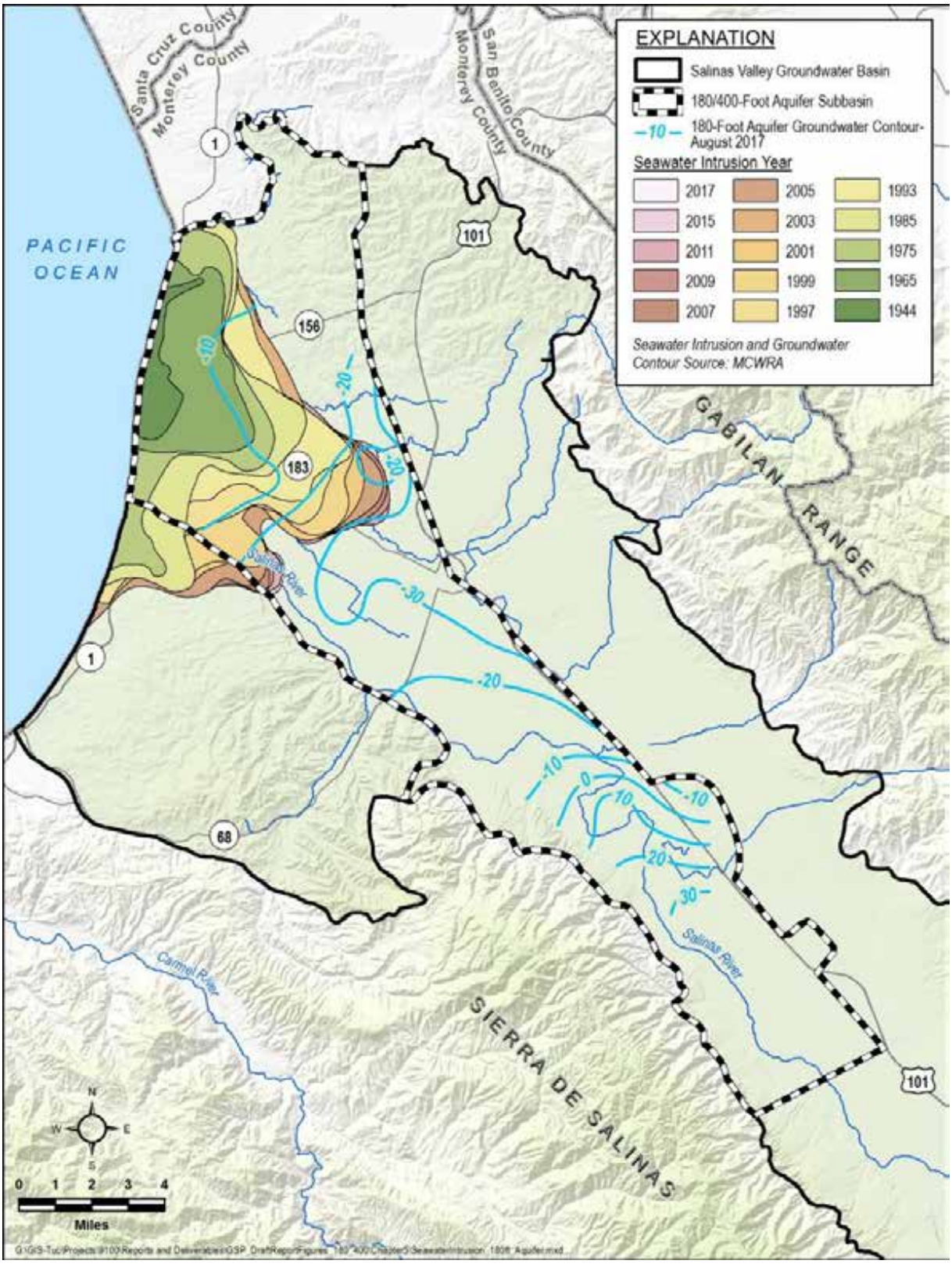


Figure 5-26. Seawater Intrusion in the 180-Foot Aquifer
(from MCWRA)

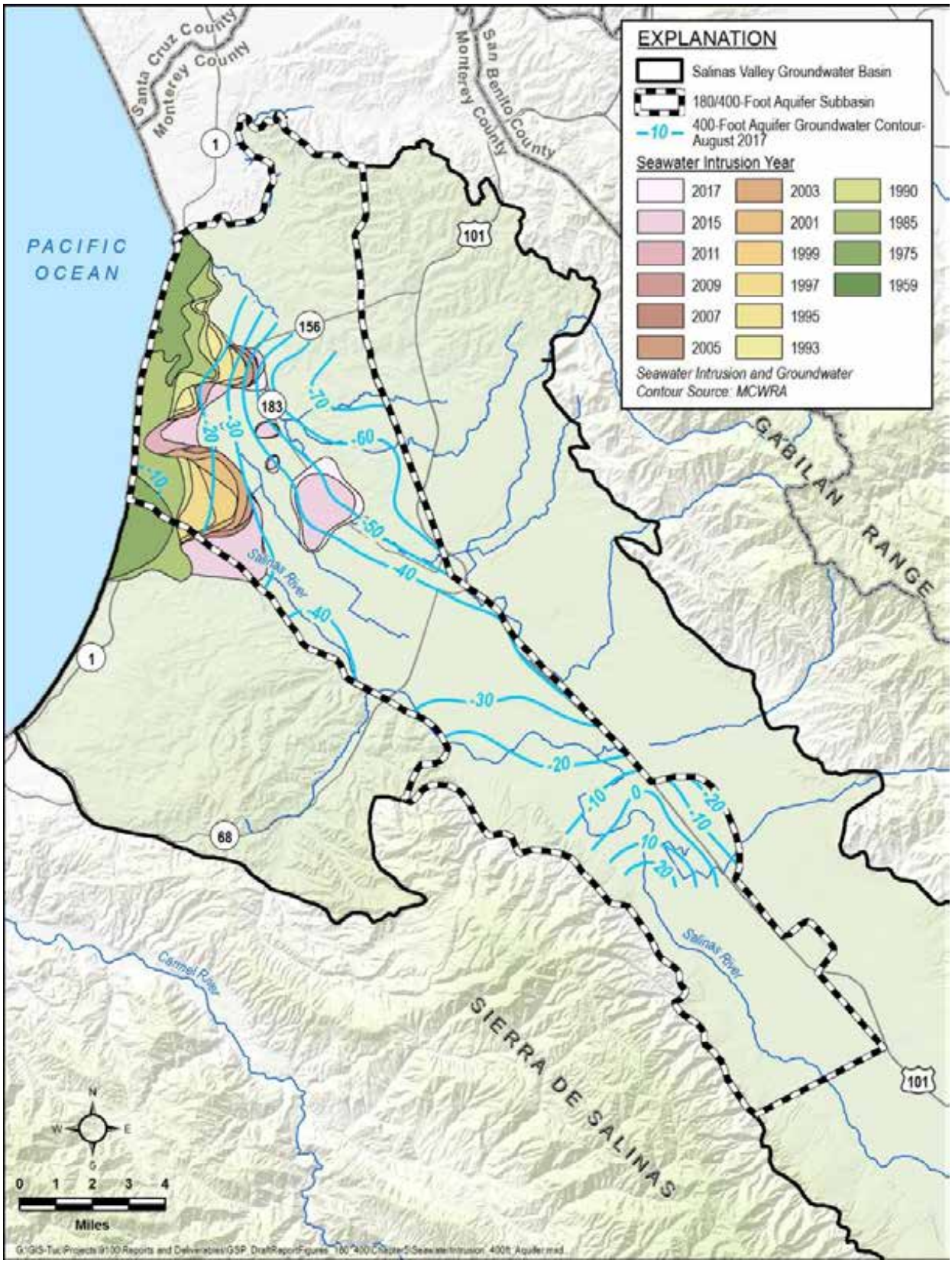


Figure 5-27. Seawater Intrusion in the 400-Foot Aquifer
(from MCWRA)

Figure 5-26 and Figure 5-27 also present the mapped August 2017 groundwater elevations for the 180-Foot Aquifer and the 400-Foot Aquifer. These maps show the seasonally low groundwater elevations that drive seawater intrusion.

A cross-section showing the vertical distribution of seawater intrusion is shown on Figure 5-28. The hydrostratigraphy shown on this cross section is adapted from the *Final report, hydrostratigraphic analysis of the Northern Salinas Valley* (Kennedy-Jenks, 2004). The location of the cross-section is shown as line A-A' on Figure 5-29. The superposition of the seawater intrusion on the existing hydrostratigraphic cross-section was based on the 2017 500mg/L contour from MCWRA and recent groundwater quality data in the GSP database. The entire saturated thickness of the aquifer was assumed to be seawater intruded if any well in the aquifer indicated seawater intrusion.

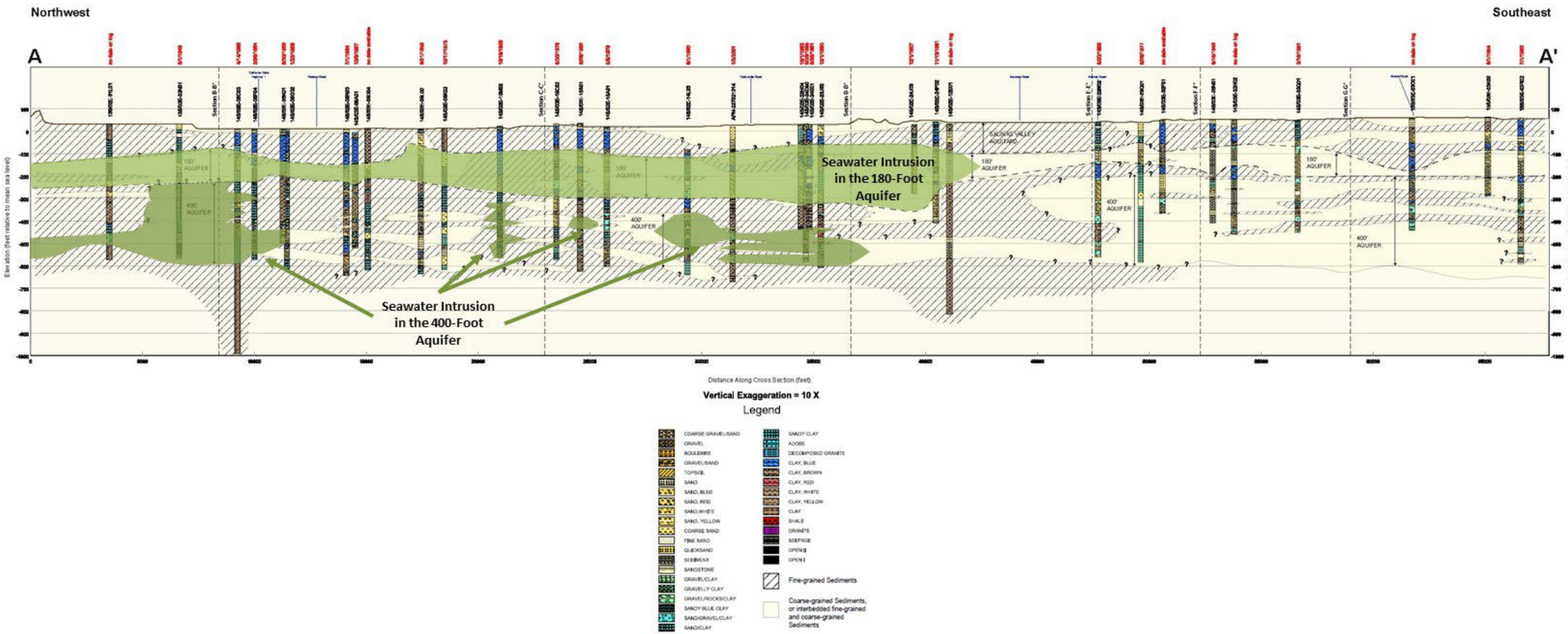


Figure 5-28. Cross-Section of Estimated Depth of Seawater Intrusion Based on Mapped 2017 Intrusion

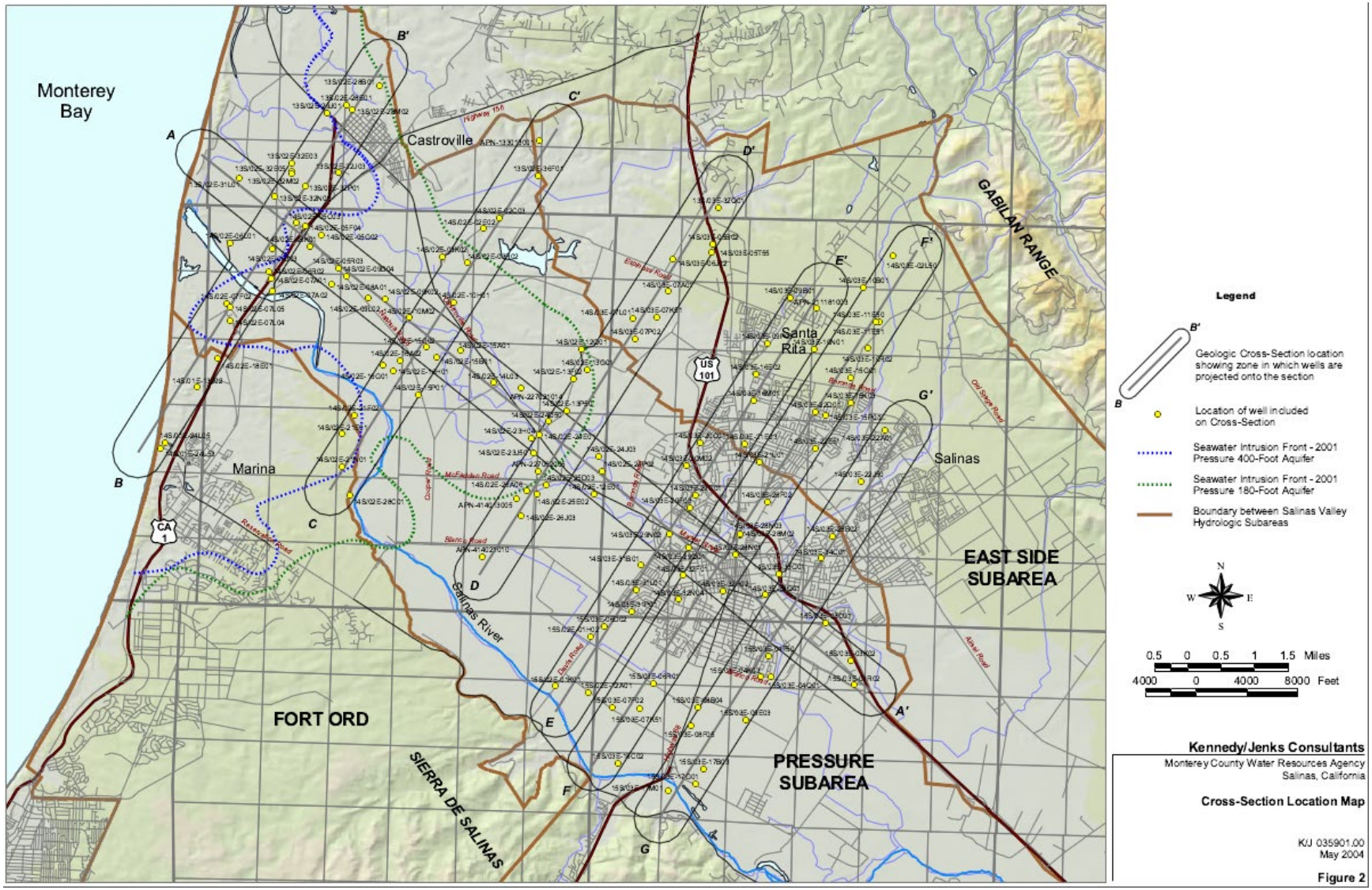


Figure 5-29. Location of Cross-Section A-A' Used for Hydrostratigraphy on Figure 5-28

5.3.3 Seawater Intrusion Rates

Figure 5-30 and Figure 5-31 present the time series graphs of the total acreage that overlies groundwater with chloride concentration greater than 500 mg/L. Figure 5-30 shows the time series of acreage overlying seawater intrusion in the 180-Foot Aquifer. In 2017 89% of this seawater intruded area was in the 180/400-Foot Aquifer Subbasin and the remainder was in the adjacent Monterey Subbasin. Figure 5-31 shows the time series of acreage overlying seawater intrusion in the 400-Foot Aquifer. In 2017, 78% of this seawater intruded area was in the 180/400-Foot Aquifer Subbasin and the remainder was in the adjacent Monterey Subbasin.

As shown on Figure 5-30, seawater intrusion into the 180-Foot Aquifer covered approximately 20,000 acres in 1995 and had expanded to approximately 28,000 acres by 2010. Since then, the rate of expansion has decreased, with an overlying area of 28,300 acres in 2017.

The area overlying intrusion into the 400-Foot Aquifer is not as extensive, with an overlying area of approximately 12,000 acres in 2010. However, between 2013 and 2015, the 400-Foot Aquifer experienced a significant increase in the area of seawater intrusion, from approximately 12,500 acres to approximately 18,000 acres. This apparent rapid increase in this area is likely the result of localized downward migration of high chloride groundwater from the 180-Foot Aquifer to the 400-Foot Aquifer. The process of downward migration between aquifers may be in part attributed to wells that are screened across both aquifers, discontinuous aquitards, or improperly abandoned wells. Regardless of the specific pathways, the presence of vertical downward hydraulic gradients from the 180-Foot Aquifer to the 400-Foot Aquifer presents a risk that eventually the intruded area of the 400-Foot Aquifer will be as large as that of the 180-Foot Aquifer.

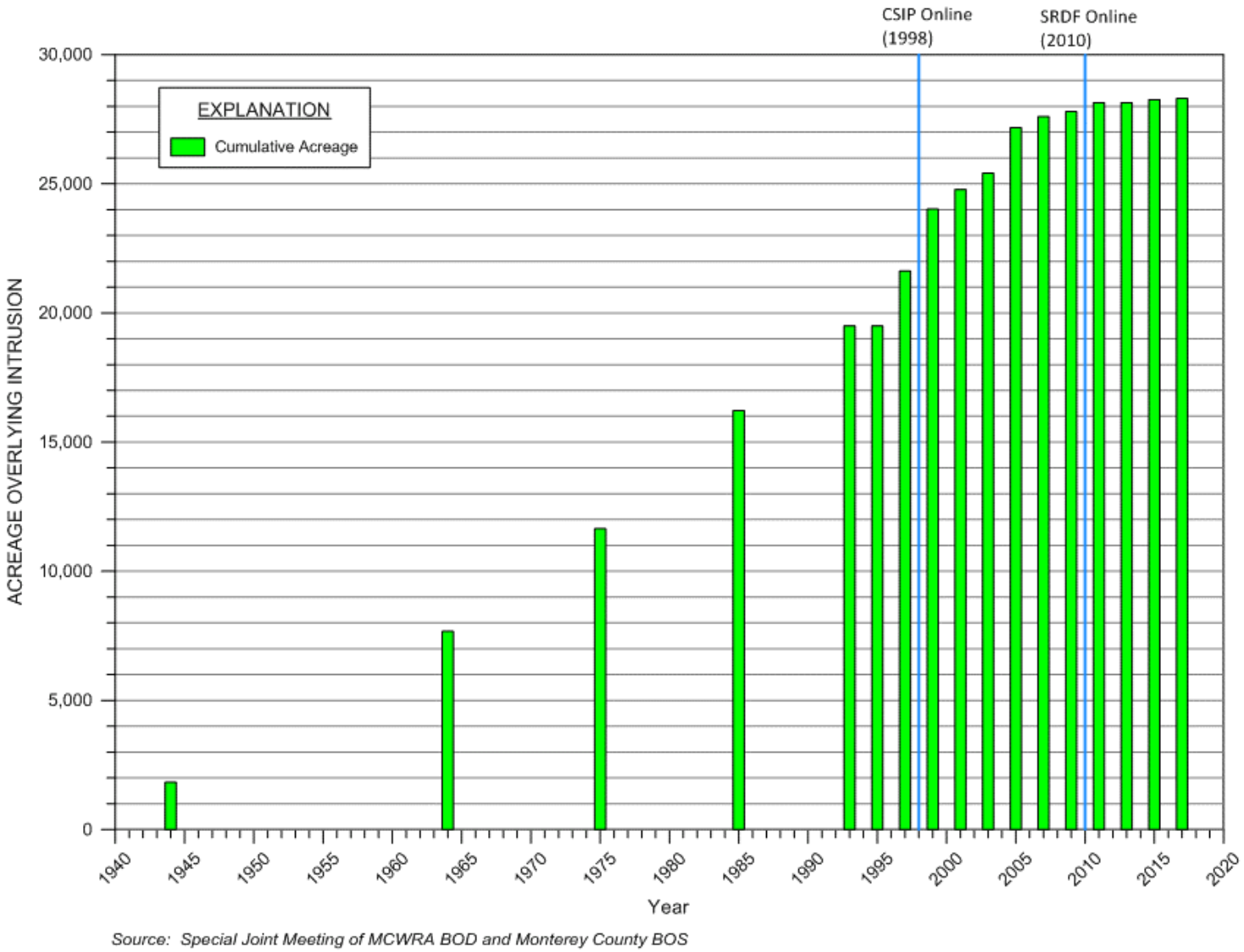


Figure 5-30. Acreage Overlying Seawater Intrusion in the 180-Foot Aquifer
(created with data from MCWRA)

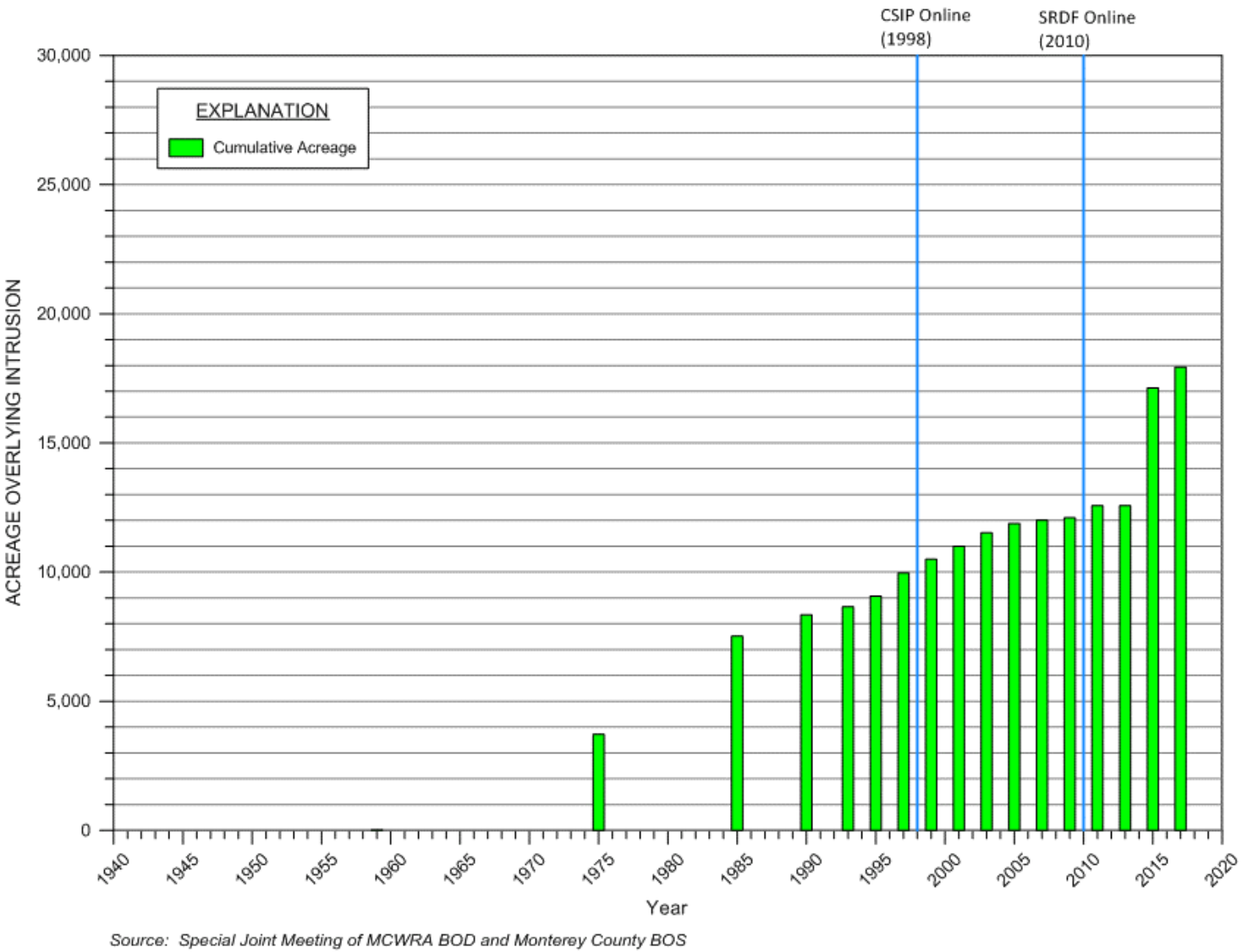


Figure 5-31. Acreage Overlying Seawater Intrusion in the 400-Foot Aquifer
(created with data from MCWRA)

Seawater intrusion has not been reported in the Deep Aquifers. However, due to concern over this risk, the County has a current moratorium under its Ordinance 5303 on the construction of new wells in the Deep Aquifers beneath the areas impacted by seawater intrusion.

The volume of seawater flowing into the Subbasin every year does not strictly correspond to the acreages overlying the seawater-intruded area that are shown on Figure 5-30 and Figure 5-31. As the seawater intrusion front approaches pumping depressions, the front will slow down and stop at the lowest point in the pumping depression. The seawater intrusion front will then appear to stop; and no more acreage will be added every year. However, seawater will continue to flow in from the ocean towards the pumping depression.

The *State of the Salinas River Groundwater Basin* report estimated that approximately 11,000 acre-feet of seawater flows into the Pressure subarea every year. Previous estimates have ranged between 14,000 and 18,000 AF/yr. of seawater intrusion (Brown and Caldwell, 2016). These seawater inflow estimates include portions of the Monterey Subbasin. The length of coastline subject to seawater intrusion is approximately 75% in the 180/400-Foot Aquifer Subbasin and therefore this GSP estimates the flow into the 180/400-Foot Aquifer Subbasin is between 8,250 and 13,500 AF/yr. This analysis adopts a middle value of 10,500 AF/yr.

5.4 Groundwater Quality Distribution and Trends

This section presents a summary of current groundwater quality conditions. The SVBGSA does not have regulatory authority over groundwater quality and is not charged with improving groundwater quality in the Salinas Valley Groundwater Basin. Projects and actions implemented by the SVBGSA are not required to improve groundwater quality; however, they must not further degrade groundwater quality.

5.4.1 Data Sources

Groundwater quality samples have been collected and analyzed in the Subbasin for various studies and programs. Groundwater quality samples have also been collected on a regular basis for compliance with regulatory programs. In particular, a broad survey of groundwater quality was conducted in 2015 by the CCGC (CCGC, 2015).

Groundwater quality in the Salinas Valley Groundwater Basin and adjacent areas was evaluated by the USGS in two studies under the Groundwater Ambient Monitoring and Assessment Program (GAMA) - a statewide groundwater quality monitoring program established in 2000 by the California State Water Resources Control Board (SWRCB). The USGS investigated water quality in groundwater used for public supply, and in the shallower zones used for domestic wells (USGS, 2005; Burton and Wright, 2018). These GAMA projects sampled 22 wells in the 180/400-Foot Aquifer Subbasin; and the samples were analyzed for up to 270 constituents and water-quality indicators including volatile organic compounds (VOCs), pesticides, pesticide

degradates, nutrients, major and minor ions, trace elements, radioactivity, microbial indicators, dissolved noble gases, and naturally occurring isotopes (USGS, 2005). In addition, through the voluntary GAMA Domestic Well Project, 10 domestic wells in the 180/400-Foot Aquifer Subbasin were sampled for 208 constituents, including volatile organic compounds, pesticides, trace elements, isotopic tracers, and radioactivity. All quality-assured data collected for the GAMA Program are publicly available through the USGS National Water Information System (NWIS) web interface (http://waterdata.usgs.gov/ca/nwis/) and the SWRCB GeoTracker groundwater information system (https://geotracker.waterboards.ca.gov/gama/) (Burton and Wright, 2018).

5.4.2 Point Sources of Groundwater Pollutants

Because of overlapping agency responsibilities, clean-up and monitoring of point source pollutants may be under the responsibility of either the Regional Board or the California State Department of Toxic Substances Control (DTSC). The Regional Board and DTSC make all related materials available to the public through two public portals: GeoTracker (https://geotracker.waterboards.ca.gov/) managed by the Regional Board and Envirostor (https://www.envirostor.dtsc.ca.gov/public/) managed by DTSC.

Table 5-2 provides a summary of the active clean-up sites, and Figure 5-32 presents a map with the location of active clean-up sites within the Subbasin. Table 5-2 does not include sites that have leaking underground storage tanks, which are not overseen by DTSC or the Regional Board.

Table 5-2. Active Cleanup Sites

Label	Site Name	Site Type	Status	Constituents of Concern (COCs)	Address	City
1	Dynegy Moss Landing	Corrective Action	Active	metals, petroleum, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs)	Highway 1 & Dolan Road	Moss Landing
2	Moss Landing Power Plant	Cleanup Program Site	Open - Verification Monitoring	metals/heavy metals, petroleum/fuels/oils, polynuclear aromatic hydrocarbons, volatile organic compounds (VOCs)	Highway 1 & Dolan Road	Moss Landing
3	National Refractories (Former)	Cleanup Program Site	Open - Remediation	chromium, trichloroethylene (TCE)	7697 California Highway 1	Moss Landing
4	Union Pacific Railroad - Salinas Yard	Cleanup Program Site	Open - Verification Monitoring	petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), naphthalene, VOCs, metals	Rico and West Lakes Streets	Salinas
5	Toro Petroleum-Agt	Cleanup Program Site	Open - Verification Monitoring	benzene, petroleum hydrocarbons	308 West Market Street	Salinas
6	Pacific Gas & Electric (PG&E), Salinas Manufactured Gas Plant (MPG)	Voluntary Cleanup	Active	cyanide, metals, contaminated soil, hydrocarbon mixtures	2 Bridge Street	Salinas
7	Borina Foundation	Cleanup Program Site	Open - Remediation contaminated soil was excavated in 2013. Soil vapor extraction remedy is operating to treat soil gas	halogenated volatile organic compounds (VOCs) in soil and soil gas	110-124 Abbott Street	Salinas
8	Crop Production Services, Inc. - Salinas	Cleanup Program Site	Open - Remediation Pump and treat system in place	nitrate, pesticides in shallow areas	1143 Terven Avenue	Salinas
9	Pure-Etch Co	Corrective Action	Active - dual phase extraction remedy implemented	benzene, ethylbenzene, petroleum hydrocarbon-gas, toluene, xylenes	1031 Industrial Street	Salinas
10	NH3 Service Company	Cleanup Program Site	Open - Verification Monitoring Pump and treat system in place	nitrate	945 Johnson Avenue	Salinas
11	Firestone Tire (Salinas Plant)	National Priorities List	Delisted	1,2-dichloroethylene (DCE), tetrachloroethylene (PCE)	340 El Camino Real South	Salinas

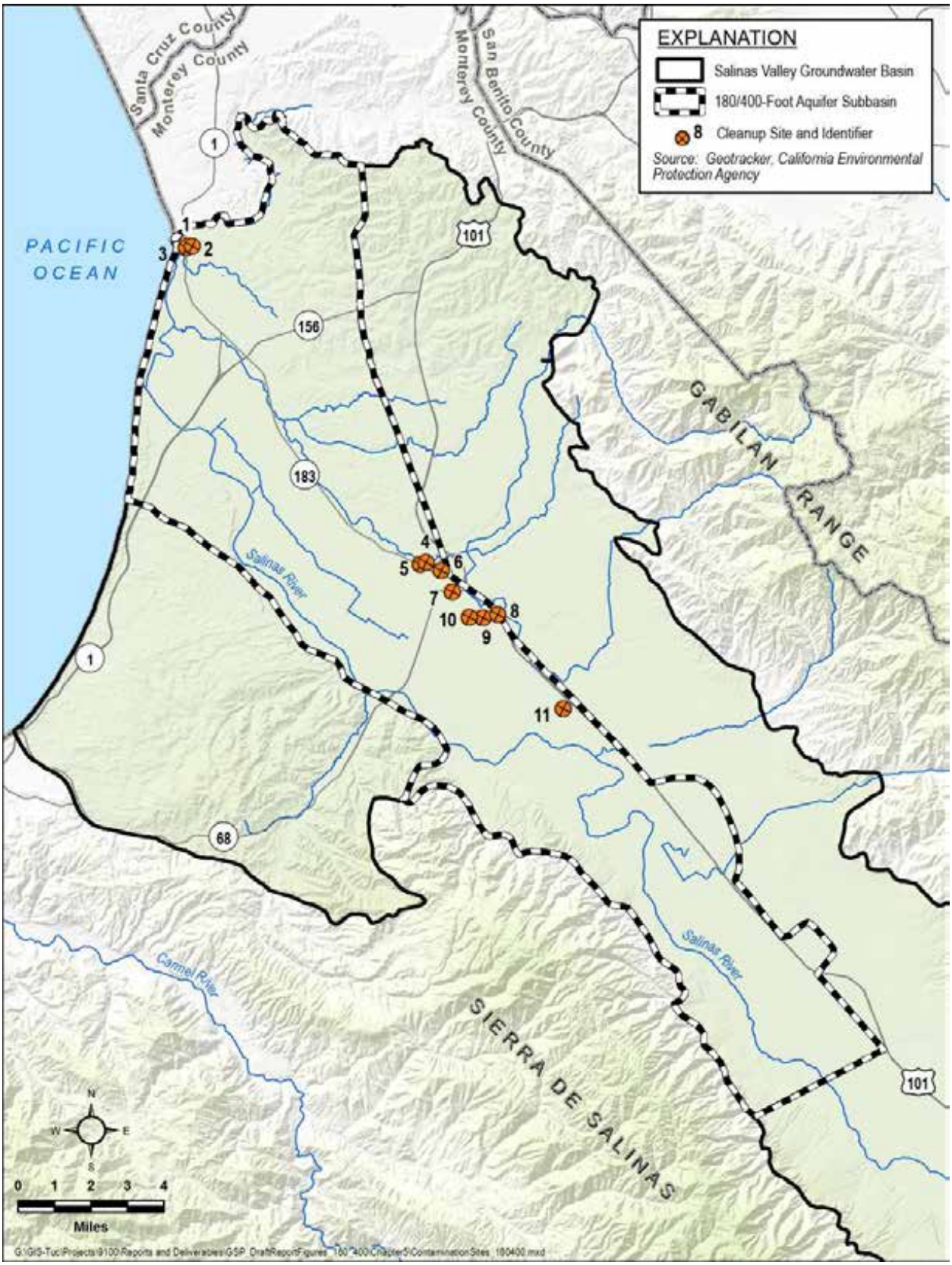


Figure 5-32. Active Cleanup Sites

5.4.3 Distribution and Concentrations of Diffuse or Natural Groundwater Constituents

In addition to the point sources described above, the Regional Board monitors and regulates activities and discharges that can contribute to non-point pollutants, which are constituents that are released to groundwater over large areas. In the Subbasin, the most prevalent non-point source water quality concern is nitrate. The current distribution of nitrate was extensively monitored and evaluated by the CCGC and documented in a report submitted to the CCRWQCB (CCGC, 2015).

Figure 5-33 presents a map of nitrate distribution in the Subbasin prepared by CCGC (2015) and included in the report prepared for CCGC. This map is a focused portion of a larger map that covers the entire Salinas Valley Groundwater Basin. The blurry quality of this map results from zooming in on a small portion of the original map. The orange and red areas illustrate the portions of the Subbasin where groundwater has nitrate concentrations above 45 mg/L as NO_3. This is equivalent to the MCL for drinking water and the Basin Plan W**a**ter Quality Objective set by the Regional Board.

Figure 5-34 presents maps of measured nitrate concentration from six decades of monitoring for the entire Salinas Valley Groundwater Basin. These maps, prepared by MCWRA, indicate that elevated nitrate concentrations in groundwater were locally present through the 1960s, but significantly increased in 1970s and 1980s. It appears that the extensive distribution of nitrate concentrations above the MCL as shown on Figure 5-33 has been present for 20 to 30 years.

A May 2018 staff report to the CCRWQCB included a summary of nitrate concentrations throughout the Central Coast Region, including the Salinas Valley Groundwater Basin. This staff report includes data from 2008 to 2018 collected at 2,235 wells in the Salinas Valley Groundwater Basin, during Ag Orders 2.0 and 3.0 sampling events. As summarized in this staff report, “nitrate exceeded the primary MCL in 20 percent of all groundwater wells sampled [Valley-wide].” Data were summarized by groundwater basin/subbasin and well type:

- On-farm domestic wells: tend to be of shallower depths and represents water used for domestic drinking water supply
- Irrigation supply wells: tend to be of intermediate depths and represents water used for primarily for agricultural supply beneficial uses.

Specifically, 26 percent of On-Farm Domestic Wells in the Subbasin exceeded the MCL with a mean concentration of 11.9 mg/l NO3-N. In addition, the 21 percent of Irrigation Supply Wells in the Subbasin exceeded the MCL with a mean concentration of 6.7 mg/l NO3-N (CCRWQCB, 2018).

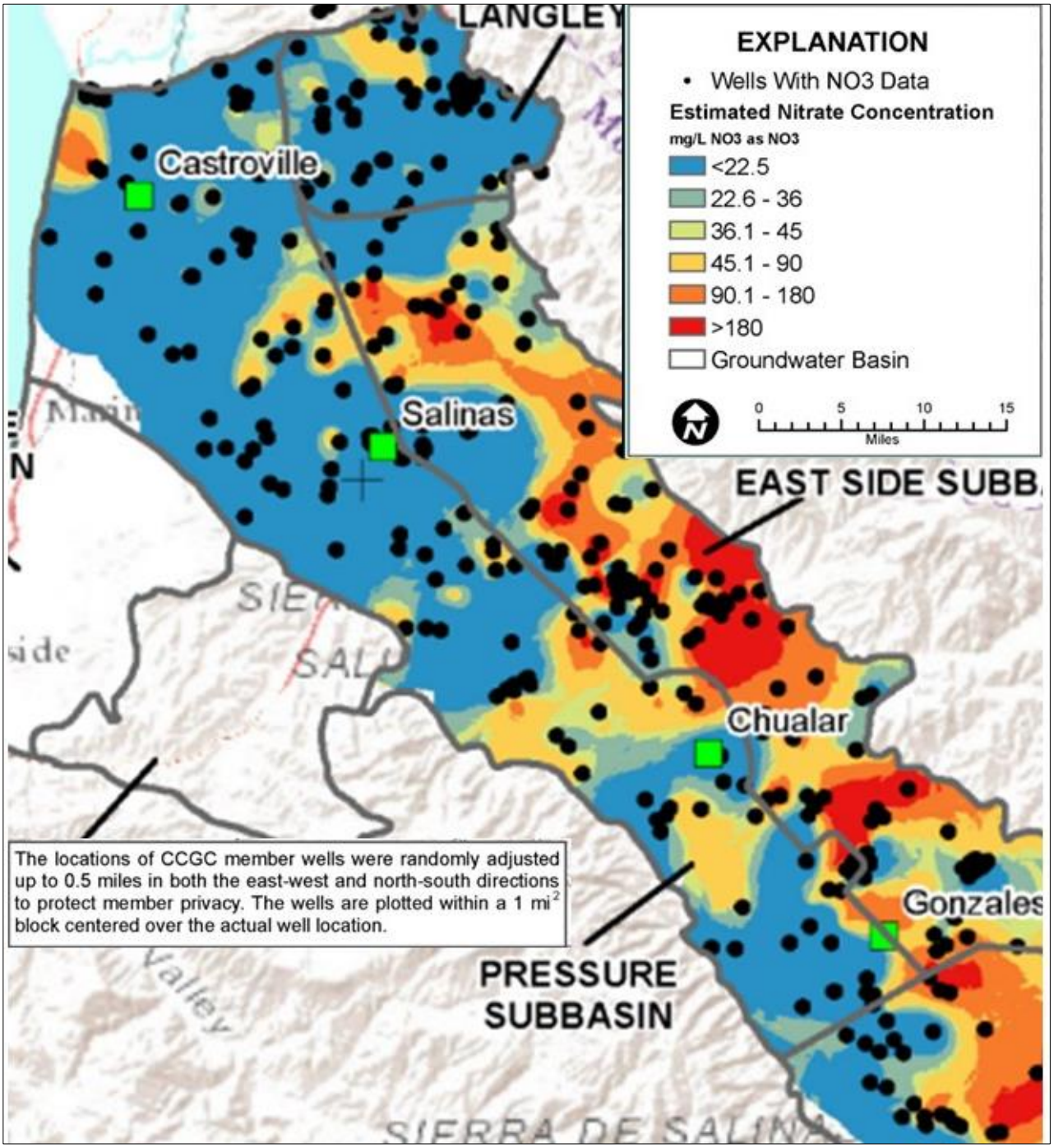


Figure 5-33. Estimated Nitrate Concentrations
(from CCGC, 2015)

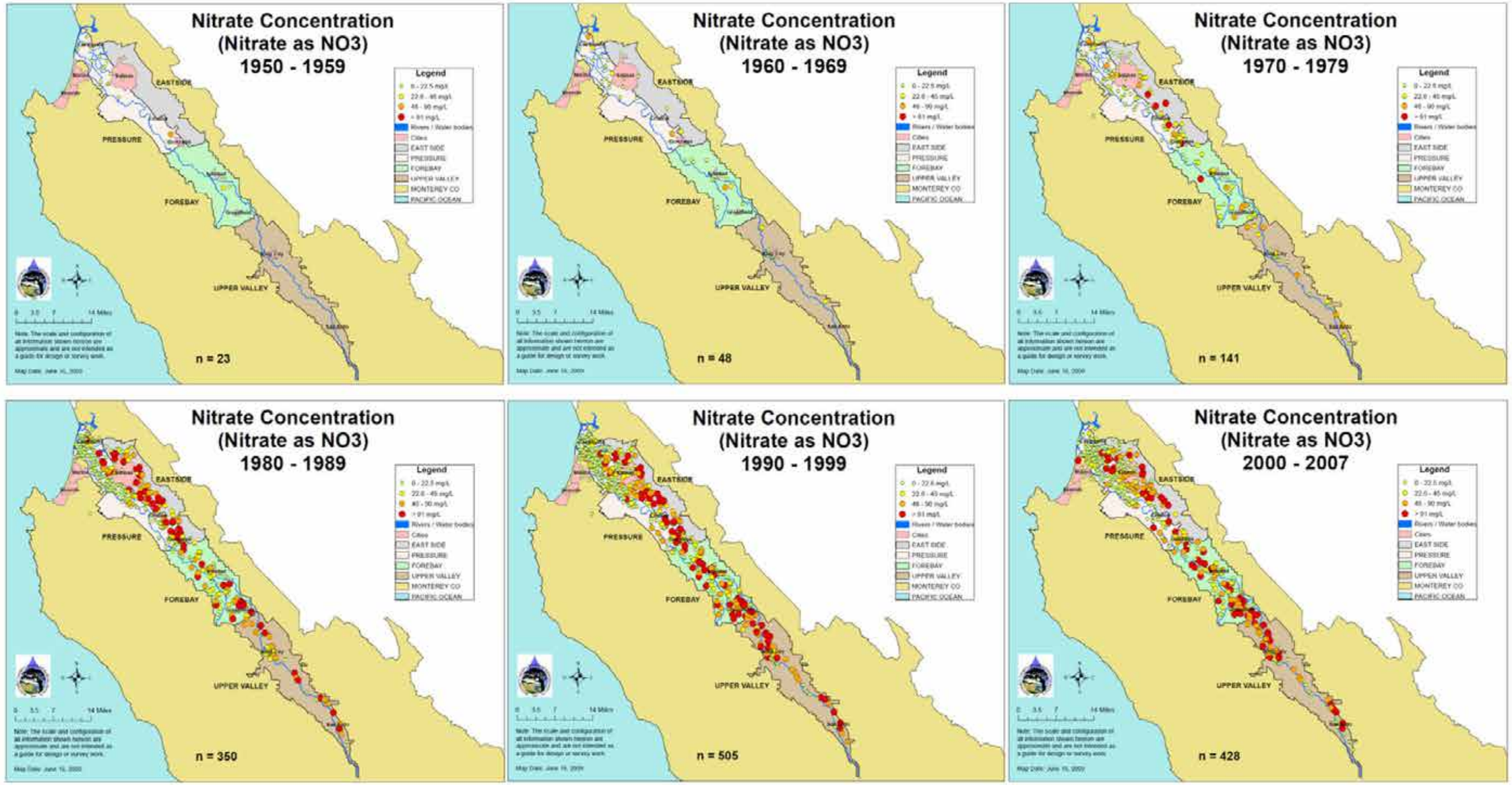


Figure 5-34. Nitrate Concentrations, 1950 to 2007
(from MCWRA)

Additional groundwater quality conditions in the basin are summarized below based on the two USGS water quality studies for the GAMA Priority Basin Project in the Salinas Valley Groundwater Basin (USGS, 2005; Burton and Wright, 2018) as well as data from the GAMA Domestic Well Project.

The 2005 GAMA study in Salinas Valley characterized deeper groundwater resources used for public water supply (USGS, 2005). The 2018 GAMA study characterized shallower groundwater resources used primarily as a water supply for domestic wells (Burton and Wright, 2018). A total of 22 wells were sampled in the 180/400-Foot Aquifer Subbasin for these two studies. Out of the 270 constituents analyzed, one constituent was detected at concentrations above the MCL and two constituents were detected at concentrations above the secondary maximum contaminant level (SMCL), which are levels set for aesthetic rather than health-based reasons.

- Nitrate was detected in 100% of the 19 samples analyzed for nitrate. Nitrate concentrations above the MCL of 10 mg/L as N occurred in 32% of these samples
- Total dissolved solids were detected at concentrations above the SMCL of 1,000 mg/L in 26% of 19 samples
- Chloride was detected at concentrations above the SMCL of 500 mg/L in 11% of 19 samples

Groundwater samples for the GAMA Domestic Well Project were collected from 10 wells in the 180/400-Foot Aquifer Subbasin on a voluntary basis in 2011. Samples were analyzed for 208 constituents, including volatile organic compounds, pesticides, trace elements, isotopic tracers, and radioactivity. Five constituents were detected at concentrations above the MCL: cadmium, thallium, fluoride, perchlorate, and nitrate. Iron and manganese were detected at concentrations above the SMCL.

- Cadmium was detected in 2 of 10 wells. One sample had concentrations above the MCL of 5 micrograms per liter (µg/L)
- Thallium was detected in 5 of 10 wells. One sample had concentrations above the MCL of 2 µg/L
- Fluoride was detected in 5 of 10 wells. One sample had concentrations above the MCL of 2 mg/L
- Perchlorate was detected in 8 of 10 wells. One sample had concentrations above the MCL of 6 µg/L
- Nitrate was detected in 9 of 10 wells. One sample had concentrations above the MCL of 10 mg/L
- Iron was detected in 7 of the 10 wells. One sample had concentrations above the SMCL of 300 µg/L

- Manganese was detected in 5 out of 10 wells. Two samples had concentrations above the SMCL of 50 (µg/L)

Of these constituents, most were detected at concentrations above regulatory limits in a small percentage of the sampled wells (<10%). Since constituents with low detection frequency do not represent groundwater quality issues throughout the entire Subbasin, these constituents will not be considered further in this GSP. More information can be found in the original reports (USGS, 2005; Burton and Wright, 2018) and at the GeoTracker GAMA online database (http://geotracker.waterboards.ca.gov/gama/gamamap/public/#).

The following constituents have been identified in the California Water Service Company's Salinas District wellfields: nitrate, Methyl tert-butyl ether (MTBE), and hexavalent chromium (Cr(VI)). Six of Cal Water's wells have been placed on inactive status due to water quality issues (California Water Service, 2016). Wellhead treatment is used to reduce nitrate and Cr(VI) concentrations to levels that meet applicable standards. Cal Water is currently in compliance with the USEPA standard for arsenic (10 ppb) but may be impacted if the standard is lowered to 5 ppb (California Water Service, 2016).

5.4.4 Groundwater Quality Summary

Based on the water quality information presented in the previous sections, the following constituents have been identified above levels of concern in the Subbasin and will be considered for inclusion in the GSP monitoring program:

- 1,2,3-trichloropropane
- arsenic
- cadmium
- chloride
- fluoride
- hexavalent chromium
- iron
- manganese
- methyl tert-butyl ether
- nitrate
- perchlorate
- TDS
- thallium

The monitoring system is further defined in Chapter 7. The constituents listed above are the constituents of concern for all aquifers in the 180/400-Foot Aquifer Subbasin.

5.5 Subsidence

Land subsidence is the lowering of the ground surface elevation. This is often caused by pumping below thick clay layers. Land subsidence can be elastic or inelastic. Inelastic subsidence is generally irreversible. Elastic subsidence is small, reversible lowering and rising of the ground surface.

5.5.1 Data Sources

DWR has made Interferometric Synthetic Aperture Radar (InSAR) satellite data available on their SGMA Data Viewer web map to estimate subsidence. These are the only data used for estimating subsidence in this GSP.

5.5.2 Subsidence Mapping

Figure 5-35 presents a map showing the InSAR subsidence data in the 180/400-Foot Aquifer between June 2015 and June 2018. The yellow area on the map is the area with measured changes in ground elevation of between -0.1 and 0.1 feet. As discussed in Section 8.10, because of measurement error in this methodology, any measured ground level changes between -0.1 and 0.1 feet is considered the area of no subsidence. The white areas on the map are areas with no data available. The map shows that no measurable subsidence has been recorded anywhere in the 180/400-Foot Aquifer Subbasin between June 2015 and June 2018.

The 180/400-Foot Aquifer Subbasin is one of two subbasins in the Salinas Valley Groundwater Basin that has geologic conditions that may make it susceptible to subsidence if groundwater elevations drop below historical lows. The geology that may cause subsidence is the thick clay units that define the confining layers in the Subbasin. Most of the pumping in this area occurs below these clay layers, potentially inducing subsidence. However, seawater intrusion has kept groundwater elevations relatively stable and no subsidence has been observed.

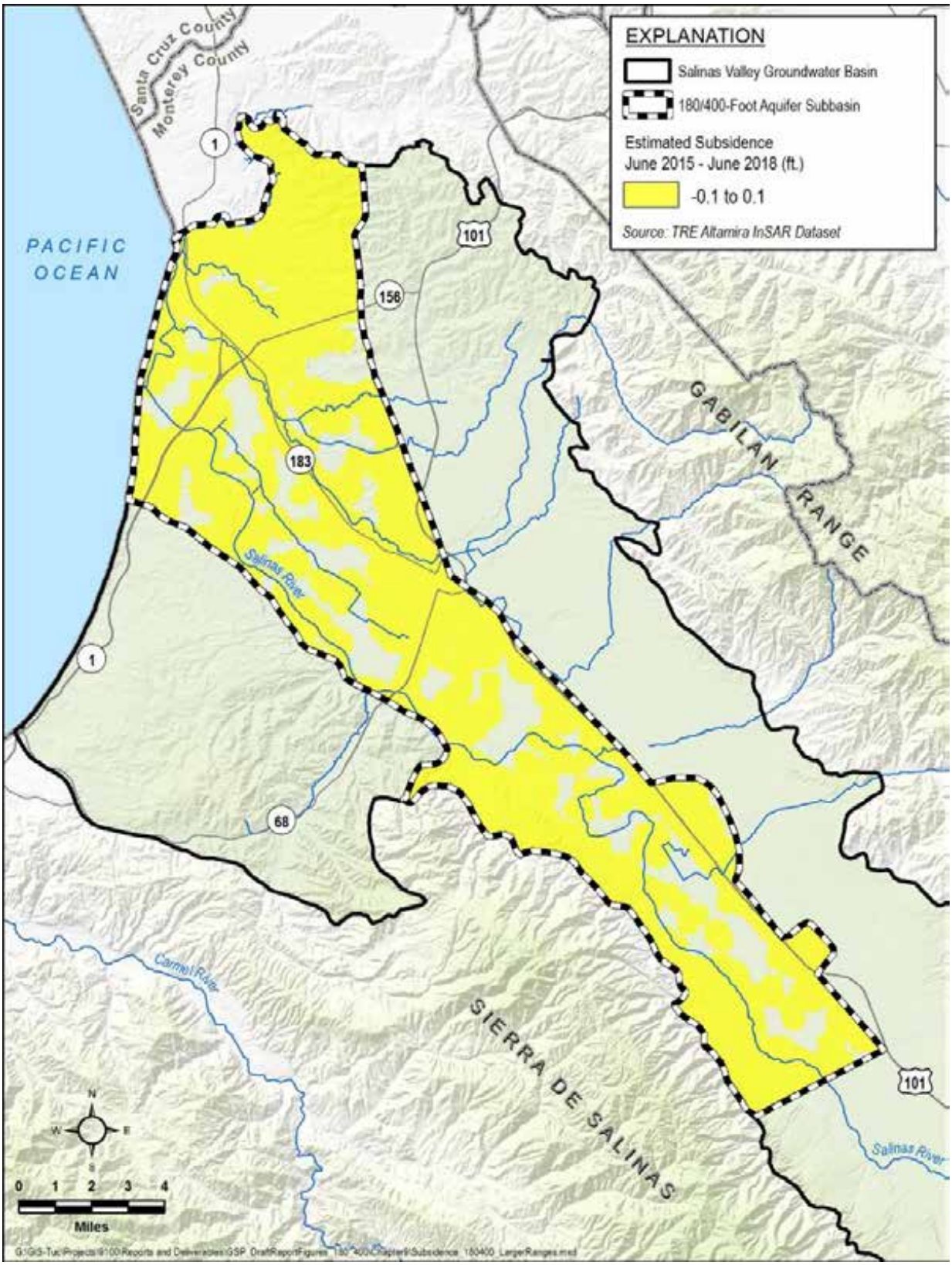


Figure 5-35. Estimated InSAR Subsidence in Subbasin
(created with data from DWR, 2019)

5.6 Interconnected Surface Water

Surface water that is connected to the groundwater flow system is referred to as interconnected surface water. If the groundwater elevation is higher than the water level in the stream, the stream is said to be a gaining stream because it gains water from the surrounding underlying groundwater. If the groundwater elevation is lower than the water level in the stream, it is termed a losing stream because it loses water to the surrounding groundwater flow system. If the groundwater elevation is below the streambed elevation, the stream and groundwater are considered to be disconnected. SGMA does not require that disconnected stream reaches be analyzed or managed. These concepts are illustrated on Figure 5-36.

5.6.1 Data Sources

The primary characteristic of the 180/400-Foot Aquifer Subbasin is the presence of the Salinas Valley Aquitard – a shallow laterally extensive clay layer that effectively separates the Salinas River from the underlying aquifers. As mentioned in Chapter 4, this aquitard is not completely continuous, and there are locations where the 180-Foot Aquifer may be in hydraulic connection with overlying sediments. However, groundwater in the 180- and 400-Foot Aquifers is generally not considered to be hydraulically connected to the Salinas River or its tributaries. This aspect of the 180/400-Foot Aquifer Subbasin has been well documented in multiple independent studies (DWR, 1946; DWR, 2018; Durbin, et al., 1978; Kennedy-Jenks, 2004).

There is evidence that the shallow sediments which occur above the Salinas Valley Aquitard are connected to the surface water system. However, there is limited groundwater pumping in this area and it is not identified as a principal aquifer (see Chapter 4).

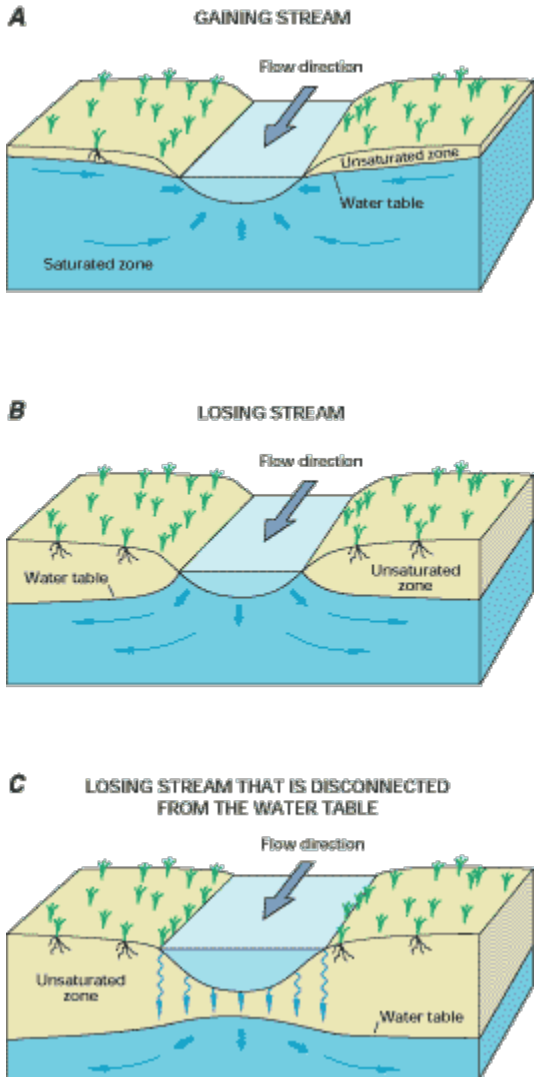


Figure 5-36. Conceptual Representation of Interconnected Surface Water (Winter, et al., 1999)

5.6.2 Analysis of Surface Water and Groundwater Interconnection

Even with the physical clay barrier between surface water and the 180-Foot Aquifer; an additional evaluation of the connection between surface water and the 180-Foot Aquifer is warranted. An additional check on the potential locations of interconnected surface waters was conducted by reviewing depth to groundwater data. If the depth to groundwater is less than 20 feet, it is possible that groundwater and the surface water are interconnected.

To document this relationship, groundwater elevations measured in the fall of 2013 in the 180-Foot Aquifer were compared to ground surface elevations to estimate the depth to groundwater. Fall 2013 was selected because it is a recent year with groundwater elevations mapped by MCWRA that does not represent the end of a drought period. For this analysis, any area with a depth to groundwater of less than 20 feet is assumed to be an area of potentially interconnected surface water. Figure 5-37 presents the results of that analysis and shows that groundwater in the 180-Foot Aquifer is greater than 20 feet below ground surface in most of the 180/400-Foot Subbasin.

For areas of the Subbasin that are connected to surface water, a detailed analysis of hydraulic connection is required. There are two limited areas where the depth to groundwater in 2013 was less than 20 feet below ground surface: the northern end of the Subbasin where the Salinas River discharges into the Monterey Bay and near the southern boundary of the Subbasin adjacent to the Salinas River. These areas may require additional evaluation of hydraulic interaction, which will be possible with the USGS SVIHM model once it is made publicly available.

This identification of interconnected surface water is supported by previous numerical groundwater modeling conducted by Durbin *et. al* (1978). Figure 5-38 is a profile of the Salinas Valley Groundwater Basin showing simulated groundwater elevations in May 1971 and September 1970 relative to the thalweg, or lowest point, of the Salinas River. Although this profile is developed for the entire Valley, the left side of the profile is relevant to the 180/400-Foot Aquifer Subbasin. This profile shows that between the Arroyo Seco Confluence and Spreckels, groundwater elevations have historically been much deeper than the Salinas River, indicating that the surface water is disconnected from groundwater.

This analysis of locations of interconnected surface water is based on best available data but contains significant uncertainty. Additional data are needed to reduce uncertainty and refine the map of interconnected surface waters. The main source of these data will be the Valley-wide groundwater flow model when it becomes available. Additional shallow groundwater monitoring wells may be necessary to verify groundwater elevations adjacent to surface water bodies. This is a data gap that will be addressed during GSP implementation. An evaluation of surface water depletion rates is provided in Chapter 6.

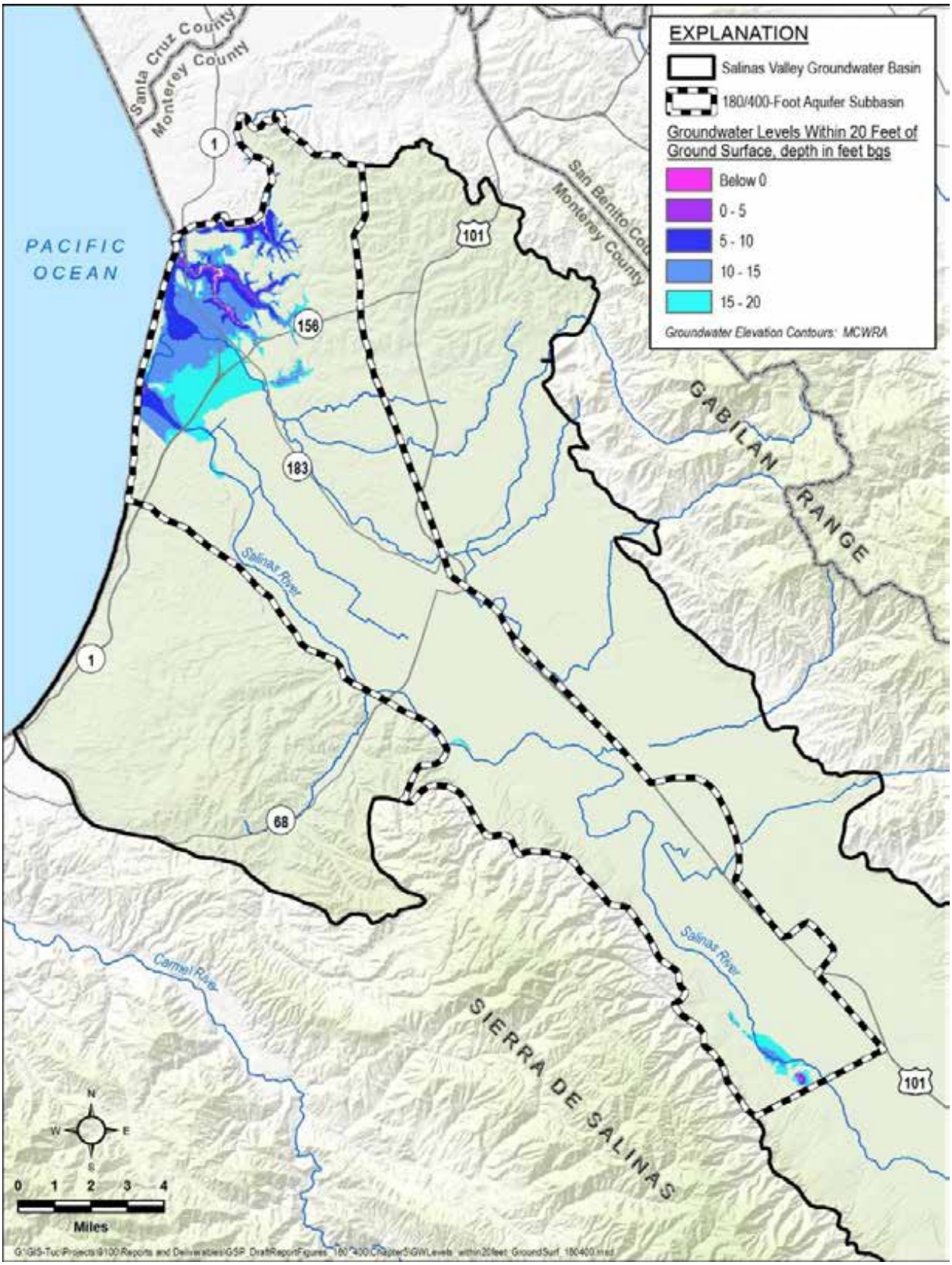


Figure 5-37. Groundwater Within 20 Feet of Land Surface

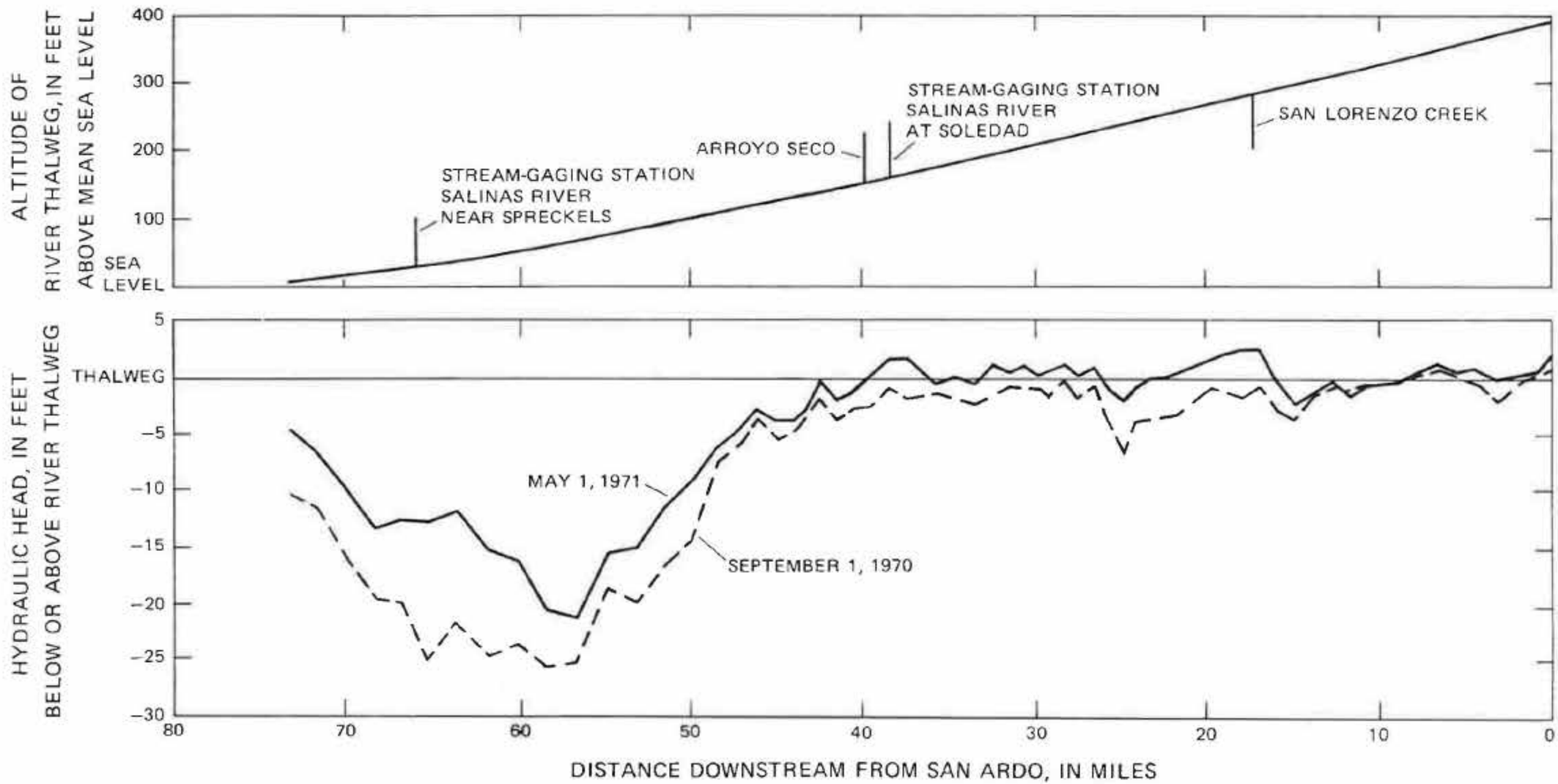


Figure 5-38. Groundwater Profiles Computed by Two-Dimensional Groundwater Model and Thalweg Profile Along the Salinas River (Durbin, et al., 1978)

6 WATER BUDGETS

This chapter summarizes the estimated water budgets for the 180/400-Foot Aquifer Subbasin, including information required by the SGMA Regulations and information that is important for developing an effective plan to achieve sustainability. In accordance with SGMA Regulations §354.18, this water budget provides an accounting and assessment of the total annual volume of surface water and groundwater entering and leaving the Subbasin, including historical, current, and projected water budgets, and the change in the volume of groundwater stored in the Subbasin. Water budgets are reported in graphical and tabular formats, where applicable. Water budget volumes are reported on a water year (October 1 to September 30) basis, unless otherwise indicated.

The water budgets presented in this chapter are based on best available data and tools. However, the limited availability of historical data results in some water budget terms having significant uncertainty. Therefore, these water budgets should be used for general guidance only and not to definitively quantify the various water budget inflows and outflows. These water budgets will be improved during GSP implementation as new data and new tools become available.

Three water budgets are included in this chapter:

- Historical water budgets cover the years 1995 to 2014
- Current water budgets cover the years 2015 to 2017
- Future water budgets cover a 47-year period simulated by the SVIHM

The three water budgets presented in this chapter - historical, current, and future - are developed using different approaches, and are therefore not directly comparable with each other. The historical and current water budgets are developed by aggregating data and analyses from previous reports and publicly available sources. The future water budget is developed from the output of the SVIHM groundwater model being developed by the USGS. Because of these different approaches, caution should be exercised when comparing historical or current water budgets to future water budgets. Once the historical groundwater model is made available by the USGS, the historical and current water budgets will be extracted from this historical model. This future update will allow the three water budgets to be based on a consistent approach.

6.1 Overview of Water Budget Chapter

This chapter is organized in sections that develop the water budgets in a structured fashion. The chapter sections are organized with the following approach:

1. Establishing the water budget components. These are the individual constituents that are estimated for each water budget.

2. Identifying the source data and quantifying each of the historical and current surface water budget components. Separate sections are included for quantifying surface water inflows and surface water outflows. The component quantification is mainly for the historical and current water budgets; future water budget quantities are extracted from the USGS's SVIHM.
3. Identifying the source data and quantifying each of the historical and current groundwater budget components. Separate sections are included for quantifying groundwater inflow and groundwater outflow components. The component quantification is mainly for the historical and current water budgets; future water budget quantities are extracted from the USGS's SVIHM.
4. Estimating the change in groundwater in storage in the Subbasin.
5. Combining the individual components into historical and current water budgets.
6. Discussing the uncertainties in the historical and current water budgets.
7. Developing a future water budget from the model output.

The water budget terms are presented in tables, graphs, and charts in this chapter. More detailed tables of annual water budget time series are presented in a series of Appendices attached to this chapter.

6.2 Water Budget Components

The water budget is an inventory of surface water and groundwater inflows into, and outflows from, the Subbasin. A few components of the water budget can be measured, such as streamflow at a gauging station or groundwater pumping from a metered well. Other components of the water budget are estimated, such as recharge from precipitation or unmetered groundwater pumping.

Figure 6-1 presents the general schematic diagram of the hydrologic cycle that is included in the water budget BMP (DWR, 2016b).

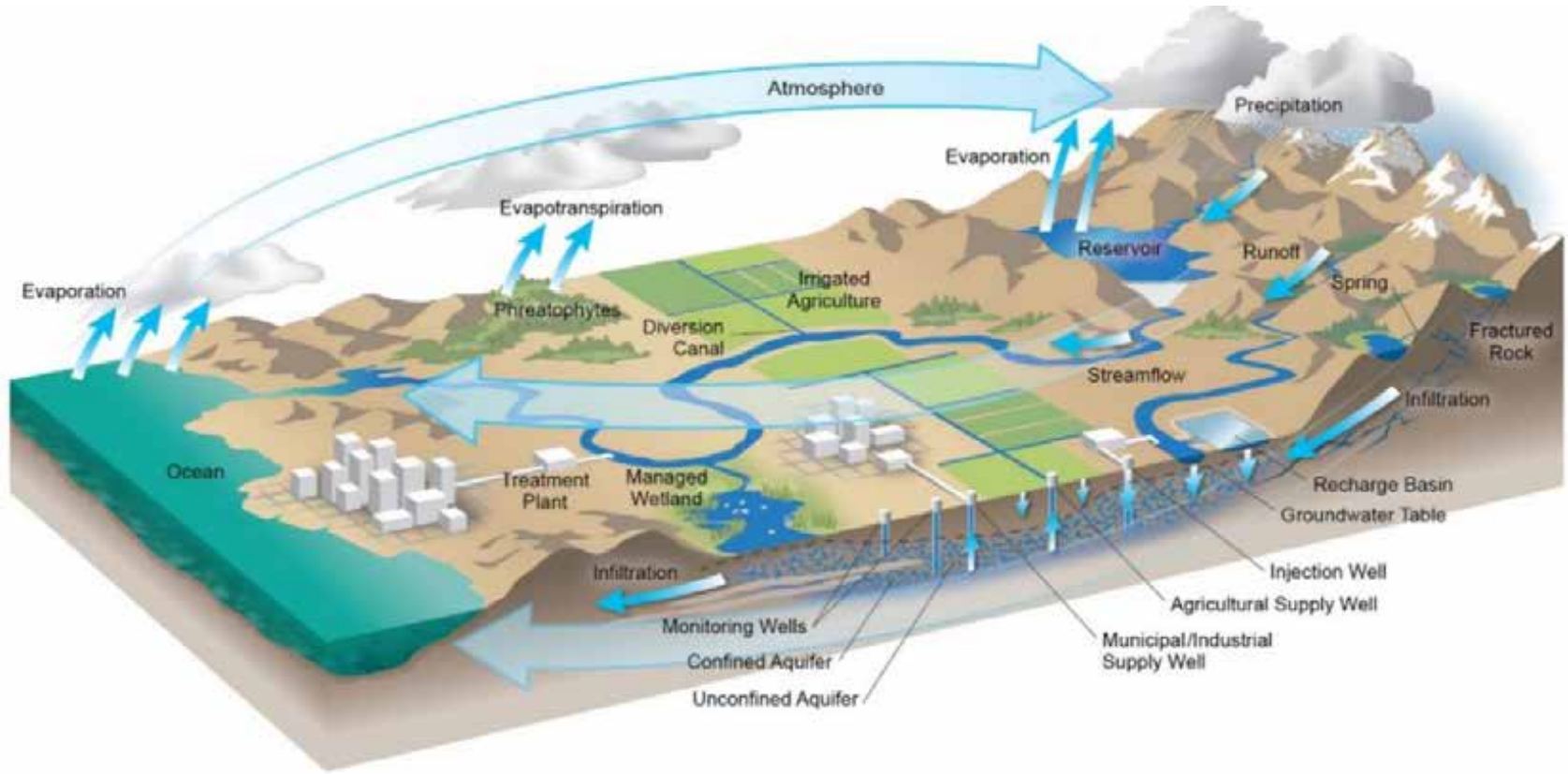


Figure 6-1. Schematic Hydrologic Cycle
(from DWR, 2016b)

The water budgets for the Subbasin are calculated within the following boundaries:

- Lateral boundaries for the water budget are the perimeter of the 180/400-Foot Aquifer Subbasin as shown on Figure 1-1.
- Bottom of the water budget is the base of the groundwater subbasin as described in Chapter 4. The water budget is not sensitive to the exact definition of this base elevation because it is defined as a depth below where there is no significant inflow, outflow, or change in storage.
- Top of the water budget is above the ground surface, so that surface water is included in the water budget.

6.2.1 Surface Water Budget Components

Within the boundaries discussed above, the surface water budget inflows include:

- Runoff from precipitation
- Salinas River inflow from the Forebay Subbasin
- Tributary inflows from the Eastside Subbasin
- Irrigation return flow to agricultural drains

The surface water budget outflows include:

- Salinas River direct diversions
- Salinas River outflow to Monterey Bay
- Outflows to Monterey Bay through the Blanco Drain and Reclamation Ditch
- Streamflow percolation to groundwater

6.2.2 Groundwater Budget Components

Within the boundaries discussed above, the groundwater budget inflows include:

- Streamflow percolation
- Deep percolation of precipitation
- Deep percolation of excess irrigation
- Subsurface inflows from adjacent subbasins

The groundwater budget outflows include:

- Groundwater pumping
- Riparian evapotranspiration
- Subsurface outflows to adjacent subbasins

6.2.3 Change in Groundwater Storage Components

Change in groundwater storage has two components in the Subbasin: change in groundwater elevation and seawater intrusion. Changes in groundwater elevation represent water gained or lost in the aquifer due to pumping and recharge. Seawater intrusion is included as a change in storage component because seawater intrusion reduces the amount of usable groundwater stored in the Subbasin.

6.3 Surface Water Inflow Data

This section quantifies each of the surface water inflow components listed in Section 6.2.1. Data are only provided for the historical and current water budgets. The future water budget is addressed in Section 6.10.

6.3.1 Runoff from Precipitation

Runoff of precipitation for the historical and current water budgets were obtained from the California Basin Characterization Model (BCM) (Flint, et al., 2013). The BCM is a physically based, high-resolution water balance model that simulates evapotranspiration, infiltration, runoff, and recharge to groundwater based on climatic records. Figure 6-2 is a schematic showing the inputs, components, and outputs of the BCM. Additional information regarding the BCM methodology can be found in its documentation.

Complete data for water year 2017 were not available from the BCM. In water year 2017, the precipitation gage at the Salinas Airport (National Oceanographic and Atmospheric Administration (NOAA) / National Weather Service (NWS) Cooperative Observer Program (COOP) Station 047669) recorded 12.77 inches of rainfall. Runoff was estimated for water year 2017 as the average of all years in the historical budget that had between 11 and 13 inches of precipitation at the Salinas Airport; including 1996, 1999, 2009, and 2014.

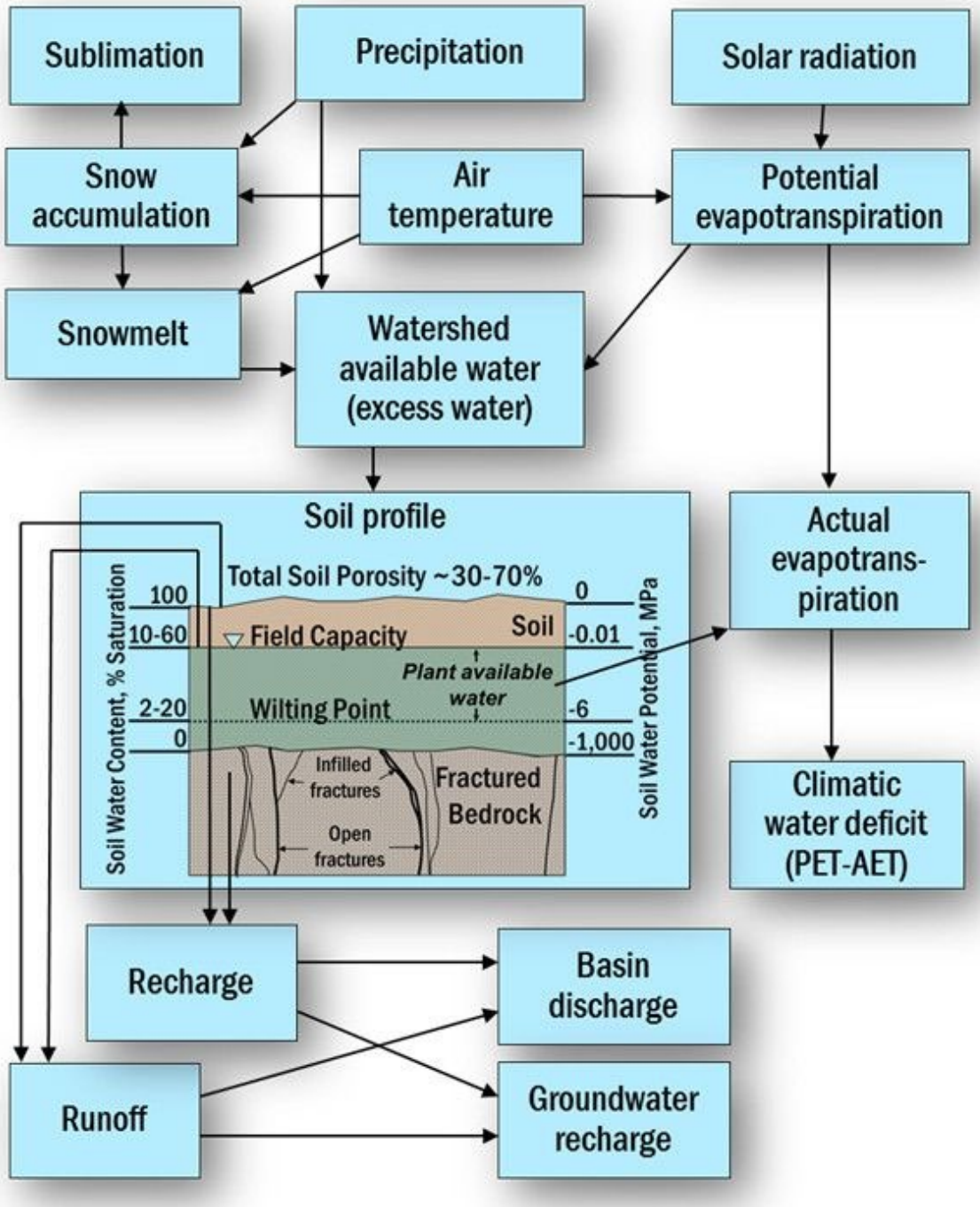


Figure 6-2. Basin Characterization Model Schematic
(Source: Flint, et al., 2013)

The BCM-reported average annual precipitation in the 180/400-Foot Aquifer Subbasin is 114,100 AF/yr. for the historical water budget period and 106,600 AF/yr. for the current water-budget period. As shown in Table 6-1, the runoff for the historical and current periods was 1,100 and 1,700 AF/yr., respectively; equivalent to approximately 1 to 2% of precipitation.

Table 6-1. Runoff from Precipitation

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)
Precipitation	114,100	106,600
Runoff from Precipitation	1,100	1,700
Runoff as % of Precipitation	1%	2%

6.3.2 Salinas River Inflow from the Forebay Subbasin

The primary surface water inflow to the 180/400-Foot Aquifer Subbasin is the Salinas River. Annual Salinas River inflow to the Subbasin at the boundary with the Forebay Subbasin was estimated by using annual flow data from three of the permanent USGS stream gauges, shown in blue on Figure 6-3, and the estimated distribution of 2017 river depletions that are summarized in a 2018 memorandum titled *2017 Salinas River Discharge Measurement Series Results in Context* (MCWRA, 2018b). The 2017 reported supplemented data from the three permanent stream gauges with data from temporary gauges shown in red on Figure 6-3. The data in this report are limited but are the best available data. As reported by MCWRA, the Salinas River depletion during September 2017 between Soledad and Gonzales, near the Subbasin boundary, was 134 cubic feet per second (cfs). The Salinas River depletion between Gonzales and the Chualar gauge was 79 cfs. Therefore, approximately 63% of the Salinas River depletion between Soledad and the Chualar gauge occurred in the Forebay Subbasin, above Gonzales; and 37% of the Salinas River depletion occurred in 180/400-Foot Aquifer Subbasin, below Gonzales.

Annual flow at the boundary between the 180/400-Foot Aquifer Subbasin and the Forebay Subbasin is therefore estimated as the annual flow at the Chualar gauge plus 37% of the loss between Soledad and Chualar. The flow at Soledad is a combination of flows from the main stem of the Salinas River and flow from the Arroyo Seco River and is estimated by combining the flows at the Salinas River Soledad gauge (#11151700) and the Arroyo Seco below Reliz Creek gauge (# 11152050). The average annual flow calculations are shown in Table 6-2.

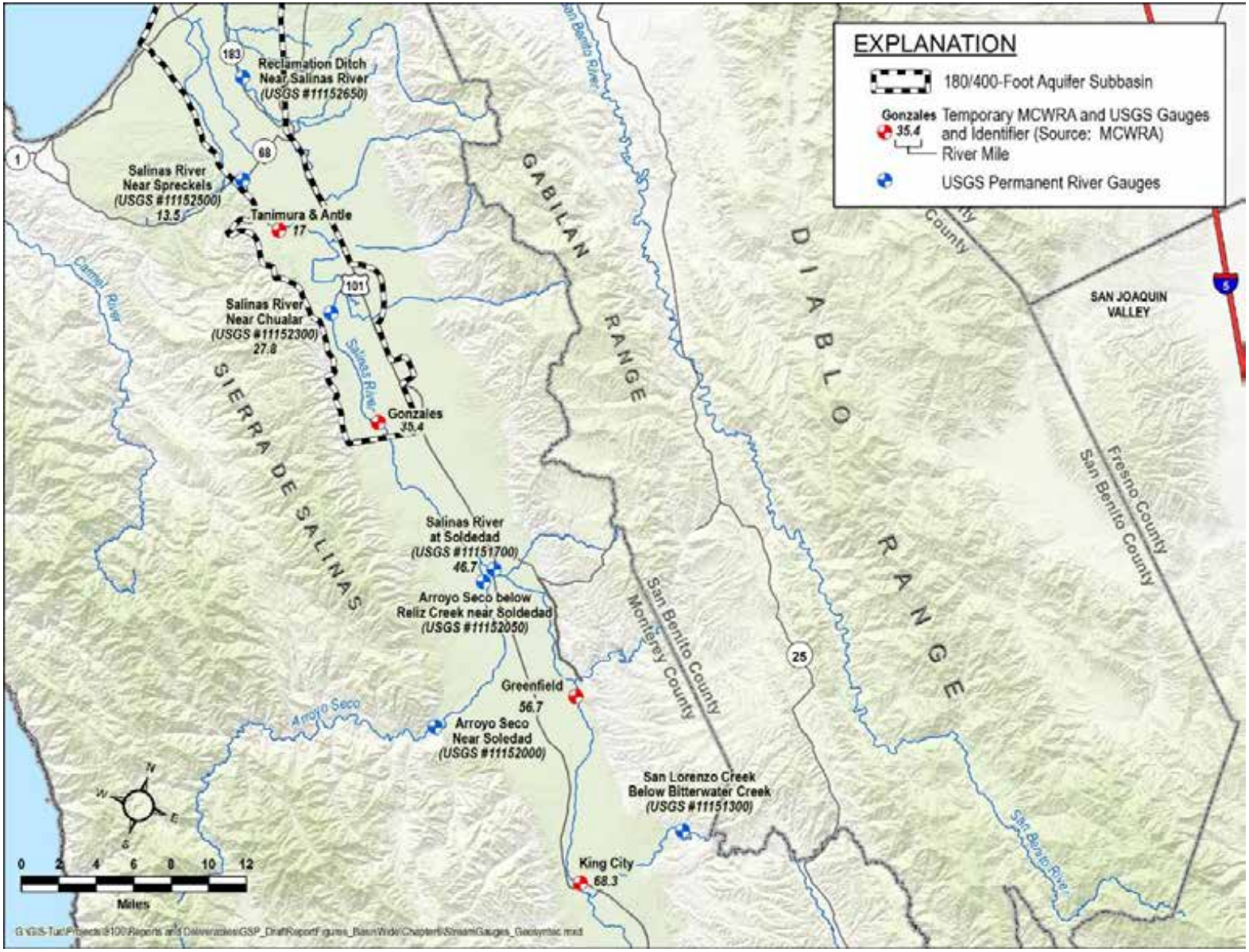


Figure 6-3. USGS Stream Gauge Locations

Table 6-2. Average Annual Salinas River Flow from the Forebay Subbasin

Flow Component		Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)
A	Flow at Salinas River Soledad Gauge	272,600	120,900
B	Flow at Arroyo Seco below Reliz Creek Gauge	84,600	91,200
C	Combined flows, representing the total flow at Soledad (A + B)	357,200	212,100
D	Salinas River Flow at the Chualar Gauge	285,500	135,200
E	Depletion between Soledad and Chualar (C – D)	71,700	76,900
F	Depletion in 180/400-Foot Aquifer Subbasin (37% of E)	26,500	28,500
G	Estimated Flow at Gonzales (D + F)	312,000	163,700

6.3.3 Tributary Flows from the Eastside Subbasin

There are ungauged tributaries to the Salinas River that discharge from the Gabilan and Diablo Ranges after flowing across the Eastside Subbasin. These tributaries contribute surface water inflow to the Subbasin downstream of the Chualar gauge. These ephemeral tributaries are dry for much of the year but can have significant flow during the wet season. The San Lorenzo Creek gauge (#11151300, Figure 6-3) is representative of flow from the Gabilan and Diablo Ranges and was used to estimate surface water inflow from these tributaries. Based on tabulated data from Durbin *et. al*. (1978) for the areas of watersheds that drain into the Salinas Valley Groundwater Basin from the east, the combined catchments of the small tributaries is approximately 96 square miles, or approximately 40% of the 233 square mile catchment of San Lorenzo Creek. For the Subbasin surface water budget, we assumed that half of this surface water inflow percolates into the Eastside Subbasin and half flows into to the 180/400-Foot Aquifer Subbasin. Therefore, contribution from these tributaries is estimated as 20% of the San Lorenzo Creek gauge annual flow.

The estimated tributary inflows from the Eastside Subbasin for the historical and current water budgets are shown in Table 6-3.

Table 6-3. Tributary Inflows from Eastside Subbasins

Flow Component	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)
Annual average flows at the San Lorenzo Creek gauge	11,600	4,400
Estimated tributary inflows from Eastside Subbasin	2,300	900

6.3.4 Irrigation and Precipitation Return Flow to Agricultural Drains

A portion of precipitation that infiltrates the ground and applied irrigation water is captured by agricultural drains and is routed to the Blanco Drain and Reclamation Ditch as surface water. A USGS stream gauge (#11152650, Figure 6-3) on the Reclamation Ditch provides annual drain flow data from 2003 through 2017. The average annual flows from 2003-2014 were assumed for years prior to 2003.

In 2014, an estimate of Blanco Drain annual flows was developed as part of the Pure Water Monterey Draft Environmental Impact Report (EIR) (Schaaf & Wheeler, 2014). This report estimated the average annual flow in the Blanco Drain to be 2,600 AF/yr.

Table 6-4 summarizes the average annual values of irrigation and precipitation return flow into the two agricultural drains.

Table 6-4. Irrigation and Precipitation Return Flow to Agricultural Drains for Historical and Current Water Budgets

Flow Component	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)	Notes
Blanco Drain	2,600	2,600	Schaaf & Wheeler, (2014)
Reclamation Ditch	7,400	15,400	Reclamation Ditch gauge
Total Irrigation Return Flow	10,000	18,000	

6.4 Surface Water Outflow Data

This section quantifies each of the surface water outflow components listed in Section 6.2.1. Data are only provided for the historical and current water budgets. The future water budget is addressed in Section 6.10.

6.4.1 Salinas River Diversion Data

Direct stream diversions are reported to the SWRCB. The State's system for annual reporting of diversions changed from hard copy to a computerized format between 2004 and 2010. Data reported to the State through the computerized system are available for download from the Electronic Water Rights Information Management System (eWRIMS) website (https://www.waterboards.ca.gov/waterrights/water_issues/programs/ewrims/). Annual surface water diversions from the Salinas River from 2011to 2017 were obtained from eWRIMS for use in the historical and current water budgets. Diversions in years prior to 2010 were set equal to the 2011-2017 average.

Table 6-5 lists the estimated average direct diversions from the Salinas River for the historical and current water budgets. Detailed annual time series for the diversions within the Subbasin are provided in Appendix 6A.

Table 6-5. Salinas River Direct Diversions for Historical and Current Water Budget

Flow Component	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)	Notes
Salinas River Diversions	8,000	7,900	eWRIMS data 2011-2017 and average assumed for prior years

Many growers and residents have noted that some irrigation is reported both to the SWRCB as Salinas River Diversion, and to the MCWRA as groundwater pumping. Because the SWRCB system is reported by diversion number and the MCWRA system is reported by well, it can be difficult to reconcile the two reporting systems. Therefore, both the SWRCB diversion data and the MCWRA groundwater pumping data are presented in this chapter. This may result in an over-estimate of the amount of water used for irrigation for the historical and current groundwater budgets. The estimated water used for irrigation in the future water budget does not rely on these reports, and therefore does not over-estimate the water used for irrigation. The SVBGSA will update the historical and current groundwater budgets when the SVIHM becomes available, and the updated historical and current water budgets will not have the potential double counting of irrigation problem.

6.4.2 Salinas River Outflow to Monterey Bay

Salinas River outflow to Monterey Bay was estimated based on annual flow data from the Salinas River gauge near Spreckels (Gauge #11152500, Figure 6-3). Because the gauge is located approximately 14 miles upstream of the Salinas River lagoon, an adjustment was made to the gauged data to better estimate the Salinas River flow to Monterey Bay. Between Spreckels and the coast the river depletion rate is assumed to be 2 cfs per mile. This is based on an assumed

reduction from the 3.5 cfs per mile river depletion rate observed upstream of Spreckels (MCWRA, 2018b). Assuming this depletion rate is constant over an entire year, the total annual depletion between the Spreckels gauge and the coast is approximately 20,000 AF/yr. Therefore, the assumed outflow of the Salinas River to Monterey Bay is 20,000 AF/yr. less than the average annual flow at the Spreckels gauge.

Table 6-6 lists the estimated average Salinas River outflow to Monterey Bay for the historical and current water budgets.

Table 6-6. Salinas River Outflow to Monterey Bay for Historical and Current Water Budgets

Flow Component	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)	Notes
Salinas River Outflow to Monterey Bay	240,800	103,400	Spreckels gauge – 20,000 AF/yr. downstream percolation

6.4.3 Other Surface Water Outflows to Monterey Bay

The Blanco Drain discharges to the Salinas River upstream of the Salinas River Diversion Facility (SRDF). Near Castroville, the Reclamation Ditch discharges into Tembledero Slough, which flows into the Old Salinas River and ultimately to Monterey Bay (Figure 4-11). As described in Section 6.3.4, flows into the Blanco Drain and the Reclamation Ditch were estimated based on annual flow at the Reclamation Ditch gauge (USGS gauge # 11152650, Figure 6-3) and the 2,600 AF/yr. average flow in Blanco Drain estimated as part of the Pure Water Monterey Draft EIR (Schaaf & Wheeler, 2014), as described in Section 6.3.4. Because the two drains do not store water, the flow into the two drains is equal to the annual flow out of the two drains. The average annual discharge of the Blanco Drain and the Reclamation Ditch into Monterey Bay are summarized in Table 6-7.

Table 6-7. Other Surface Water Outflows to Monterey Bay for Historical and Current Water Budgets

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)	Notes
Blanco Drain	2,600	2,600	Schaaf & Wheeler (2014)
Reclamation Ditch	7,400	15,400	Reclamation Ditch gauge
Sum of Blanco Drain and Reclamation Ditch Outflows to Monterey Bay	10,000	18,000	

6.4.4 Streamflow Percolation

The rate of Salinas River percolation into the groundwater system was estimated based on the annual USGS stream gauge data and the MCWRA river depletion analysis summarized in the *2017 Salinas River Discharge Measurement Series Results in Context* (MCWRA, 2018b). The gauge data and depletion rates were used to generate estimates of annual Salinas River inflow from the Forebay Subbasin and annual Salinas River outflow to Monterey Bay. The difference between inflow and outflow was used to generate a preliminary estimate of annual stream depletion. When the stream depletion rates were compared to the annual inflow rates, the data suggested the following three conditions.

- **Salinas River Inflow less than 80,000 AF/yr. (110 cfs):** Stream depletion was approximately equal to inflow. During these relatively dry years, the amount of outflow to Monterey Bay is negligible relative to the water budget.

- **Salinas River Inflow between 80,000 AF/yr. (110 cfs) and 300,000 AF/yr. (415 cfs):** Stream depletion estimates are approximately 80,000 AF/yr. for all inflow rates.

- **Salinas River Inflow greater than 300,000 AF/yr. (415 cfs):** Stream depletion estimates are highly variable, but the average of all values is approximately 90,000 AF/yr.

Based on the above relationship of Salinas River inflow and depletion, this component of the surface water budget was estimated for each year based on the Salinas River inflow. Based on the Salinas River inflow, the stream depletion was set to either the total Salinas River inflow, 80,000 AF/yr., or 90,000 AF/yr. The corresponding annual streamflow percolation results are provided in Appendix 6A.

6.5 Groundwater System Inflow Data

This section quantifies each of the groundwater system inflow components listed in Section 6.2.2. Data are only provided for the historical and current water budgets. Future groundwater system budget data extracted from the SVIHM are provided in Section 6.10.

6.5.1 Streamflow Percolation

As stated in Section 6.4.4, annual percolation of streamflow into the groundwater system set to either the Salinas River inflow into the 180/400-Foot Aquifer Subbasin, 80,000 AF/yr., or 90,000 AF/yr., depending on the Salinas River inflow data. Appendix 6A summarizes streamflow percolation for the historical and current water budgets.

6.5.2 Percolation of Precipitation

Precipitation that is not lost to runoff, agricultural drainage, or evapotranspiration recharges the groundwater system as deep percolation. The BCM values of precipitation, runoff, and groundwater system recharge for the historical and current water budgets are presented in Table 6-8. As described in Section 6.3.1, groundwater system recharge for water year 2017 was assumed to be the average of prior years with similar precipitation. Some of the groundwater system recharge estimated by BCM is captured by agricultural drains and does not directly recharge the principal aquifers.

Table 6-8. BCM-Reported Precipitation, Runoff, and Groundwater System Recharge for Historical and Current Water Budget

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)
Total precipitation	114,100	106,600
Runoff	1,100	1,700
Deep percolation of precipitation (groundwater system recharge and flow to agricultural drains)	8,500	6,000

6.5.3 Percolation of Excess Irrigation

Applied irrigation water that is not consumptively used by plants and is not captured as return flow by agricultural drains percolates below the root zone and becomes an inflow component to the groundwater system. BCM estimates natural recharge from precipitation and does not consider additional recharge from agricultural irrigation. The deep percolation of excess agricultural irrigation was estimated separately.

The total amount of water applied for irrigation is the sum of the groundwater pumping for irrigation, Salinas River diversions for irrigation, and CSIP deliveries.

- Agricultural pumping is reported annually by MCWRA for the Pressure Subarea. This value was adjusted proportionally for the area of the Subbasin relative to the total area of the Pressure Subarea.
- Salinas River diversions in the Subbasin are estimated from eWRIMS data for 2011 to 2017; and the average value for those years was applied to prior years in the historical water budget.
- CSIP deliveries began in 1999 and are reported annually.

As discussed earlier, this approach likely overestimates the amount of irrigation because some irrigation is reported as both a surface water diversion in the eWRIMS system and as groundwater pumping in MCWRA's pumping database. Crop consumptive use was estimated using an average irrigation efficiency of 80% for the Subbasin. This assumes 80% of applied irrigation is consumed by evapotranspiration and 20% becomes either return flow to agricultural drains or deep percolation to the groundwater system.

Table 6-9 presents the calculated deep percolation of irrigation water. Some of the groundwater recharge from irrigation is captured by agricultural drains, and does not directly recharge the deep groundwater.

Table 6-9. Deep Percolation from Excess Irrigation for Historical and Current Water Budget

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)
Total Agricultural Applied Water	107,200	112,100
Crop Consumptive Use	85,800	89,700
Deep Percolation (groundwater system recharge and flow to agricultural drains)	21,400	22,500

6.5.4 Total Deep Percolation to Groundwater System

Table 6-10 estimates the total deep percolation to the groundwater system from precipitation and excess irrigation. A portion of the deep percolation from precipitation and a portion of the deep percolation from excess irrigation is captured by the Blanco Drain and the Reclamation Ditch. It is impossible to differentiate between water in the agricultural drains originating from irrigation and water originating from precipitation. Therefore, the two sources of infiltration are combined, and the drain flows are then removed to estimate total deep percolation.

Table 6-10. Net Deep Percolation from Precipitation and Excess Irrigation

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)
Percolation from precipitation	8,500	6,000
Percolation from excess irrigation	21,400	22,500
Combined drain flows from Table 6-4	10,000	18,000
Net deep percolation to groundwater system from both precipitation and excess irrigation	19,900	10,500

6.5.5 Subsurface Inflows from Adjacent Subbasins

Based on groundwater flow directions and hydraulic gradients at the Subbasin boundaries, subsurface inflow to the 180/400-Foot Aquifer Subbasin from the Forebay Subbasin has been estimated as approximately 17,000 AF/yr. (Montgomery Watson, 1997). The boundary with the Monterey Subbasin is subparallel to groundwater flow direction resulting in a small amount of subsurface flow between the basins. The flow between basins is estimated as a net inflow of 3,000 AF/yr. from the Monterey Subbasin into the 180/400-Foot Aquifer Subbasin based on quantities reported by Montgomery Watson (1997). The estimated values are assumed constant for the historical and current water budgets. Groundwater generally flows from the 180/400-Foot Aquifer Subbasin into the Eastside and Langley Subbasins, as well as to Pajaro Valley. These subsurface outflows are quantified in Section 6.6.3.

The boundary flows will be reassessed when the calibrated historical SVIHM is available. Table 6-11 summarizes the subsurface inflow components for the historical and current water budgets.

Table 6-11. Subsurface Inflow from Adjacent Subbasins in Historical and Current Water Budgets

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)	Notes
Inflow from Forebay Subbasin	17,000	17,000	Estimate from Brown and Caldwell (2015)
Inflow from Monterey Subbasin	3,000	3,000	Estimate from Montgomery Watson (1997)
Total Inflows	20,000	20,000	

6.6 Groundwater Outflow Data

This section quantifies each of the groundwater outflow components listed in Section 6.2.2. Data are only provided for the historical and current water budgets. Future groundwater budget data extracted from the SVIHM are provided in Section 6.10.

6.6.1 Groundwater Pumping

Groundwater is pumped from the Subbasin for multiple water use sectors including agricultural, domestic, and urban. Groundwater pumping is reported annually to MCWRA in accordance with MCWRA Ordinance 3717. Reliable annual pumping records, categorized as Agricultural or Urban, are available from MCWRA for the period 1995-2015. The records provide annual pumping rates for all years of the historical water budget. Agricultural pumping is reported on a water-year basis; urban pumping is reported on a calendar-year basis. For the current water budget, only one year of data is available (2015) and therefore the average values of the historical budget period were used for 2016 and 2017. The pumping rates for the current water

budget will be updated when the MCWRA data for 2016 and 2017 are available. The annual pumping amounts reported by MCWRA for 1995-2015 are tabulated in Appendix 6A.

The reported groundwater pumping excludes rural domestic pumping because Monterey County Ordinance 3717 exempts reporting pumping from wells with a discharge pipe less than 3 inches in diameter. Therefore, rural domestic pumping was estimated based on the number of DWR permitted domestic wells in the Subbasin in 2018 and adjusted for 1995 through 2017 based on percent change in Monterey County population. The calculations assumed that each well was associated with a single parcel, and that the annual groundwater pumping was 0.39 AF per parcel. This is consistent with the *Codes and Standards Consulting: California's Residential Indoor Water Use* report (Consol, 2014) that estimated the annual indoor water use of a new, three-bedroom home occupied by four people at 46,521 gallons per year (0.14 AF). Combined indoor and outdoor water use was estimated at 0.39 ac-ft per household.

Table 6-12 and Table 6-13 summarize the average, minimum, and maximum groundwater pumping rates in the historical and current water budgets. The minimum and maximum of total pumping are not equal to the sum of the sectors because the timing of pumping sector extremes is not coincident.

Table 6-12. Historical Annual Groundwater Pumping by Water Use Sector

Water Use Sector	Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
Agricultural	89,000	76,200	110,800
Urban	18,900	14,000	27,500
Rural-Domestic	200	200	200
Total Pumping*	108,100	92,900	130,800

Note: Agricultural pumping is reported on a water-year basis whereas urban pumping is reported on a calendar-year basis. Rural domestic pumping is estimated on a calendar year basis.

Table 6-13. Current Annual Groundwater Pumping by Water Use Sector

Water Use Sector	Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
Agricultural	91,900	89,000	97,700
Urban	17,000	12,900	19,000
Rural-Domestic	200	200	200
Total Pumping	109,100	108,200	110,900

Note: Agricultural pumping is reported on a water-year basis whereas urban pumping is reported on a calendar-year basis. Rural domestic pumping is estimated on a calendar year basis.

6.6.2 Riparian Evapotranspiration

Due to the seasonal release of water from the Nacimiento and San Antonio reservoirs, the Salinas River has been transformed from an ephemeral to a perennial river that supports extensive strands of non-native riparian vegetation. The non-native riparian vegetation represents a significant loss of water from the basin through evapotranspiration (ET). In particular, *Arundo donax* is an invasive reed that has spread throughout California and other states. The ET rate of *Arundo donax* is highly variable but is estimated to be up to 20 AF/yr./acre (E. Zefferman, County of Monterey Resource Conservation District, personal communication, 2019). The California Department of Fish and Wildlife Biogeographic Information and Observation System GIS database indicates that there are approximately 800 acres of *Arundo donax* in the 180/400-Foot Aquifer Subbasin. For the historical and current water budgets, ET by *Arundo donax* was assumed to be 16 AF/yr./acre. The riparian ET occurs at the interface between the surface water and groundwater budgets and could be incorporated into either budget. For the historical and current water budgets, the riparian ET is included in the groundwater budget. Table 6-14 presents the constant riparian ET rate used in the historical and current water budgets.

Table 6-14. Riparian Evapotranspiration in Historical and Current Water Budgets

	Average Acre-Feet/Year for the Historical Water Budget	Average Acre-Feet/year for the Current Water Budget	Notes
Riparian Evapotranspiration	12,000	12,000	Estimated acreage and ET rate

6.6.3 Subsurface Outflows to Adjacent Subbasins

Based on groundwater flow directions at the Subbasin boundaries, subsurface outflow from the Subbasin occurs at the Eastside and Langley Subbasin boundaries. The combined outflow to these two subbasins has been estimated at approximately 8,000 AF/yr. (Montgomery Watson, 1997). In addition, at the northern boundary groundwater flows toward the Pajaro Valley Basin. The rate of subsurface flow from the Subbasin to the Pajaro Basin is estimated at 1,500 AF/yr. based on modeling analysis reported by USGS (Hanson, et al., 2014b). The estimated values are assumed constant for the historical and current budgets. The boundary flows can be reassessed when the calibrated historical SVIHM is available. Table 6-15 summarizes the subsurface inflow components from the historical and current water budgets.

Table 6-15. Subsurface Outflow to Adjacent Subbasins/Basin in Historical and Current Water Budgets

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)	Notes
Eastside/Langley Subbasins	8,000	8,000	Brown and Caldwell (2015)
Pajaro Valley Basin	1,500	1,500	Hanson et al., (2014b)
Total Subsurface Outflow	9,500	9,500	

6.7 Change in Storage Data

6.7.1 Groundwater Elevation Fluctuations

The change in groundwater storage estimated from observed change in groundwater elevations is described in Section 5.2. The change in the volume of groundwater in storage is based on fall water levels collected by MCWRA, which are the best available data. Conversion of the measured groundwater elevation changes to estimated groundwater storage changes requires an estimate of the storage coefficient and area of the Subbasin. The storage coefficient is dependent on the material properties of the aquifer and the degree to which the aquifer is confined by an overlaying aquitard. Brown and Caldwell estimated the storage coefficient in the 180/400-Foot Aquifer Subbasin to be 0.04 (Brown and Caldwell, 2015).

As noted in Section 5.2.2, the long-term change in storage since 1944 is an average annual loss of approximately 1,200 AF/yr. The average change in storage due to groundwater elevation fluctuations during the historical period, based on fall water measurements, is a loss of approximately 650 AF/yr. The average change in storage due to groundwater elevation fluctuations during the current period is a loss of approximately 1,000 AF/yr.

6.7.2 Seawater Intrusion

As reported in Section 5.2, seawater intrusion has occurred and is occurring in response to groundwater pumping in the 180/400-Foot Aquifer Subbasin. The 10,500 AF/yr. estimated rate of seawater intrusion into the 180/400-Foot Aquifer Subbasin presented in Section 5.2 is used as a constant value for both the Historical and Current Water Budget (Table 6-16). This estimate may be improved based on access to the calibrated SVIHM.

Table 6-16. Seawater Intrusion in Historical and Current Water Budgets

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)	Notes
Seawater Intrusion	-10,500	-10,500	Estimated from previous studies (Section 5.2)

6.8 Historical and Current Water Budgets

The historical water budget is based on 20 years of historical data covering 1995 to 2014. The 20-year period of 1995 to 2014 was selected as the period for the historical water budget because:

- Relatively complete pumping rates from most wells in the Subbasin were available from MCWRA,
- A relatively complete climatic cycle occurred, and
- The current water supply management system was in place for a significant amount of time.

The current water budget is based on the average of conditions between 2015 and 2017, the most recent years for which complete data are available. Because the current water budget represents a relatively short time period, it cannot be directly compared to the historical water budget. The historical water budget is designed to reflect average historical conditions. The current water budget reflects a snapshot in time that is susceptible to short-term climatic conditions.

6.8.1 Surface Water Budget

The surface water inflow and outflow components described in Sections 6.3 and 6.4 are combined to generate annual surface water budgets for the historical and current water budget periods.

Table 6-17 summarizes the average, minimum, and maximum annual values for each component of the historical surface water budget. Table 6-18 summarizes the average, minimum, and maximum annual values for each component of the current surface water budget. The minimum and maximum of total inflows and outflows are not equal to the sum of the sectors because the timing of sector extremes is not coincident.

Table 6-17. Summary of Historical Surface Water Budget

Inflow			Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Surface Water Inflows				
		Salinas River from Forebay Subbasin	312,100	5,000	1,155,600
		Tributaries from Eastside Subbasin	2,300	0	11,800
	Precipitation Runoff		1,100	0	9,400
	Irrigation Return Flow		10,000	5,000	16,400
TOTAL INFLOW			325,500	10,000	1,186,800
Outflow			Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Surface Water Outflows				
		Salinas River Diversions	8,000	6,500	9,200
		Salinas River Outflow to Monterey Bay	240,800	0	1,251,400
		Other Outflows to Monterey Bay	10,000	5,000	16,400
	Net Percolation of Streamflow to Groundwater System		76,800	5,000	90,000
TOTAL OUTFLOW			335,600	18,900	1,359,400

Table 6-18. Summary of Current Surface Water Budget

Inflow			Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Surface Water Inflows				
		Salinas River from Forebay Subbasin	163,700	3,300	477,900
		Tributaries from Eastside Subbasin	900	0	2,600
	Precipitation Runoff		1,700	200	3,200
	Irrigation Return Flow		18,000	8,700	30,800
TOTAL INFLOW			184,300	13,700	511,400
Outflow			Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Surface Water Outflows				
		Salinas River Diversions	7,900	7,600	8,300
		Salinas River Outflow to Monterey Bay	103,400	0	310,300
		Other Outflows to Monterey Bay	18,000	8,700	30,800
	Net Percolation of Streamflow to Groundwater System		34,400	3,300	90,000
TOTAL OUTFLOW			163,700	20,300	438,900

The surface water budget components are highly variable. Figure 6-4 illustrates the annual inflow and outflow components for the historical budget period. The diagram uses stacked bar height to illustrate the magnitude of budget components for each year, with inflows shown on the

positive y-axis and outflows on the negative y-axis. The inflow and outflow components for each year are tabulated in Appendix 6A.

Figure 6-4 shows that streamflow percolation remains relatively stable over the historical period, with a drastic decrease during the 2014 dry year, when the reservoirs did not release as much water into the Salinas River as in previous years. The Salinas River flows are highly managed and depend on the Nacimiento and San Antonio Reservoir operations. Thus, they are generally kept constant through reservoir management. The other components of the surface water budget are dependent on the varying climate and correlate to the water year types.

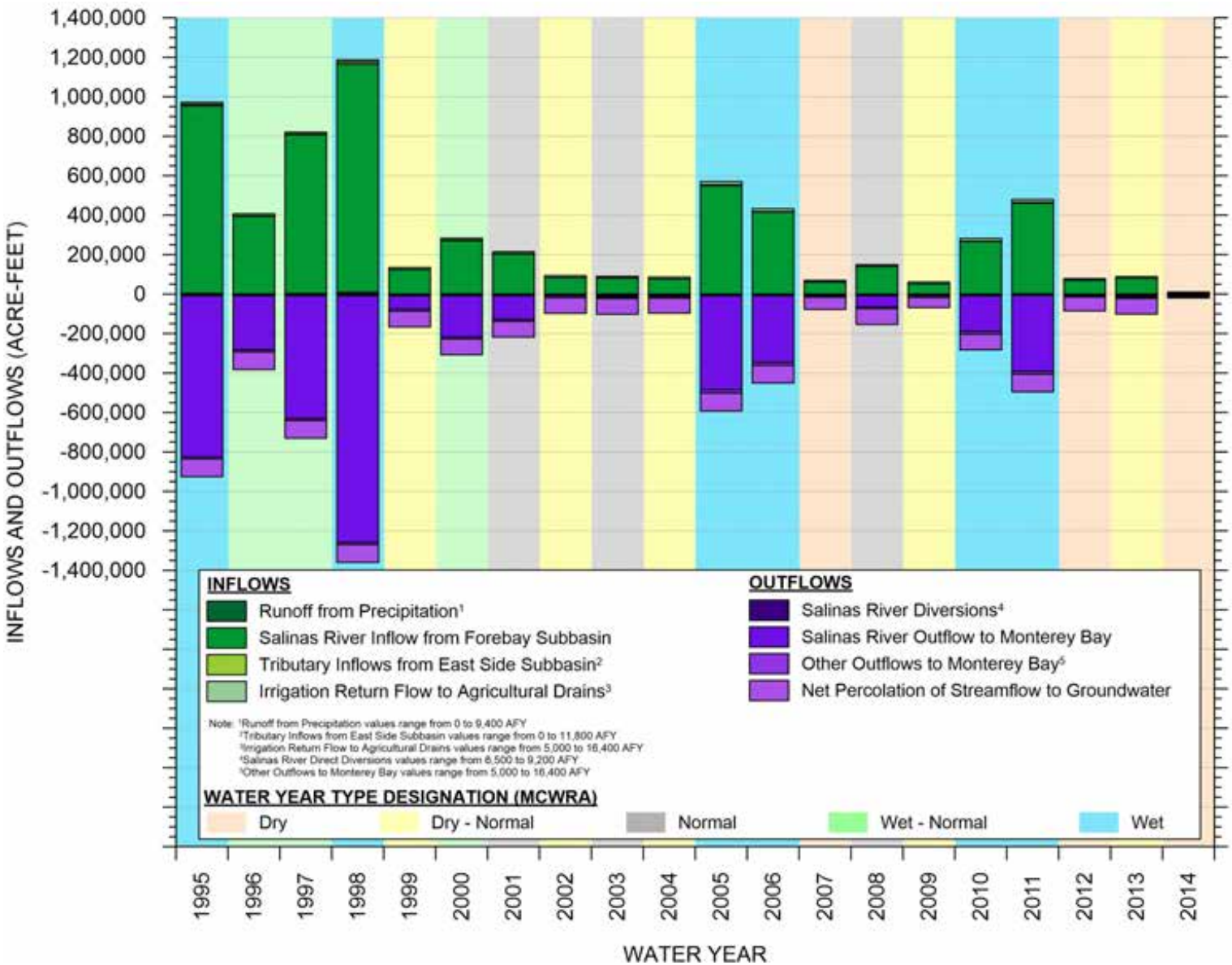


Figure 6-4. Historical Surface Water Budget

6.8.2 Groundwater Budget

The groundwater inflow and outflow components described in Sections 6.5 and 6.6 are combined to generate annual groundwater budgets for the historical and current budget periods. The groundwater system encompasses all groundwater that exists in the shallow sediments as well as the principal aquifers, as described in Chapter 4 of this GSP.

Table 6-19 summarizes the average, minimum, and maximum annual values for each component of the historical groundwater budget. Table 6-20 summarizes the average, minimum, and maximum annual values for each component of the current groundwater budget. The minimum and maximum of total inflows and outflows are not equal to the sum of the sectors because the timing of sector extremes is not coincident.

Table 6-19. Summary of Historical Groundwater Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Net Percolation of Streamflow to Groundwater System	76,800	5,000	90,000
	Deep Percolation of Precipitation and Excess Irrigation	19,900	9,700	69,400
	Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
TOTAL INFLOW		116,700	43,300	179,400
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Pumping - Total Subbasin	108,100	92,900	130,800
	Agricultural	89,000	76,200	110,800
	Urban	18,900	14,000	27,500
	Rural Domestic	200	200	200
	Riparian Evapotranspiration	12,000	12,000	12,000
	Subsurface Outflows to Adjacent Subbasins/Basin	9,500	9,500	9,500
TOTAL OUTFLOW		129,600	114,400	152,300
Difference Between Inflows and Outflows		Average (AF/yr.)		
	Difference Between Inflows and Outflows	-12,900		

Table 6-20. Summary of Current Groundwater Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Net Percolation of Streamflow to Groundwater System	34,400	3,300	90,000
	Deep Percolation of Precipitation and Excess Irrigation	10,400	-6,400	18,900
	Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
TOTAL INFLOW		64,800	42,200	103,600
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Pumping - Total Subbasin	109,100	108,200	111,100
	Agricultural	91,900	89,000	97,700
	Urban	17,000	12,900	19,000
	Rural Domestic	200	200	200
	Riparian Evapotranspiration	12,000	12,000	12,000
	Subsurface Outflows to Adjacent Subbasins/Basin	9,500	9,500	9,500
TOTAL OUTFLOW		130,600	129,700	132,400
Difference Between Inflows and Outflows		Average (AF/y.)		
	Difference Between Inflows and Outflows	-65,800		

[1]Deep percolation is equal to the amount of deep percolation from precipitation plus applied irrigation water minus crop consumption and flow in the Blanco Drain and Rec Ditch. In 2017, flows were extremely high, which results in a negative value for this year. The total recharge from both irrigation and precipitation is correct.

The annual groundwater system budget components are variable, although not as variable as the surface water budget components. Figure 6-5 illustrates the annual inflow and outflow components for the historical budget period. The diagram uses stacked bar height to illustrate the magnitude of budget components for each year, with inflows shown on the positive y-axis and outflows on the negative y-axis. The inflow and outflow components for each year are tabulated in Appendix 6A.

Figure 6-5 shows that groundwater pumping in the Subbasin is not directly correlated to the amount of inflow to the principal aquifers. For example, during the 2014 dry year, when the inflows decreased drastically due to very little streamflow percolation from the Salinas River, total groundwater system pumping remained similar to the previous year, where streamflow percolation was more in line with average years.

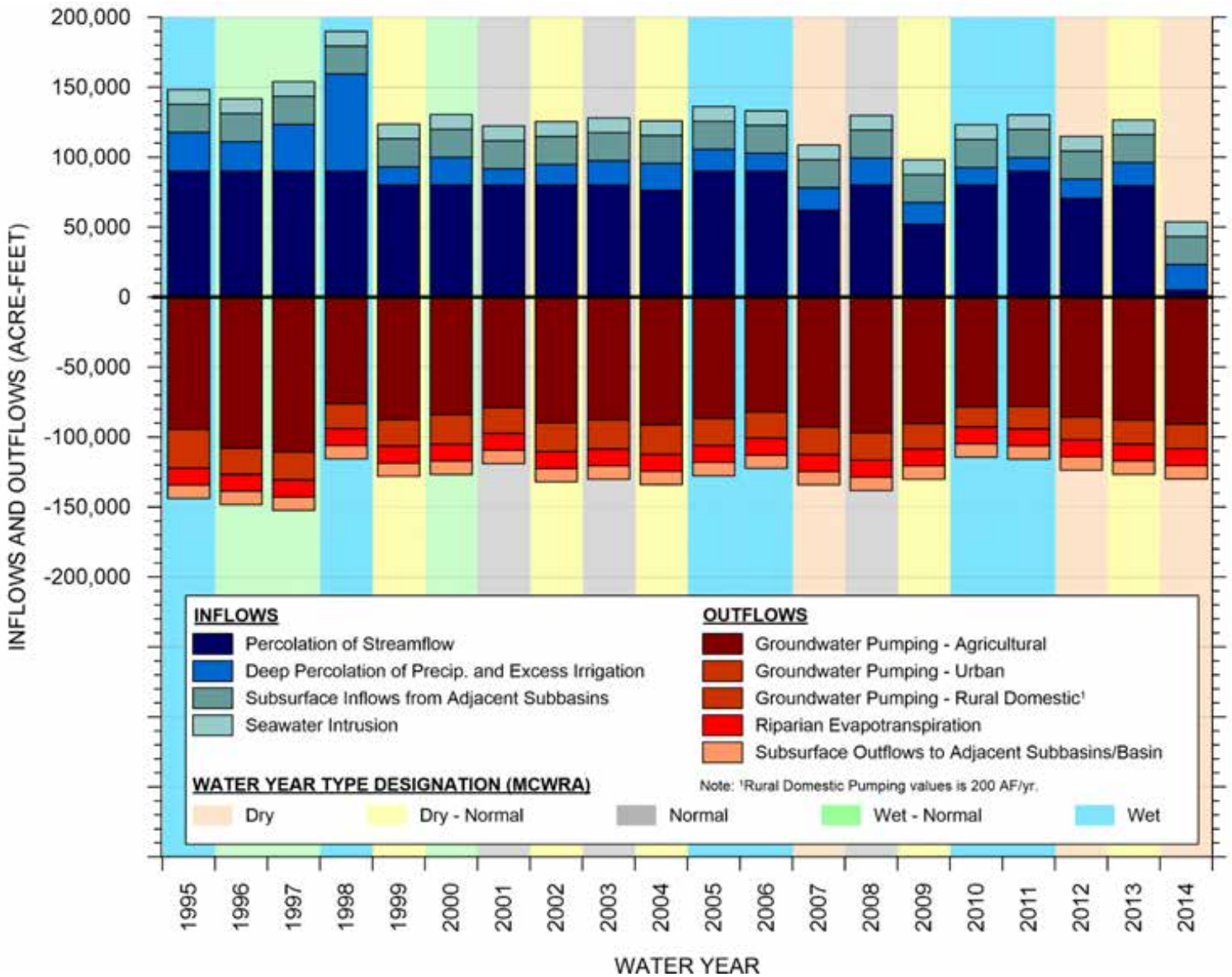


Figure 6-5. Historical Groundwater Budget

6.8.3 Subbasin Water Supply Reliability

A review of water supply sources in the 180/400-Foot Aquifer Subbasin shows that surface water supplies, as measured by the San Antonio and Nacimiento Reservoir releases to the Salinas River, allow for a reliable, yet small supply in wet and normal years. The reservoir releases also supply a stable supply of surface water in the first year of a drought by taking advantage of carry-over storage (Figure 6-6). However, the current operations do not allow for reliability in multi-year drought periods as shown in the 2002-2004 and 2007-2009 droughts. More recently, during the 4-year drought from 2012 to 2015, no water was released from the reservoirs in the last 2 years of the drought. Although no water was released, agricultural groundwater pumping did not substantially increase in those years.

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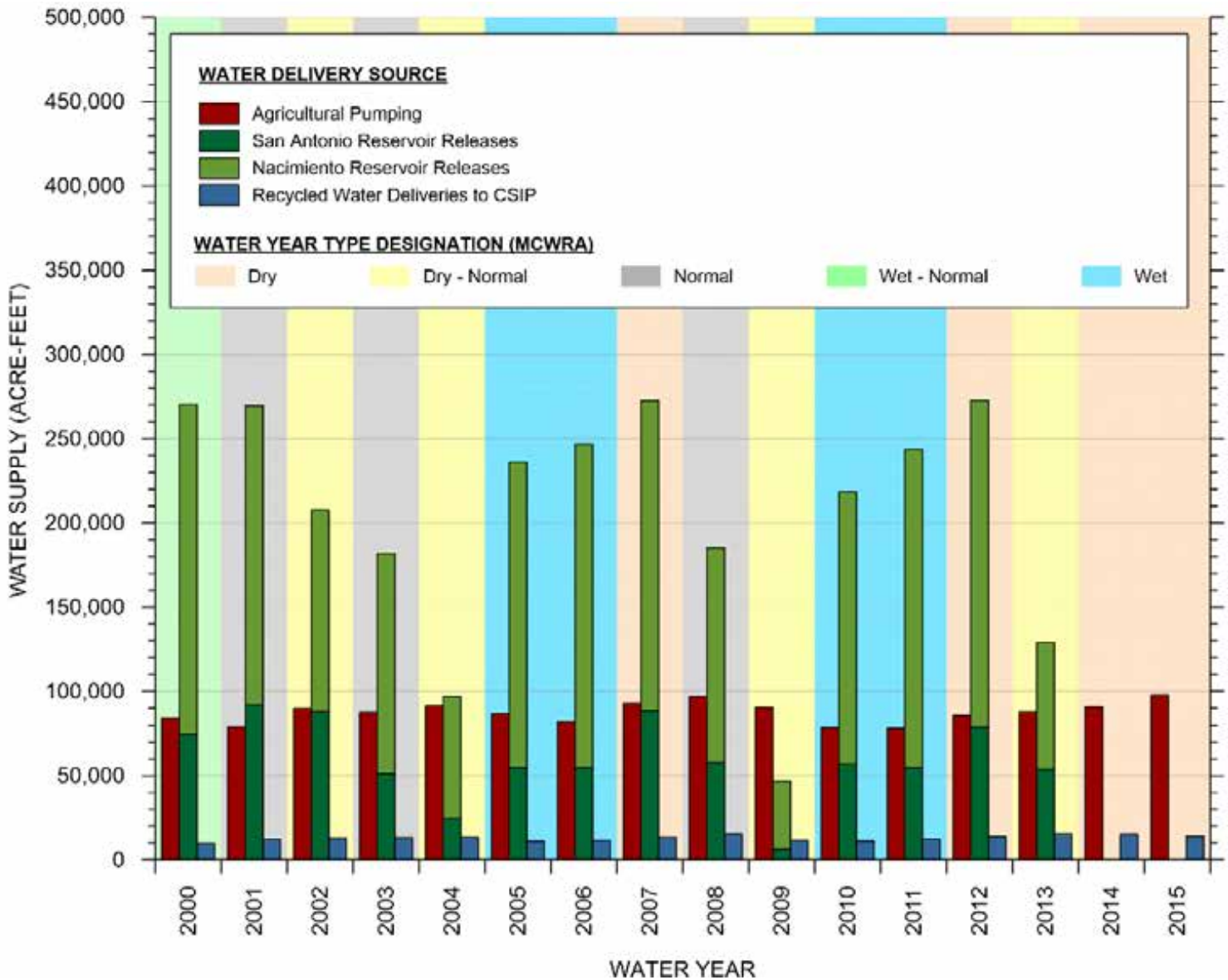


Figure 6-6. Water Supply Reliability

6.8.4 Subbasin Water Budget Summary

Figure 6-7 provides a diagram illustrating the interrelationship of the surface water and groundwater budget components. Average rates for these components over the historical water budget period are included in the diagram.

6.8.5 Sustainable Yield

The historical and current sustainable yield of the Subbasin is an estimate of the quantity of groundwater that can be pumped on a long-term average annual basis without causing a net decrease in storage. The sustainable yield can be estimated based on the average annual values of the following components of the historical water budget:

- Total pumping
- Change in groundwater system storage, including seawater intrusion

The sustainable yield is computed as:

Sustainable yield = pumping - change in storage

Table 6-21 summarizes the estimated historical sustainable yield for the 180/400-Foot Aquifer Subbasin. Negative values in Table 6-21 represent a loss of groundwater storage. The quantification of overdraft is the sum of the change in storage and seawater intrusion. Based on the water budget components, the historical sustainable yield of the Subbasin is 97,200 AF/yr., which represents a 10% reduction in total pumping relative to the average annual historical pumping rate. The current sustainable yield of the Subbasin is 98,000 AF/yr. The values in Table 6-21 are estimates only. The sustainable yield value will be modified and updated as more data are collected and more analyses are conducted.

Table 6-21. Estimated Historical and Current Sustainable Yield for the 180/400-Foot Aquifer Subbasin

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)
Total Subbasin Pumping	108,100	109,100
Change in Storage (Groundwater Elevations)	-400	-600
Seawater Intrusion	-10,500	-10,500
Estimated Historical Sustainable Yield	97,200	98,000

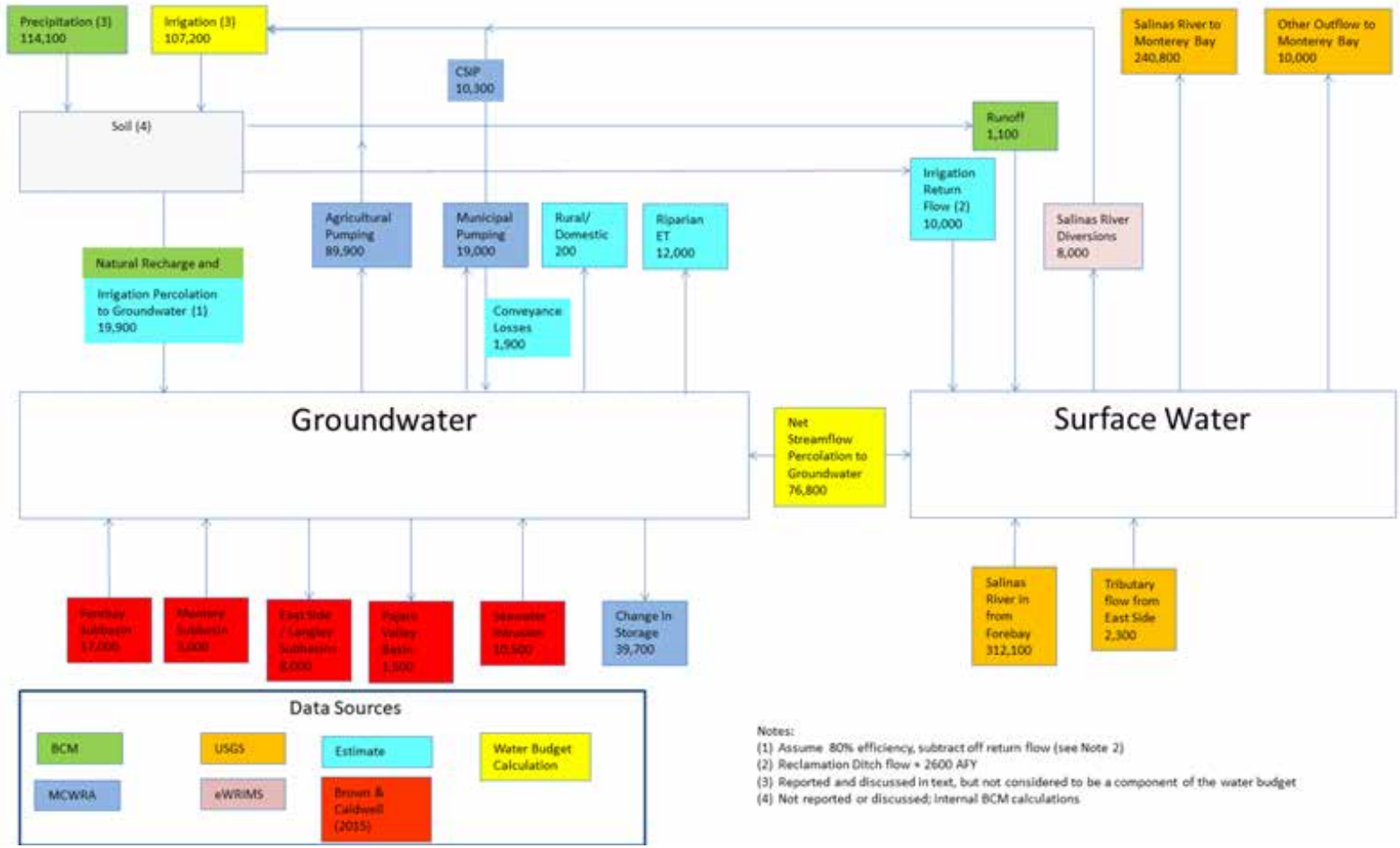


Figure 6-7. Annual Average Historical Total Water Budget

6.9 Uncertainties in Historical and Current Water Budget Calculations

As described in Section 6.1, the level of accuracy and certainty is highly variable between water budget components. The water budget uncertainty will be reduced over time as the GSP monitoring programs are implemented and the resulting data are used to check and improve the budgets.

Although the uncertainty of each component has not been quantified, the net uncertainty in the groundwater budget can be assessed based on a comparison between calculated and estimated change in storage. This difference provides a quantitative estimate of how well the water budget matches observed conditions. Although this measure doesn't quantify uncertainty in the components of the budgets, it allows an assessment of whether the net sum of the components is reasonable.

Since there are no significant surface water storage reservoirs within the Subbasin, the uncertainty in the surface water budget is the difference between inflows and outflows. Table 6-22 shows that the historical surface water budget has an uncertainty of -10,100 AF/yr., which is 3% of the historical outflow. By contrast, the current surface water budget has an uncertainty of 20,600 AF/yr., which is 13% of the outflow.

Table 6-23 compares the difference between estimated groundwater inflows and outflow to the calculated change in groundwater storage for the historical and current time periods. The difference between groundwater inflows and outflows for the historical groundwater budget is 12,900 AF/yr. This 12,900 AF/yr. is an estimate of the annual storage loss if all inflows and outflows are perfectly known. The MCWRA calculations of storage loss only account for storage losses due to change in groundwater elevations. To compare the budget estimate of storage loss to the MCWRA estimate, storage loss is reduced by the 10,500 AF of annual storage loss attributed to for seawater intrusion. The annual storage change for the historical period based on the difference between inflows and outflows is therefore a loss of 2,400 AF/yr. The calculated change in storage from groundwater elevations is a storage loss of 400 AF/yr. The difference between these two estimates of storage loss is 2,000 AF/yr., which is equivalent to 2% of the average water budget (average of inflows and outflows).

In the current groundwater budget, Table 6-23 indicates that the difference between inflows and outflows is a storage loss of 65,800 AF/yr. Accounting for a reduction of 10,500 AF due to seawater intrusion, the annual storage change for the current period is -55,300 AF/yr. The calculated change in storage from groundwater elevations is a storage loss of 600 AF/yr. for the current groundwater budget. The difference between these two estimates of storage loss is 54,700 AF/yr., which is equivalent to 42% of the average water budget.

As noted in Section 6.4.1, double-counting of water used for irrigation in the SWRCB diversion data and the MCWRA groundwater pumping results in an over-estimate of the amount of water

used for irrigation for the historical and current groundwater budgets. This accounts for some of the error on the water budget. This error will be removed when the SVIHM becomes available.

Table 6-22. Estimated Historical and Current Surface Water Budget Uncertainties

	Historical Budget	Current Budget
Budget Average Annual Inflow (AF/yr.)	325,500	184,300
Budget Average Annual Outflow (AF/yr.)	335,600	163,700
Difference Between Inflow and Outflow (AF/yr.)	-10,100	20,600
Difference Between Budget and Estimated (% of Outflow)	3%	13%

Table 6-23. Estimated Historical and Current Groundwater Budget Uncertainties

	Historical Budget	Current Budget
Budget Average Annual Inflow (AF/yr.)	116,700	64,800
Budget Average Annual Outflow (AF/yr.)	129,600	130,600
Difference Between Inflow and Outflow (AF/yr.)	-12,900	-65,800
Seawater Intrusion (AF/yr.)	-10,500	-10,500
Average Annual Change in Storage Based on Inflows and Outflows (AF/yr.)	-2,400	-55,300
Estimated Average Annual Change in Storage (AF/yr.) Based on MCWRA Water Level Measurements	-400	-600
Difference Between Budget and Estimated (AF/yr.)	-2,000	-54,700
Difference Between Budget and Estimated (% of Avg Water Budget)	-2%	-42%

Note: although seawater intrusion is identified as an inflow to quantify the overall basin water budget, it is not considered part of the sustainable yield.

The historical groundwater budget uncertainty of 2% is relatively small. The current ground budget uncertainty of 42% is significant. These estimates will be changed and refined when the SVIHM is made available.

6.10 Projected Water Budget

The projected water budget is extracted from the SVIHM, incorporating projected hydrologic conditions and climate change. Two projected water budgets are presented, one incorporating estimated 2030 climate change projections and one incorporating estimated 2070 climate change projections. The projected water budget represents 47 years of future conditions including projected climate change and sea level rise. The future water budget simulations do not simulate

a 47-year projected future, but rather simulate 47 likely hydrologic events that may occur in 2030, and 47 likely hydrologic events that may occur in 2070.

The climate change projections are based on the available climate change data provided by DWR (2018). Projected water budgets will be useful for showing that sustainability will be achieved in the 20-year implementation period and maintained over the 50-year planning and implementation horizon.

6.10.1 Assumptions Used in Projected Water Budget Development

6.10.1.1 General SVIHM Characteristics

The SVIHM is a numerical groundwater-surface water model that was constructed using the code MODFLOW-OWHM (Hanson, et al., 2014a). This code is a version of the USGS groundwater flow code MODFLOW that includes a focus on the agricultural supply and demand system, through the Farm Process. The model grid consists of 976 rows, 272 columns, and 9 layers, covering the Salinas Valley Groundwater Basin from the Monterey-San Luis Obispo County Line in the south to the Pajaro Valley Basin in the north, including the offshore extent of the major water supply aquifers. The model includes operations of the San Antonio and Nacimiento reservoirs that supply the Salinas Valley Groundwater Basin.

6.10.1.2 SVIHM Assumptions and Modifications to Simulate Future Conditions

The assumptions incorporated into the SVIHM for the projected water budget simulations include the following:

- **Land Use**: The land use is assumed to be static, aside from a semi-annual change to represent crop seasonality. The annual pattern is repeated every year in the model. Land use in the model reflects the 2014 land use, which is the most recent crop and land use data in the available model. This assumption is consistent with the GSP Regulations that state “Projected water demand shall utilize the most recent land use, evapotranspiration, and crop coefficient information as the baseline condition for estimating future water demand”.
- **Urban Growth**: No urban growth is included in this simulation to remain consistent with the USGS assumptions. If urban growth is infill, this assumption may result in an underestimate of net pumping increases and an underestimate of the Subbasin’s future overdraft. If urban growth replaces agricultural irrigation, the impact may be minimal.
- **Reservoir Operations**: The reservoir operations reflect the current approach to reservoir management taken by MCWRA. Therefore, the projected surface water supply reflects the current and most recent water supply information.
- **Stream Diversions**: The SVIHM explicitly simulates only two stream diversions in the Salinas Valley Groundwater Basin: Clark Colony and the SRDF. The Clark Colony

diversion is located along Arroyo Seco, and diverts water to an adjacent agricultural area. The SRDF came online in 2010, and diverts water from the Salinas River to the CSIP area. Clark Colony diversions are repeated from the historical record to match the water year. SRDF diversions are made throughout the duration of the Operational SVIHM whenever reservoir storage and streamflow conditions allow.

- **Recycled Water Deliveries**: Recycled water has been delivered to the CSIP area since 1998 as irrigation supply. The SVIHM includes recycled water deliveries throughout the duration of the model.

6.10.1.2.1 Future Projected Climate Assumptions

Several modifications were made to the SVIHM in accordance with recommendations made by DWR in their *Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development* (DWR, 2018). Three types of datasets were modified to account for 2030 and 2070 projected climate change: climate data, streamflow, and sea level.

Climate Data

DWR has provided gridded change factors for 2030 and 2070 climate conditions. These change factors are derived from the statewide gridded datasets for the Variable Infiltration Capacity (VIC) hydrologic model and are provided as monthly gridded values that can be multiplied by historical data between 1915 and 2011 to produce a dataset of climate inputs for each climate change scenario. Because the change factors are only available through December 2011 and the SVIHM uses a climate time series through December 2014, monthly change factors were estimated for January 2012 to December 2014. Historical data were analyzed from the Salinas Airport precipitation gauge record to identify years from 1968 to 2011 that were most similar to conditions in 2012, 2013 and 2014. As a result, projected climate data from 1981, 2002, and 2004 were applied as the climate inputs for 2012, 2013, and 2014, respectively.

The modified gridded monthly climate data for the entire model period were applied as inputs to the model, which reads precipitation and ET_0 data on a monthly basis.

Streamflow

DWR has provided monthly change factors for unimpaired streamflow throughout California. For the Salinas Valley Groundwater Basin and other areas outside of the Central Valley, these change factors are provided as a single time series for each major watershed. Streamflows along the margins of the Subbasin were modified by the monthly change factors. As with the climate data, an assumption was made to extend the streamflow change factor time series through December 2014. The similarity in rainfall years at the Salinas Airport rainfall gauge could reasonably be expected to produce similar amounts of streamflow; therefore, the same years of 1981, 2002, and 2004 were repeated to represent the 2012, 2013, and 2014 streamflows, respectively.

Sea Level Rise

DWR guidance recommends using a constant rate of sea level rise for each of the climate change scenarios (DWR, 2018). For the 2030 climate change scenario, a sea level rise value of 15 centimeters (5.9 inches) was used. For the 2070 climate change scenario, a sea level rise value of 45 centimeters (17.7 inches) was used.

6.10.2 Projected Water Budget Overview

Although the physical processes simulated by the SVIHM are similar to the processes discussed in the historical and current water budget discussion, the SVIHM output provides slightly different water budget components than those in the historical and current water budgets. The SVIHM includes various calculations that can produce three types of water budgets:

- Land surface water budget
- Groundwater system budget
- Surface water budget

The land surface water budget is not required by the SGMA Regulations, but it does provide important information that informs how water is managed in the Salinas Valley Groundwater Basin. Therefore, information from the land surface budget is included in this GSP. The land surface water budget was used to differentiate water budget components related to crop water use and groundwater system recharge.

The surface water budget cannot readily be extracted from the SVIHM output, and further work is necessary to develop it once the SVIHM is available. The surface water budget will be provided after the model post-processing analysis is completed as part of GSP implementation.

6.10.3 Land Surface Water Budget

The land surface water budget quantifies flows into and out of the land surface and root zone of agricultural areas. The components of the land surface water budget are as follows:

- Water budget inflow components into the crop/land surface:
    - Precipitation.
    - Recycled water deliveries.
    - Surface water deliveries.
    - Agricultural application of pumped groundwater.
    - Evaporation from groundwater. This is effectively a pass-through value with the evaporation entering the soil column from below and leaving the top of the soil column.

    - Transpiration from groundwater. This is effectively a pass-through value with the transpiration entering the crop roots from below and leaving the crops into the atmosphere.

- Water budget outflow components out of the crop/land surface:
    - Evaporation of irrigation water.
    - Evaporation from precipitation.
    - Evaporation from groundwater. This is effectively a pass-through value with the evaporation entering the soil column from below and leaving the top of the soil column.
    - Transpiration of irrigation water.
    - Transpiration from precipitation.
    - Transpiration from groundwater. This is effectively a pass-through value with the transpiration entering the crop roots from below and leaving the crops into the atmosphere.
    - Overland runoff onto surrounding non-agricultural areas.
    - Deep percolation.
    - Surface water returns: Unused surface water deliveries that are returned to the stream system.

Land surface water budget inflow and outflow data for the 47-year future simulation period with 2030 climate change assumptions and the 2070 climate change assumptions are detailed in Table 6-24 and Table 6-25, respectively.

Table 6-24. Average Land Surface Water Budget Inflows

Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Precipitation	135,700	141,200
Recycled Water Deliveries	4,400	4,400
Surface Water Deliveries	8,300	8,500
Agricultural Pumping	94,800	99,500
Evaporation from Groundwater	6,500	6,800
Transpiration from Groundwater	29,600	30,800
Total Inflows	279,300	291,200

Table 6-25. Average Land Surface Water Budget Outflows

Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Evaporation from Irrigation	14,100	14,800
Evaporation from Precipitation	38,700	38,600
Evaporation from Groundwater	6,500	6,800
Transpiration from Irrigation	64,300	67,200
Transpiration from Precipitation	32,500	32,300
Transpiration from Groundwater	29,600	30,800
Overland Runoff	25,200	27,500
Deep Percolation	77,000	82,300
Surface Water Returns	500	400
Total Outflows	288,400	300,700

6.10.4 Groundwater Budget

The inflow components of the projected groundwater budget include:

- Stream leakage
- Deep percolation of precipitation and irrigation
- Inflow from the Monterey Subbasin
- Inflow from the Eastside Subbasin
- Inflow from the Langley Subbasin
- Inflow from the Forebay Subbasin
- Inflow from the Pajaro Valley

The simulated average water budget inflow components for each of the 47 years in the future simulation with 2030 and 2070 climate change projections are quantified in Table 6-26.

Table 6-26. Average Groundwater Inflow Components for Projected Climate Change Conditions

Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Stream leakage	71,500	71,700
Deep Percolation	76,300	81,800
Interflow in Wells	20,400	20,900
Inflow from Monterey Subbasin	10,900	11,500
Inflow from Eastside Subbasin	9,800	10,400
Inflow from Forebay Subbasin	5,300	5,300
Inflow from Langley Subbasin	1,800	1,800
Mountain front recharge	2,600	2,700
Underflow from Pajaro Valley Basin	100	100
Total Inflows	198,700	206,200

The outflow components of the projected groundwater budget include:

- Total groundwater extraction including municipal, agricultural, and rural domestic pumping.
- Flow to agricultural drains.
- Stream gains from groundwater.
- Outflow to the Monterey Subbasin.
- Outflow to the Eastside Subbasin.
- Outflow to the Langley Subbasin.
- Outflow to the Forebay Subbasin.
- Outflow to the Pajaro Valley Basin.
- Outflow to Ocean.

The simulated water budget inflow components for each of the 47 years in the future simulation with 2030 and 2070 climate change projections are quantified in Table 6-27.

Table 6-27. Average Groundwater Outflow Components for Projected Climate Change Conditions

Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Pumping	135,800	141,600
Drain Flows	7,100	8,000
Flow to Streams	1,800	1,900
Groundwater ET	35,100	36,700
Outflow to Ocean	800	700
Outflow to Monterey Subbasin	5,400	5,300
Outflow to Eastside Subbasin	17,000	16,600
Outflow to Forebay Subbasin	300	300
Outflow to Langley Subbasin	100	100
Outflow to Upland Areas	900	900
Outflow to Pajaro	1,000	1,000
Total Outflows	205,300	213,100

As with the historical and current groundwater budgets, groundwater storage change consists of both groundwater elevation changes and seawater intrusion. The total change in groundwater storage is shown in Table 6-28.

Table 6-28. Change in Groundwater Storage for Projected Groundwater Budgets

Component	2030 (AF/yr.)	2070 (AF/yr.)
Groundwater Elevation Change	-4,600	-4,700
Seawater Intrusion	-3,500	-3,900
Total	-8,100	-8,600

6.10.4.1 Groundwater Budget Summary

The total groundwater inflows and outflows, along with the model error, are shown in Table 6-29. The total in and total out flows are derived from Table 6-26 and Table 6-27. The total error and percent error are calculated as

$$Error = (Inflows + Outlfows) - Change\ in\ Storage$$

$$\%Error = \frac{Error}{\left(\frac{Inflows - Outflows}{2}\right)} x100$$

Unlike the historical and current water budgets, these water budgets have acceptably small budget uncertainty errors as a percentage of the total water budget.

Table 6-29. Total Groundwater Inflows and Outflows for Projected Groundwater Budgets

Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Total In	198,700	206,200
Total Out	-205,300	-213,100
Total Change in Storage	-8,100	-8,600
Error	1,500	1,700
% Error	0.74%	0.81%

Combining the land surface and groundwater budgets, groundwater pumping by water use sector can be summarized, as shown in Table 6-30.

Table 6-30. Projected Annual Groundwater Pumping by Water Use Sector

Water Use Sector	2030 Average	2070 Average
Agricultural	94,800	99,500
Urban (total pumping minus agricultural)	20,500	21,100
Rural-Domestic (not simulated in model, considered minimal)	0	0
Total Pumping	135,800	141,600

6.10.5 Projected Sustainable Yield

The projected sustainable yield is the amount of long-term pumping that can be sustained over the planning horizon once all undesirable results have been addressed. It is not the amount of pumping needed to stop undesirable results. For example, the sustainable yield calculated in this chapter assumes zero seawater intrusion, but it does not account for temporary pumping reductions that may be necessary to achieve the higher groundwater elevations that help mitigate seawater intrusion. The SVBGSA recognizes that, dependent on the success of various proposed projects and management actions, there may be a number of years when pumping might be held at a lower level to achieve necessary rises in groundwater elevation. The actual amount of allowable pumping from the Subbasin will be adjusted in the future based on the success of projects and management actions.

The projected sustainable yield for 2030 and 2070 can be calculated in a similar way to the historical sustainable yield calculated in Table 6-21. The projected sustainable yield can be estimated by summing all of the average groundwater extractions and subtracting the average seawater intrusion and the average change in storage. The projected sustainable yields are quantified in Table 6-31. The net pumping shown on this table is the total pumping in Table 6-27 less the well interflow shown in Table 6-26. Well interflow is water that flows through an inactive well from one aquifer to another. The model calculates this flow as extraction from one aquifer and injection to another aquifer, thus adding to the total extraction and total injection in the model. The extraction portion of this well interflow must be subtracted from total model extraction to calculate the correct amount of water that is pumped out of the Subbasin. This table estimates that pumping reductions of between 7.0% and 7.1% will be needed to reduce Subbasin pumping to the sustainable yield. The quantification of overdraft is the sum of seawater intrusion and change in storage.

Table 6-31 includes the estimate of historical sustainable yield for comparison purposes. However, because of the significant differences in the estimated components between the historical and projected water budgets, the projected sustainable yield should not be directly compared to the historical sustainable yield. For example, the total pumping used to calculate the historical sustainable yield is 108,100 AF/yr., while the pumping used to estimate the projected sustainable yields varies between 115,300 and 120,600 AF/yr. Additionally, the values in Table 6-31 are estimates only. The sustainable yield value will be modified and updated as more data are collected and more analyses are performed.

It is important to recall that simply reducing pumping to within the sustainable yield is not proof of sustainability, which must be demonstrated by achieving the SMC that are outlined in Chapter 8. While the sustainable yield estimates in Table 6-31 assume zero seawater intrusion, they do not account for temporary pumping reductions that may be necessary to help mitigate seawater intrusion.

Table 6-31. Projected Sustainable Yields

	2030 Projected Sustainable Yield	2070 Projected Sustainable Yield	Historical Sustainable Yield
Net Pumping	115,300	120,600	108,100
Seawater Intrusion	-3,500	-3,900	-10,500
Change in Storage	-4,600	-4,700	-400
Projected Sustainable Yield	107,200	112,000	97,200
% Pumping Reduction	7.0%	7.1%	10.0%

6.10.6 Projected Surface Water Budget

A surface water budget was not available at the time of this writing because it could not be easily extracted from the SVIHM during the short time the SVIHM was available to the SVBGSA. A surface water budget will be included as soon as available.

6.11 Uncertainties in Projected Water Budget Simulations

As shown in Table 6-29, the calculated error in the projected water budget is acceptably small. This is in contrast to the current water budget, which had significantly larger errors due to uncertain data and less rigorous analytical methods. However, even with the small calculated error, there is inherent uncertainty involved in projecting water budgets with projected climate change based on the available scenarios and methods. The scenarios that were used to develop the projected water budgets with the SVIHM provide what might be considered the most likely future conditions; there is an approximately equal likelihood that actual future conditions will be more stressful or less stressful than those described by the recommended scenarios (DWR, 2018).

Further, as stated in DWR (2018):

> *Although it is not possible to predict future hydrology and water use with certainty, the models, data, and tools provided (by DWR) are considered current best available science and, when used appropriately should provide GSAs with a reasonable point of reference for future planning.*
>
> *All models have limitations in their interpretation of the physical system and the types of data inputs used and outputs generated, as well as the interpretation of outputs. The climate models used to generate the climate and hydrologic data for use in water budget development were recommended by the DWR Climate Change Technical Advisory Group (CCTAG) for their applicability to California water resources planning (DWR, 2018).*

Finally, there is also inherent uncertainty in groundwater flow modeling itself, since mathematical (or numerical) models can only approximate physical systems and have limitations in how they compute data. As stated by DWR (2018):

> *Models are inherently inexact because the mathematical depiction of the physical system is imperfect, and the understanding of interrelated physical processes incomplete. However, mathematical (or numerical) models are powerful tools that, when used carefully, can provide useful insight into the processes of the physical system.*

7 MONITORING NETWORKS

This chapter describes the monitoring networks that will be used to monitor the sustainable management criteria (SMCs) for the 180/400-Foot Aquifer Subbasin. The SMCs are described in Chapter 8 and are established based on the monitoring networks described herein. This description of the monitoring network has been prepared in accordance with the GSP Regulations §354.32 to include monitoring objectives, monitoring protocols, and data reporting requirements.

7.1 Introduction

7.1.1 Monitoring Objectives

SGMA requires monitoring networks be developed to promote the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the Subbasin, and to evaluate changing conditions that occur as the Plan is implemented. The monitoring networks are intended to:

- Monitor changes in groundwater conditions relative to measurable objectives and minimum thresholds.
- Demonstrate progress toward achieving measurable objectives.
- Monitor impacts to the beneficial uses or users of groundwater.
- Quantify annual changes in water budget components.

The measurable objectives and minimum thresholds monitored by the networks are described in Chapter 8.

7.1.2 Approach to Monitoring Networks

Monitoring networks are developed for each of the six sustainability indicators that are relevant to the GSP area:

- Chronic lowering of groundwater levels
- Reduction in groundwater storage
- Seawater intrusion
- Degraded water quality
- Land subsidence
- Depletion of interconnected surface water

In accordance with GSP Regulations, the monitoring networks presented in this chapter are primarily based on existing monitoring sites. The monitoring networks are limited to data points and locations that are publicly available and not confidential.

The SVBGSA determined the density of monitoring sites and frequency of measurements required in order to demonstrate short-term, seasonal, and long-term trends. These trends are also based on the amount of current and projected groundwater use, aquifer characteristics and other physical characteristics that affect groundwater flow, impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production (including adjacent subbasins that could affect the ability of the subbasin to meet the sustainability goal), and the adequacy of long-term existing monitoring results.

For some sustainability indicators, it is necessary to expand the existing monitoring systems. Data gaps are identified for each monitoring system; filling these data gaps and developing more extensive and complete monitoring systems will improve the SVBGSA's ability to demonstrate sustainability and refine the existing conceptual and numerical hydrogeologic models. Chapter 10 provides a plan and schedule for data gap resolution. The SVBGSA will review the monitoring network in each 5-year assessment, including a determination of uncertainty and whether there are data gaps that could affect the ability of the Plan to achieve the sustainability goal for the Subbasin.

7.1.3 Management Areas

The regulations require that if management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the Subbasin setting and sustainable management criteria specific to that area. At this time, management areas have not been defined for the 180/400-Foot Aquifer Subbasin.

7.2 Groundwater Elevation Monitoring Network

The sustainability indicator for chronic lowering of groundwater levels is evaluated by monitoring groundwater elevations in designated monitoring wells. The regulations require a network of monitoring wells sufficient to demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features.

7.2.1 Relevance of CASGEM Program

In November 2009, the State amended the Water Code to mandate statewide groundwater elevation monitoring through collaboration between local agencies and the Department of Water Resources (DWR). In response, DWR created the California Statewide Groundwater Elevation Monitoring (CASGEM) program wherein local agencies upload available water elevation data and DWR maintains the database in a format that is readily and widely available to the public.

The goal of the CASGEM program is to collect and store groundwater elevation data such that current and future groundwater management programs can draw upon the data to assess seasonal and long-term trends in local groundwater conditions.

The CASGEM program was therefore specifically intended to serve the purpose that is now required of the groundwater elevation monitoring network under SGMA. A CASGEM network has already been established by MCWRA for the 180/400-Foot Aquifer Subbasin (MCWRA, 2015b) This GSP will base its network for monitoring chronic lowering of groundwater elevations on the existing CASGEM network. After incorporating the CASGEM network into the GSP groundwater elevation monitoring network, no future CASGEM reporting will be necessary. All groundwater elevation data will continue to be collected by MCWRA for consistency with previous CASGEM efforts and will be reported to DWR through the monitoring module of the SGMA GSP upload tool.

7.2.2 Current CASGEM Network

The current CASGEM monitoring network consists of 23 wells with publicly available data within the 180/400-Foot Aquifer Subbasin. The CASGEM monitoring network was created to ensure adequate understanding of aquifer response. As a voluntary program, MCWRA based the CASGEM network on wells that were owned and monitored by MCWRA prior to initiation of the CASGEM program.

Table 7-1 summarizes the distribution of CASGEM wells by aquifer designation.

Table 7-1. CASGEM Well Network – Summary of Wells by Aquifer

Aquifer Designation	Number of Wells in Network
180-Foot Aquifer	12
400-Foot Aquifer	10
Deep	1

The wells in the water level monitoring network are listed in Table 7-2 and shown by aquifer depth on Figure 7-1, Figure 7-2, and Figure 7-3. The distribution of wells in the existing network and the need for additional wells is discussed below in Section 7.2.4. Appendix 7A presents well construction information and historical hydrographs for each CASGEM well.

Table 7-2. Existing 180/400-Foot Aquifer CASGEM Well Network

State Well Number	CASGEM Well Number	Local Well Designation	Well Use	Total Well Depth	Latitude (NAD 83)	Longitude (NAD 83)	Period of Record (years)
180-Foot Aquifer							
14S02E03F004M	367454N1217393W001	ESPA22636	Observation	205	36.74539	-121.739313	14.7
13S02E21Q001M	367816N1217514W001	SELA22633	Observation	157	36.781644	-121.751387	12.7
14S02E27A001M	366933N1217294W001	MCFD22632	Observation	293	36.693296	-121.729435	13.0
14S03E30G008M	366869N1216785W001	MKTC22650	Observation	293	36.68688	-121.678517	14.7
14S02E26H001M	366889N1217079W001	AMST22651	Observation	339	36.688875	-121.707934	13.0
16S04E08H004M	365550N1215466W001	CHEA21208	Observation	140	36.555022	-121.546557	13.0
17S05E06C002M	364883N1214684W001	GZWA21202	Observation	115	36.488323	-121.468395	12.7
14S03E18C001M	367207N1216806W001	BORA15009	Observation	225	36.720721	-121.680556	13.0
14S02E12B002M	367343N1216958W001	RODA14455	Observation	265	36.734316	-121.69585	13.0
15S03E16M001M	366250N1216532W001	1359	Irrigation	Confidential	36.624978	-121.653213	3.4
16S04E15D001M	365444N1215220W001	BRME10389	Unknown	384	36.544406	-121.522009	4.4
15S03E17M001M	366265N1216692W001	1480	Irrigation	271	36.62654	-121.669184	3.4
400-Foot Aquifer							
14S02E12Q001M	367221N1216965W001	1707	Residential	619	36.722108	-121.696473	3.4
14S02E08M002M	367275N1217803W001	239	Irrigation	500	36.727523	-121.78025	3.4
14S02E12B003M	367343N1216959W001	RODB14456	Observation	390	36.734282	-121.695864	15.0
17S05E06C001M	364883N1214684W002	GZWB21201	Observation	300	36.488323	-121.468404	13.0
14S02E03F003M	367455N1217395W001	ESPB22635	Observation	455	36.74548	-121.739492	14.7
13S02E32A002M	367653N1217636W001	10161	Irrigation	600	36.765339	-121.763589	3.4
14S03E18C002M	367207N1216805W001	BORB15010	Observation	395	36.720735	-121.680531	14.7
15S03E16F002M	366292N1216474W001	1862	Irrigation	592	36.629202	-121.647449	3.4
13S02E21N001M	367847N1217618W001	2432	Irrigation	550	36.784731	-121.761804	3.4
16S04E08H003M	365550N1215465W001	CHEB21205	Observation	295	36.555032	-121.546545	10.7
Deep Aquifers							
13S02E19Q003M	367808N1217847W001	75	Irrigation	1562	36.780798	-121.784687	3.4

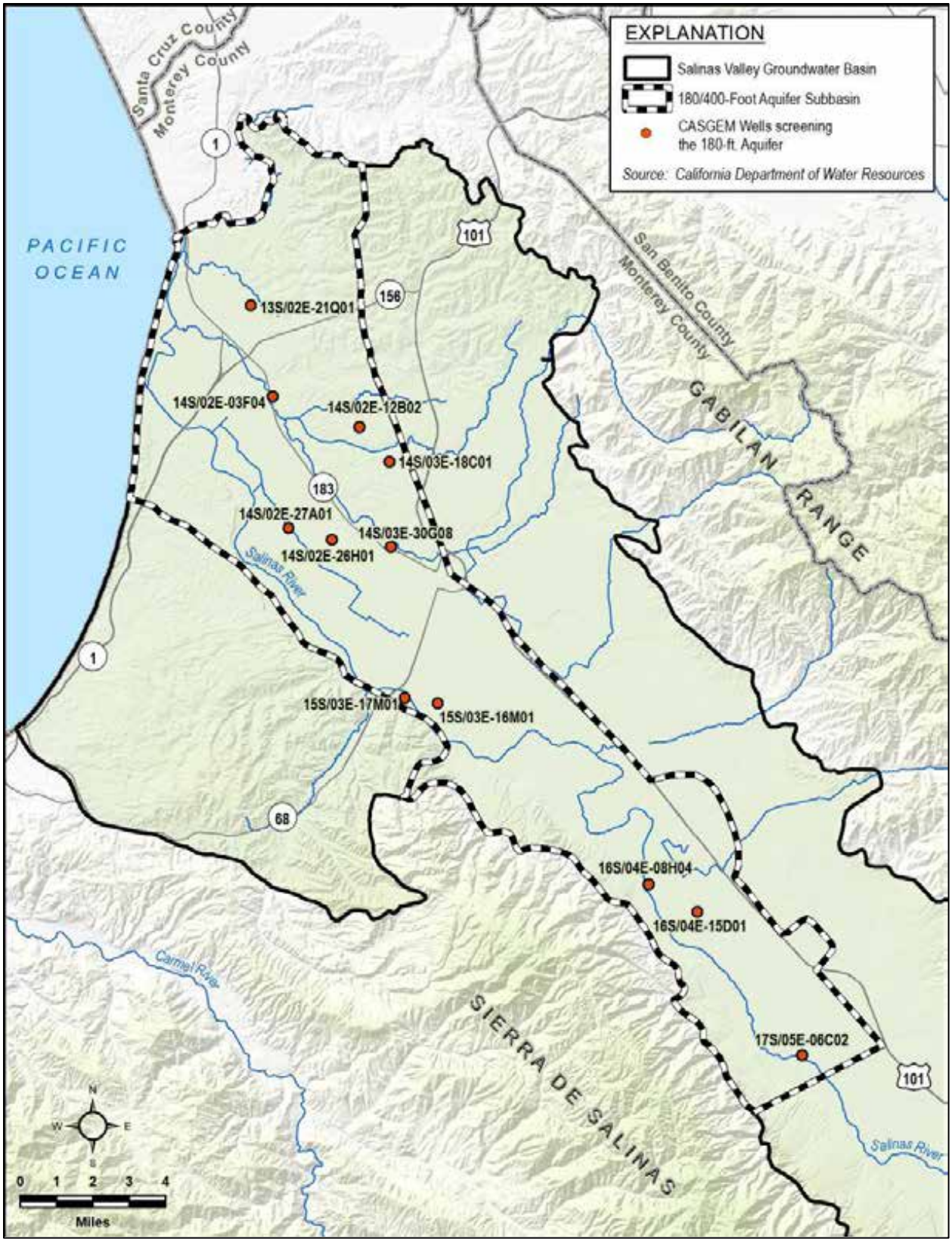


Figure 7-1. Current 180-Foot Aquifer CASGEM Monitoring Network for Water Levels

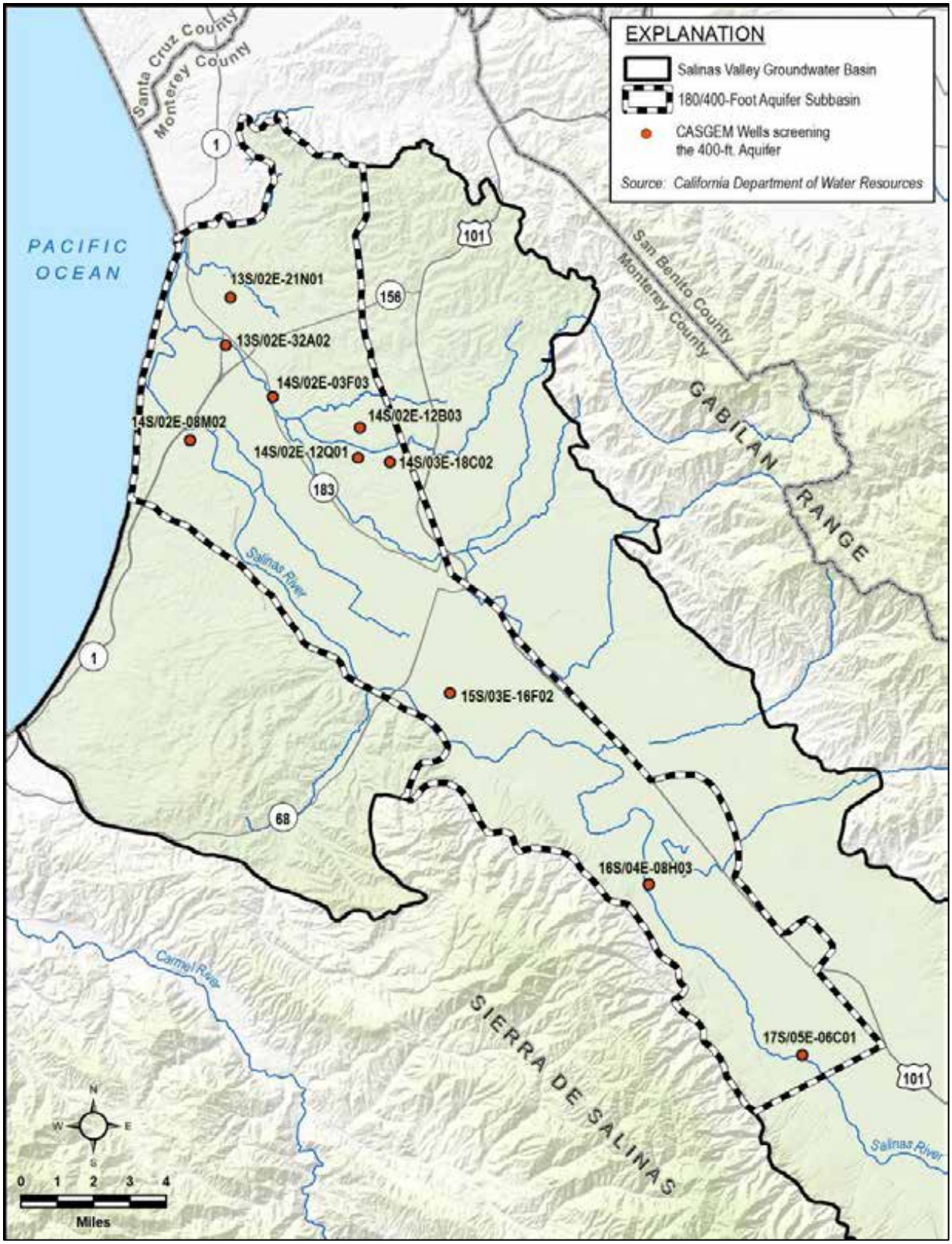


Figure 7-2. Current 400-Foot Aquifer CASGEM Monitoring Network for Water Levels

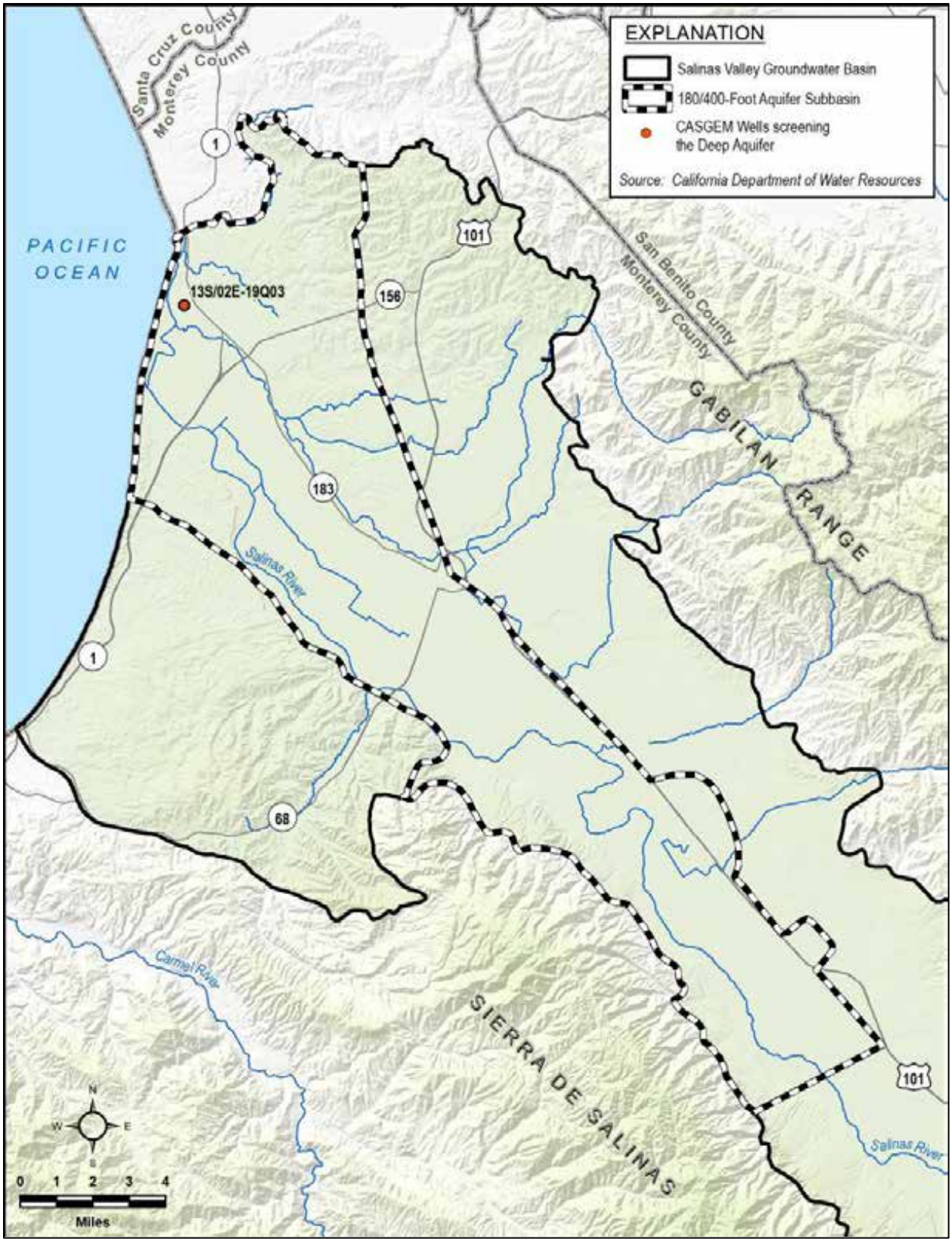


Figure 7-3. Current Deep Aquifers CASGEM Monitoring Network for Water Levels

7.2.3 Groundwater Elevation Monitoring Protocols

Chapter 4 of the MCWRA CASGEM monitoring plan includes a description of the monitoring procedures (MCWRA, 2015b). The CASGEM groundwater elevation monitoring protocols established by MCWRA are adopted by this GSP for groundwater elevation monitoring. The monitoring protocols are included in Appendix 7B. Groundwater elevation measurements will be collected at least two times per year to represent seasonal low and seasonal high groundwater conditions, as described in Appendix 7B. Groundwater elevation data are currently collected both by hand and using automated pressure transducers. The monitoring protocols established by MCWRA cover multiple monitoring methods for collection of data by hand and by automated pressure transducers. These protocols are consistent with data and reporting standards described in SGMA Regulation §352.4.

7.2.4 Groundwater Elevation Monitoring Network Data Gaps

Based on the SGMA regulations and the BMPs published by DWR on monitoring networks (DWR, 2016b), a visual analysis of the existing monitoring network was performed using professional judgment to evaluate whether there are data gaps in the groundwater elevation monitoring network.

While there is no definitive requirement on monitoring well density, the BMP cites several studies (Heath, 1976; Sophocleous, 1983; Hopkins and Anderson, 2016) that recommend 0.2 to 10 wells per 100 square miles. The BMP notes that professional judgement should be used to design the monitoring network to account for high-pumping areas, proposed projects, and other subbasin-specific factors.

The 180/400-Foot Aquifer Subbasin encompasses 132 square miles. If the BMP guidance recommendations are applied to the three aquifers in the Subbasin, the well network should include between 1 and 13 wells in each of the 180-Foot, 400-Foot, and Deep Aquifers. The current network includes 12 wells in the 180-Foot aquifer, 10 wells in the 400-Foot aquifer, and 1 well in the Deep Aquifers. The CASGEM wells in the 180-Foot, 400-Foot, and Deep Aquifers therefore fall within the range of the BMP guidance. However, visual inspection of the geographic distribution of the well network indicates that additional wells are necessary to adequately characterize the Subbasin. A higher density of monitoring wells may also be recommended in areas of potential subsidence, groundwater withdrawal, and seawater intrusion.

Figure 7-4 through Figure 7-6 show the locations of existing groundwater elevation monitoring wells and the generalized locations of proposed monitoring wells for the 180-Foot, 400-Foot, and Deep Aquifers. The generalized locations for new wells were based on addressing the criteria listed in the monitoring BMP including:

- Monitoring every principal aquifer

- Providing adequate data to produce seasonal potentiometric maps
- Providing adequate data to map groundwater depressions and recharge areas
- Providing adequate data to estimate change in groundwater storage
- Demonstrating conditions at Subbasin boundaries

The data gap areas shown for each aquifer on Figure 7-4, Figure 7-5, and Figure 7-6 will be addressed in the future by either identifying an existing well in each area that meets the criteria for a valid monitoring well, or drilling a new well in each area, as further described in Chapter 10. Some of the data gaps in the Deep Aquifers will likely be filled in response to Monterey County Urgency Ordinance 5302. This ordinance, adopted in 2018, limits the number of wells that can be drilled into the Deep Aquifers and requires that all new wells in the Deep Aquifers meter groundwater extractions, monitor groundwater elevations and quality, and submit all data to MCWRA and SVBGSA.

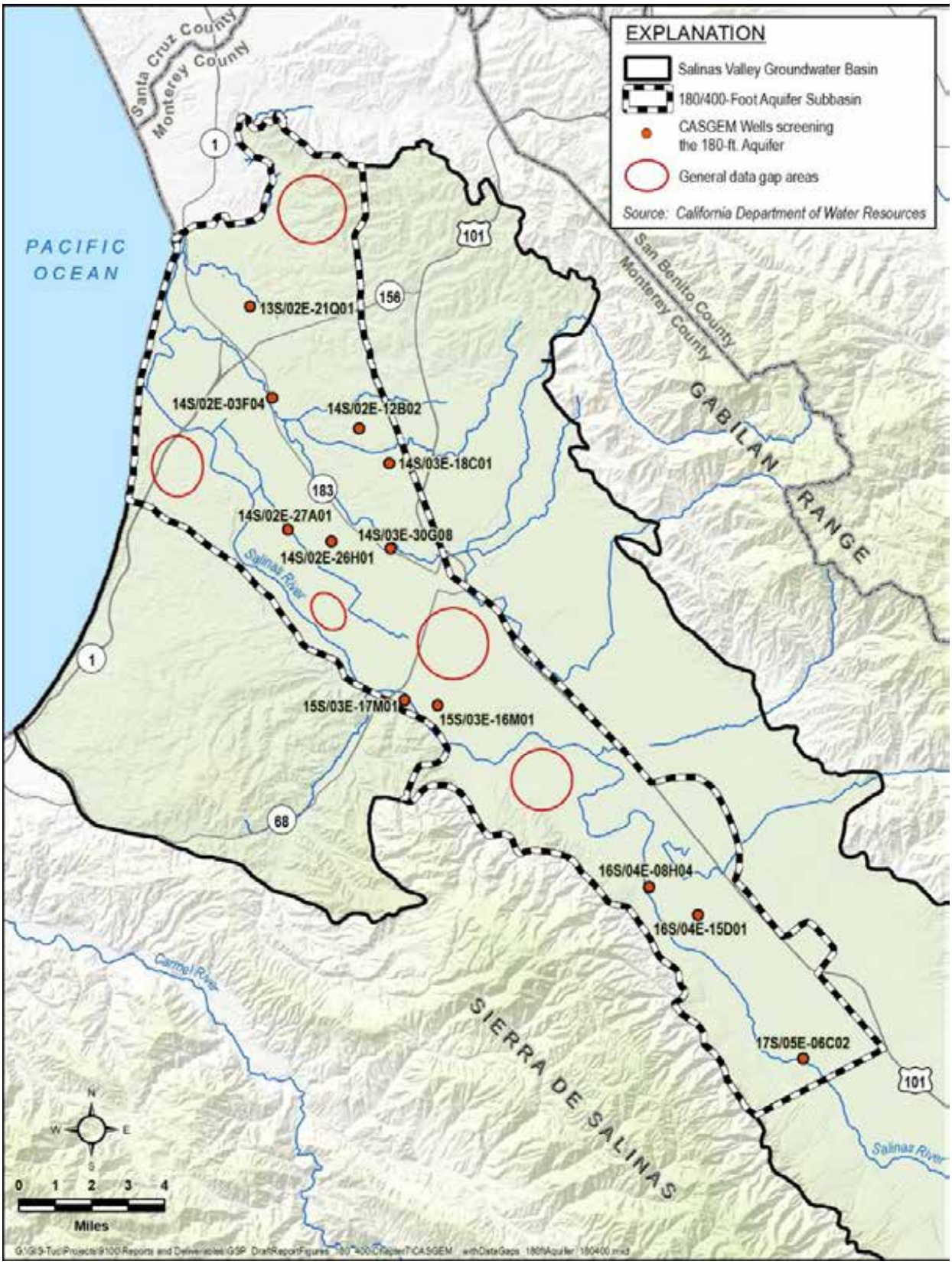


Figure 7-4. Proposed Locations for Additional Groundwater Elevation Monitoring Wells in the 180 Foot Aquifer

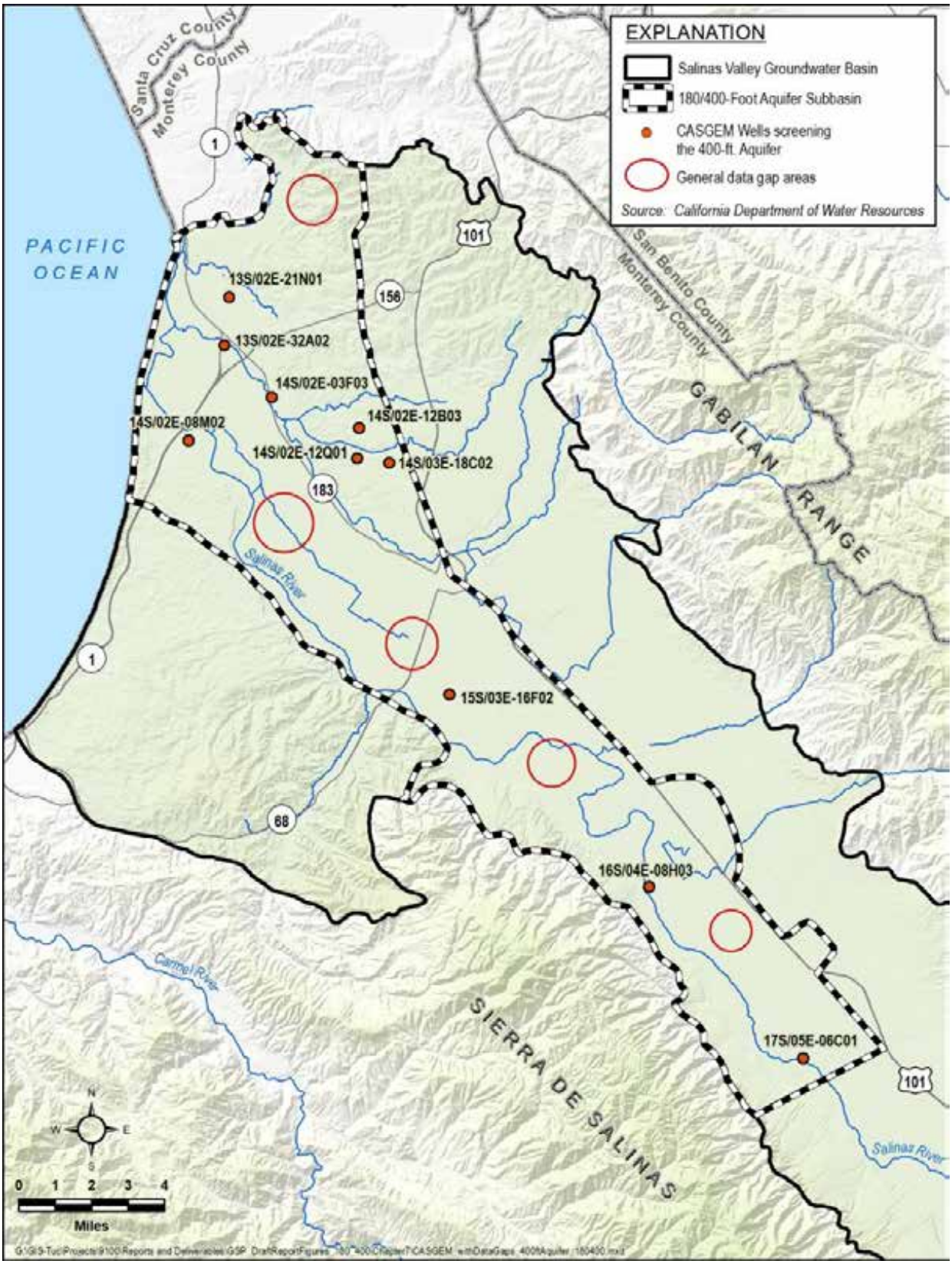


Figure 7-5. Proposed Locations for Additional Groundwater Elevation Monitoring Wells in the 400 Foot Aquifer

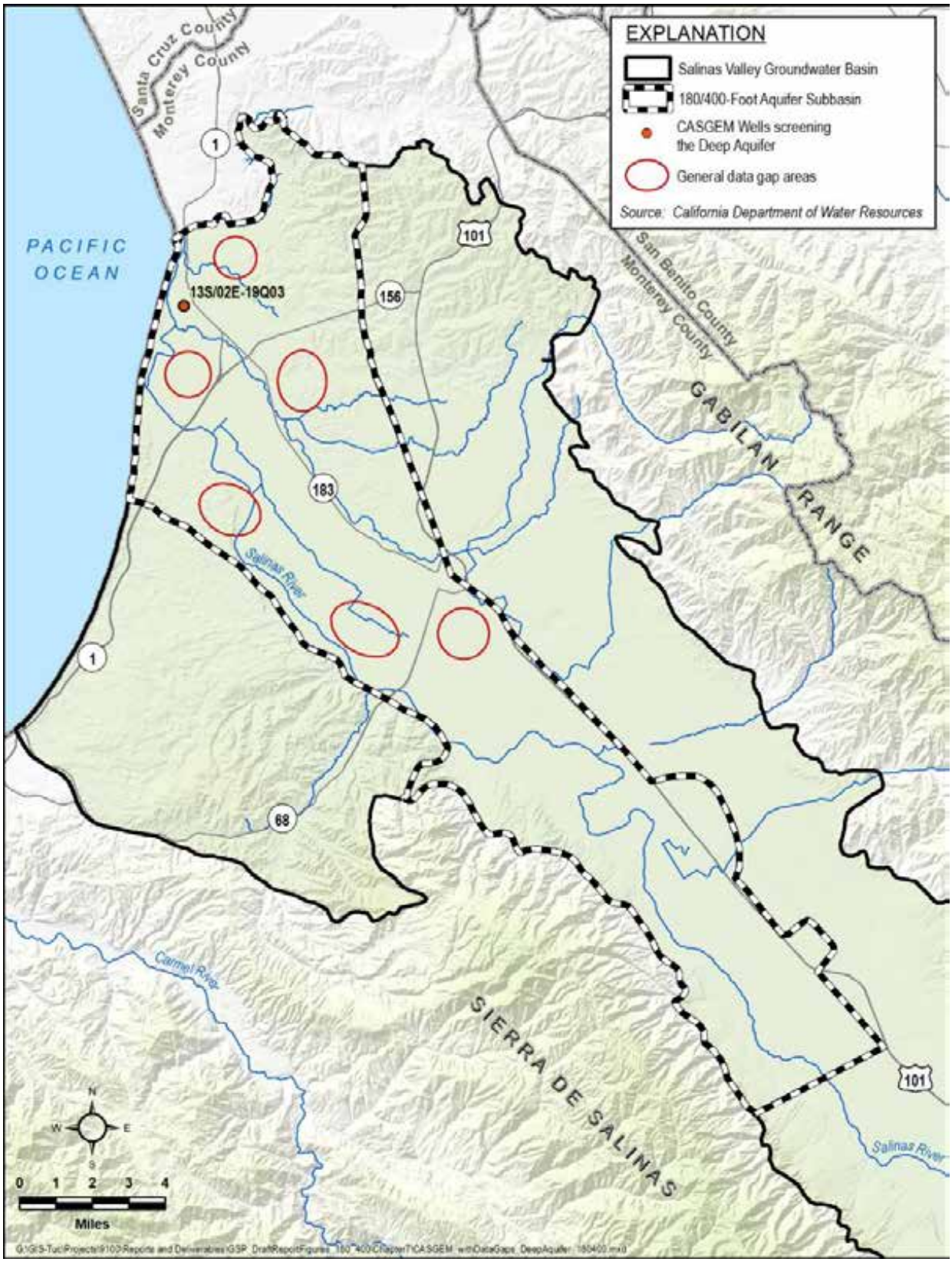


Figure 7-6. Proposed Locations for Additional Groundwater Elevation Monitoring Wells in the Deep Aquifers

7.3 Groundwater Storage Monitoring Network

In accordance with the change in groundwater storage minimum thresholds, the sustainability indicator for reduction of groundwater in storage is an amount of annual groundwater pumping. The total amount of groundwater withdrawn from the basin will be measured in a number of ways:

- Municipal groundwater users and small water systems, defined as systems with at least 15 connections or serving at least 25 people, are required to measure their groundwater usage and report it to the State of California. These data are available on the State's Drinking Water Information Clearinghouse website. These data will be used to quantify municipal and small system pumping.
- Agricultural pumping will be collected in one of two ways:
  - Most agricultural pumpers comply with the existing Monterey County Water Resources Agency Ordinance 3717 that requires groundwater users to report total pumping rates annually to the MCWRA. Groundwater wells with a discharge pipe less than 3 inches in diameter are exempt from this requirement. These lower production wells will be accounted for separately. SVBGSA will work with MCWRA to obtain the Ordinance 3717 data through a coordinated reporting program such that wells owners can provide a single annual reporting to fulfill the requirements of both the GSP and the existing County ordinance 3717.
  - For agricultural users that do not report their pumping annually, pumping will be estimated using Monterey County crop data and crop duty estimates, times a multiplier. The crop duty and multipliers are a data gap as described in Section 7.3.1.
- Domestic pumping, including water systems small enough to not require reporting to the State, will be estimated by multiplying the estimated number of domestic users by a water use factor. The initial water use factor will be 0.39 AF/yr./dwelling unit. The 0.39 AF/yr./dwelling unit is consistent with the value used in the historical and current water budgets in Chapter 6. This factor may be revised in the future if SVBGSA obtains information to justify a change.

The density of monitoring sites and frequency of measurements required from these sources will enable the agency to demonstrate short-term, seasonal, and long-term trends.

7.3.1 Groundwater Storage Monitoring Protocols

Groundwater storage monitoring will be accomplished through the use of existing monitoring programs performed by other agencies. For municipal groundwater users and small water systems, SVBGSA will download data directly from the State's Drinking Water Information Clearinghouse website. No other protocols are required.

For agricultural groundwater users, SVBGSA will work with MCWRA to develop a protocol for sharing data that is currently reported under County Ordinance 3717. SVBGSA will consider the value of developing protocols for flowmeter calibration. These protocols are consistent with data and reporting standards described in SGMA Regulation §352.4.

7.3.2 Groundwater Storage Monitoring Data Gaps

Accurate assessment of the amount of pumping requires an accurate count of the number of municipal, agricultural, and domestic wells in the GSP area. During implementation, the SVBGSA will finalize a database of existing and active groundwater wells in the 180/400-Foot Aquifer Subbasin. This database will draw from the existing MCWRA database, DWR's OWSCR database, and the Monterey County Health Department database of small water systems. As part of the assessment, the SVBGSA will verify well completion information and location, and whether the well is active, abandoned, or destroyed.

A potential data gap is the accuracy and reliability of reported groundwater pumping. SVBGSA will work with MCWRA to evaluate methods currently in place to assure data reliability. Based on the results of that evaluation, the protocols for monitoring may be revised and a protocol for well meter calibration may be developed. In addition, crop data and crop duty multipliers for estimating unreported pumping must be developed in areas where agricultural groundwater pumping is not reported. These crop duty multipliers will be used to estimate groundwater pumping, based on crop type and acreage.

7.4 Seawater Intrusion Monitoring Network

The sustainability indicator for Seawater Intrusion is evaluated using the location of a chloride isocontour, based on chloride concentration measured at an existing network of monitoring wells. MCWRA currently develops biennial maps of the 500 mg/L chloride isocontour (Figures 5-7a and 5-7b). However, those maps are based in part on confidential information obtained from private wells. The seawater intrusion monitoring network will include only wells where the data can be made publicly available.

Tables 7-3 and 7-4 list the wells currently used by MCWRA to monitor seawater intrusion. Figure 7-7 and Figure 7-8 show the locations of these wells in the 180-Foot and 400-Foot Aquifers. There is currently no seawater intrusion mapping in the Deep Aquifers. This is a data gap that is addressed below.

Table 7-3. MCWRA Seawater Intrusion Network with Publicly Available Data

Aquifer Designation	Number of Wells in Network
180-Foot Aquifer	17
400-Foot Aquifer	31
Deep	0

Table 7-4. 180/400-Foot Aquifer Seawater Intrusion Well Network

State Well Number	Total Well Depth	Latitude (NAD 83)	Longitude (NAD 83)
180-Foot Aquifer			
13S/02E-21Q01	205	36.79763	-121.7288605
14S/01E-24L02	157.4	36.7816493	-121.7514003
14S/01E-24L03	205	36.7453955	-121.7393269
14S/01E-24L04	250	36.737132	-121.7098186
14S/01E-24L05	100	36.7371266	-121.7097372
14S/02E-03F03	265	36.7343205	-121.6958626
14S/02E-11A02	280	36.7156293	-121.6980266
14S/02E-11A03	339.3	36.6888803	-121.7079471
14S/02E-11A04	292.7	36.6933013	-121.729448
14S/02E-12B02	225	36.7207266	-121.6805693
14S/02E-12B03	260	36.7183481	-121.6865932
14S/02E-13F02	293	36.6868846	-121.6785298
14S/02E-13F03	130	36.5551669	-121.5474146
14S/02E-26H01	140	36.5550273	-121.5465705
14S/02E-27A01	115	36.4891675	-121.4676728
14S/03E-18C01	Unknown	36.4883286	-121.4684084
14S/03E-18C02	205	36.79763	-121.7288605
400-Foot Aquifer			
13S/02E-15R02	585	36.7976336	-121.7288114
14S/02E-01C01	591	36.7505714	-121.6975633
14S/02E-02A02	810	36.7513598	-121.70755
14S/02E-02C03	835	36.7499731	-121.7192889
14S/02E-03F03	455	36.7454852	-121.7395058
14S/02E-03H01	800	36.7465666	-121.7288185
14S/02E-03R02	638	36.7400975	-121.7277911
14S/02E-04G02	620	36.746502	-121.7493753
14S/02E-09D04	610	36.7364032	-121.7600966
14S/02E-09K02	610	36.7287081	-121.7515143
14S/02E-10E02	717	36.7305044	-121.7426612
14S/02E-10H01	640	36.7314208	-121.7309841
14S/02E-11A04	490	36.7371694	-121.7098984
14S/02E-11B01	822	36.7360994	-121.7142361

State Well Number	Total Well Depth	Latitude (NAD 83)	Longitude (NAD 83)
14S/02E-11M03	660	36.7275465	-121.7207546
14S/02E-12B03	390	36.7342872	-121.6958768
14S/02E-13F02	480	36.7156078	-121.6980344
14S/02E-14A01	532	36.7193809	-121.7105053
14S/02E-14L03	612	36.7142507	-121.7197337
14S/02E-15A01	623	36.7211569	-121.7296572
14S/02E-15C02	550	36.7216387	-121.7378289
14S/02E-16G01	610	36.7179115	-121.7493994
14S/02E-22B01	670	36.7076668	-121.7318719
14S/02E-22L01	680	36.7013362	-121.7359514
14S/03E-18C02	395	36.7207409	-121.6805442
14S/03E-18E04	495	36.7183349	-121.6865671
16S/04E-08H02	295	36.5551431	-121.547419
16S/04E-08H03	295	36.5550375	-121.5465589
16S/05E-31P01	300	36.4891598	-121.4676964
17S/05E-06C01	Unknown	36.4883278	-121.4684169
13S/02E-15R02	585	36.7976336	-121.7288114

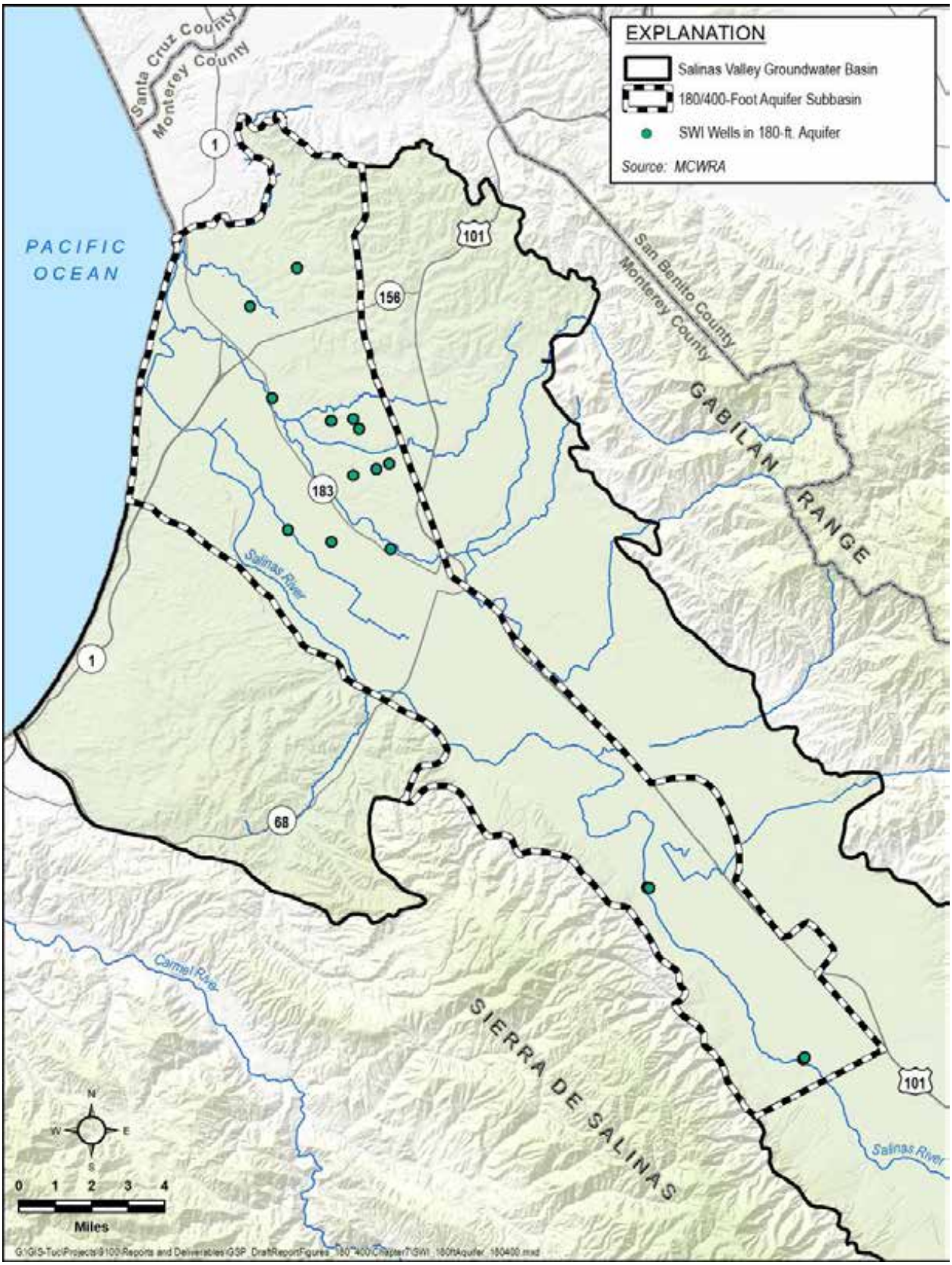


Figure 7-7. 180-Foot Aquifer Monitoring Network for Seawater Intrusion

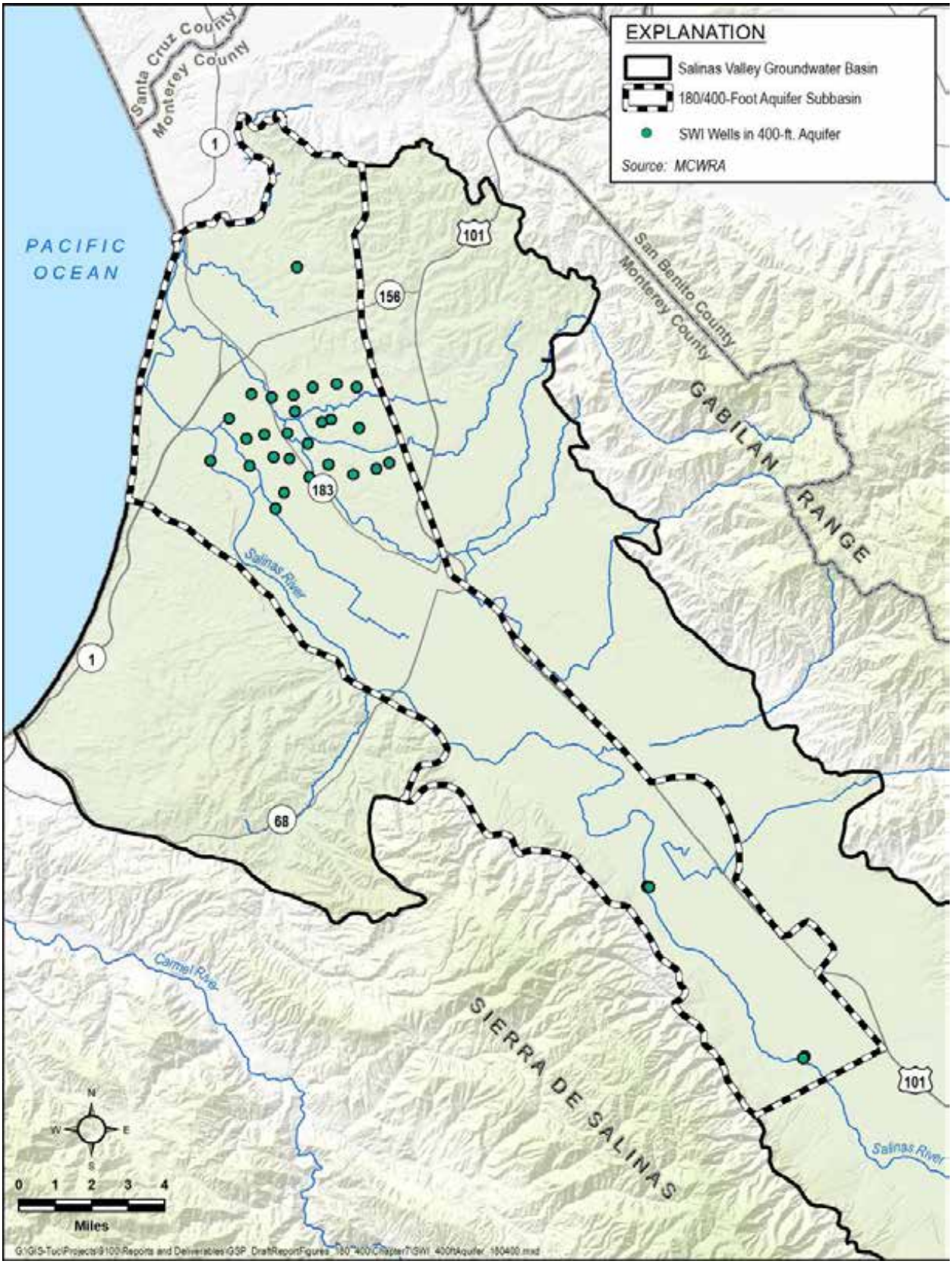


Figure 7-8. 400-Foot Aquifer Monitoring Network for Seawater Intrusion

7.4.1 Seawater Intrusion Monitoring Protocols

Seawater intrusion monitoring has been on-going activity since the MCWRA formed in 1947. The protocols established by MCWRA for collecting groundwater quality data from monitoring wells and analyzing those data for seawater intrusion are adopted by this GSP. The groundwater quality data monitoring protocols are available in the Monterey County Quality Assurance Project Plan (QAPP) and included in Appendix 7C. MCWRA also established chloride data contouring protocols to establish the isocontour map, provided in Appendix 7D. These protocols are consistent with data and reporting standards described in SGMA Regulation §352.4.

7.4.2 Seawater Intrusion Monitoring Data Gaps

The network of wells with publicly available data for monitoring chloride concentrations includes an adequate number and distribution of wells in the 180-Foot and the 400-Foot Aquifers (Figure 7-7 and Figure 7-8). However, the distribution of wells in the Deep Aquifers is inadequate and considered a data gap. As described in Section 7.2, additional wells will be identified in the Deep Aquifers for water level monitoring. The data gap for seawater intrusion monitoring in the Deep Aquifers will be addressed by using the same set of new monitoring wells identified in the water level monitoring network.

Some of the data gaps in the Deep Aquifers will likely be filled in response to Monterey County Urgency Ordinance 5302. This ordinance, adopted in 2018, limits the number of wells that can be drilled into the Deep Aquifers and requires that all new wells in the Deep Aquifers meter groundwater extractions, monitor groundwater elevations and quality, and submit all data to MCWRA and SVBGSA.

7.5 Water Quality Monitoring Network

The sustainability indicator for Degraded Water Quality is evaluated by monitoring groundwater quality at a network of existing water supply wells. The regulations require sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators to address known water quality issues.

As described in Chapter 8, separate minimum thresholds are set for agricultural constituents of concern and public supply well constituents of concern. Therefore, although there is a single groundwater quality monitoring network, different wells in the network will be reviewed for different constituents. Constituents of concern for drinking water will be assessed at public water supply wells and on-farm domestic wells. Constituents of concern for crop health will be assessed at agricultural supply wells.

The municipal public water system supply wells included in the monitoring network were identified by reviewing data from the State Water Resources Control Board (SWRCB) Division of Drinking Water. This is the same as the Public Water Systems category in the Safe Drinking

Water Plan for California. It includes municipal systems; community water systems; non-transient, non-community water systems; and non-community water systems that provide drinking water to at least 15 service connections or serve an average of at least 25 people for at least 60 days a year. Wells were selected that had at least one of the constituents of concern reported from 2015 or more recently, and totaled 51 wells (Burton and Wright, 2018). These wells are listed in Appendix 7E and shown on Figure 7-9.

Small public water systems wells, regulated by Monterey County Department of Public Health, will eventually add another136 wells to the monitoring network. These include both state small water systems that serve 5-14 connections and local water systems that serve 2-4 service connections. The limitation of this dataset is that the well location coordinates and construction information are currently missing; this is a data gap. SVBGSA work with the County to fill this data gap. When location and well construction data become available, these wells will be added to the monitoring network and included in Appendix 7E and Figure 7-9.

The domestic wells and agricultural supply wells included in the monitoring network will be a subset of those that have been sampled through the ILRP by the CCGC. The CCGC has conducted groundwater monitoring under the ILRP since 2013, sampling more than 1,200 domestic and irrigation supply wells on Coalition member ranches within the agricultural region (CCGC, 2017).

In 2017, Ag. Order 3.0 was issued and provides a “temporary 3-year order, in anticipation of a comprehensive order anticipated for adoption in 2020”. Under the anticipated 2020 Ag. Order 4.0, a long-term groundwater quality monitoring program will be put in place. The SVBGSA will use the data developed under this monitoring program to determine if domestic on-farm supply wells have constituents of concern above drinking water limits. In addition, the data will be reviewed to assess if agricultural supply wells are impacted by constituents that are detrimental to crops and could impair the agricultural beneficial use. The SVBGSA will identify a select number of domestic and irrigation ILRP wells as representative sites after Ag Order 4.0 is issued; not all wells sampled under Ag Oder 4.0 will be included in the GSP’s agricultural water quality monitoring network. Figure 7-10 shows the locations of all wells in the current ILRP groundwater quality monitoring network that were sampled under the temporary orders. The SVBGSA assumes that Ag Order 4.0 will have a similar representative geographic distribution of wells within the Subbasin. However, this network cannot be finalized until Ag Order 4.0 is issued, sometime in 2020.

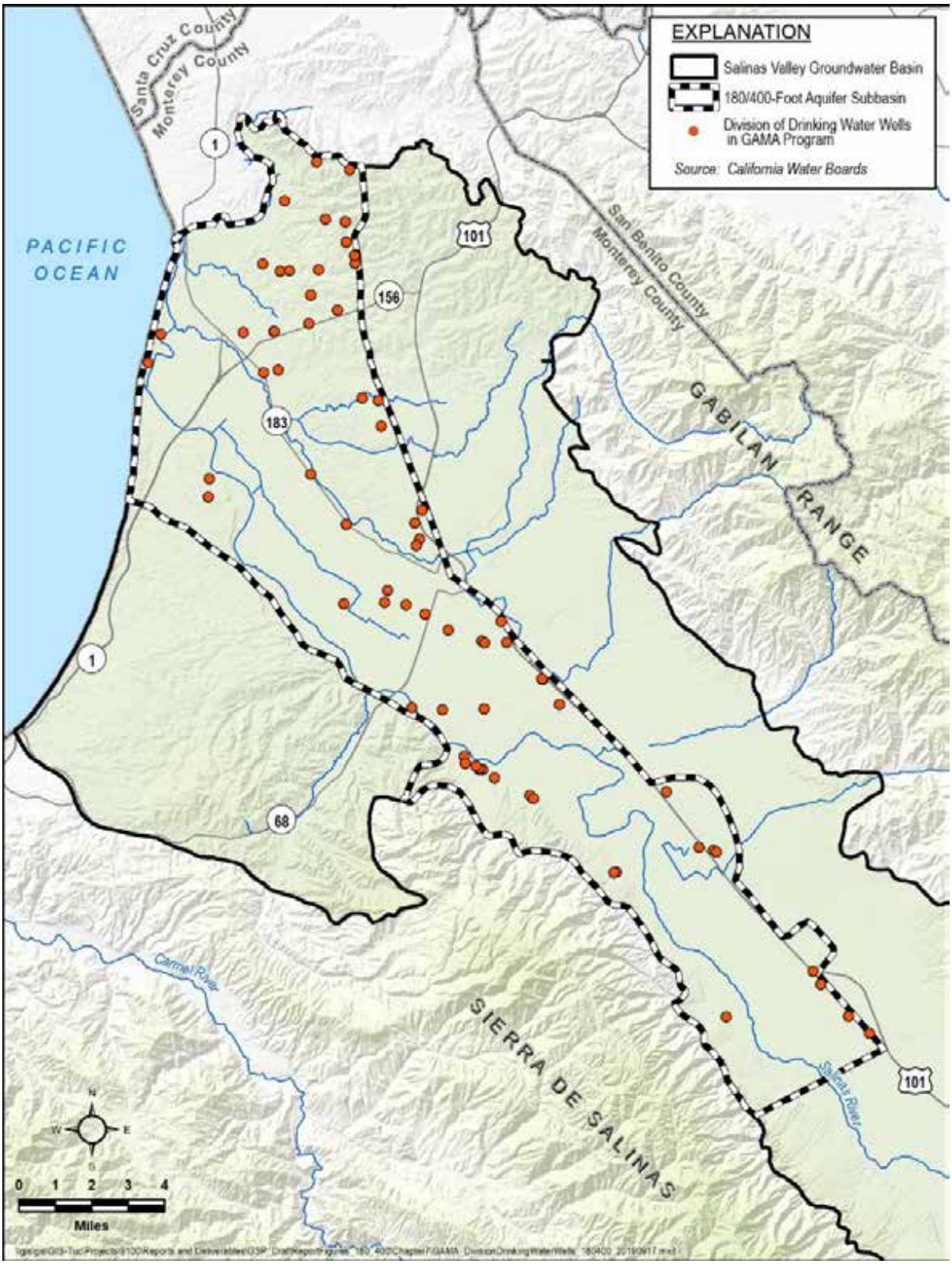


Figure 7-9. Locations of Wells in the Groundwater Quality Monitoring Network for Public Water Supply Wells

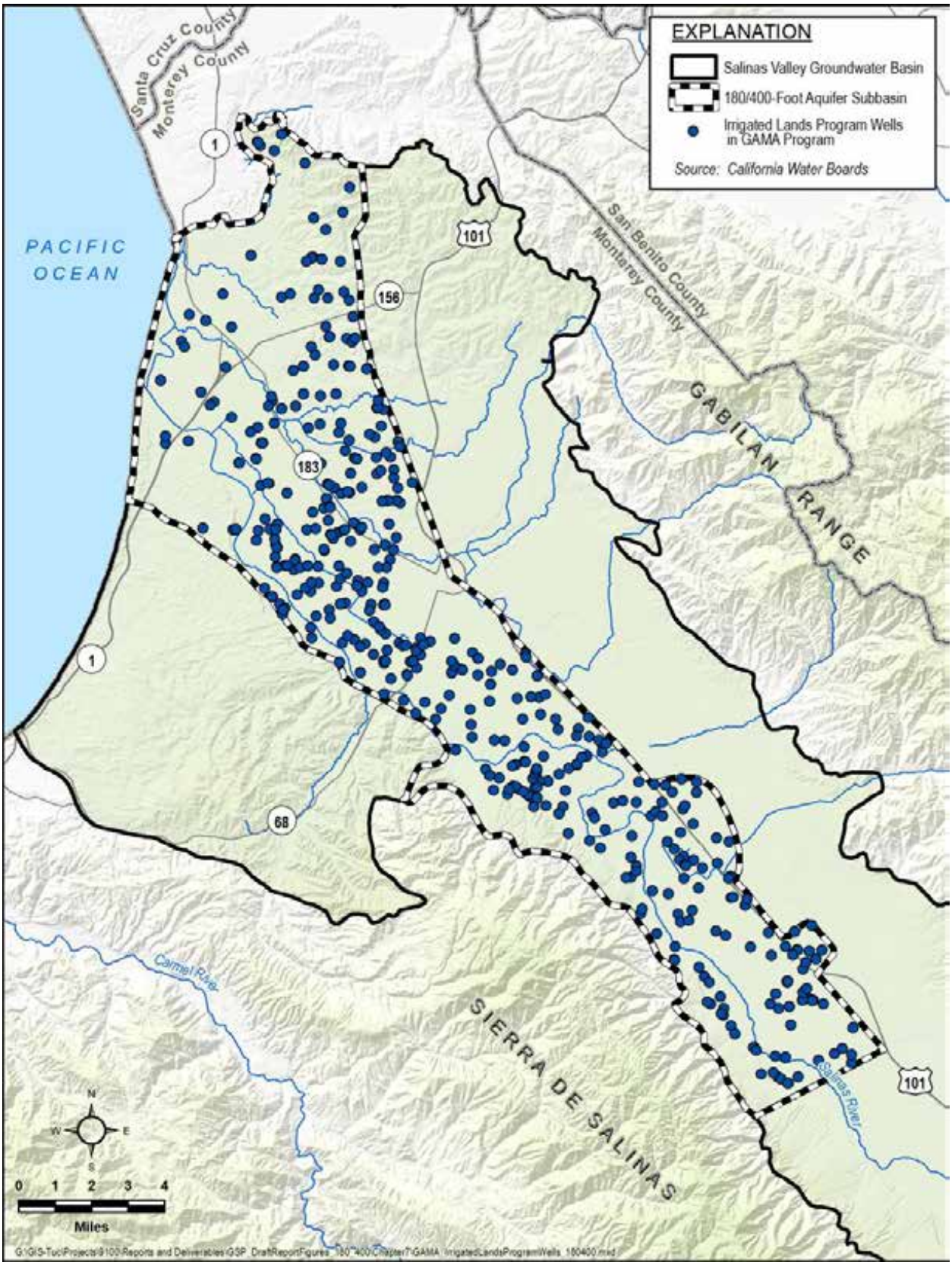


Figure 7-10. Locations of ILRP Wells Monitored under Ag Order 3.0

7.5.1 Groundwater Quality Monitoring Protocols

Water quality samples are currently being collected according to SWRCB and ILRP requirements. Water quality data from public water systems are collected, analyzed, and reported in accordance with protocols that are reviewed and approved by the SWRCB, Division of Drinking Water, in accordance with the state and federal Safe Drinking Water Acts. Monitoring protocols may vary by agency.

ILRP data are currently collected under Central Coast RWQCB Ag Order 3.0. ILRP samples are collected under the Tier 1, Tier 2, or Tier 3 monitoring and reporting programs. Copies of these monitoring and reporting programs are included in Appendix 7F, and incorporated herein as monitoring protocols. These protocols will continue to be followed during GSP implementation for the groundwater quality monitoring. These protocols are consistent with data and reporting standards described in SGMA Regulation §352.4.

7.5.2 Groundwater Quality Monitoring Data Gaps

There is adequate spatial coverage to assess impacts to beneficial uses and users. The primary data gap is that well construction information for many wells in the monitoring network is not known. The missing well construction data will be collected during plan implementation, as described in Chapter 10.

7.6 Land Subsidence Monitoring Network

As described in Section 5.4, DWR has, and will be, collecting land subsidence data using InSAR satellite data, and will make these data available to GSAs. This subsidence dataset represents the best available science for the 180/400-Foot Aquifer Subbasin and will therefore be used as the subsidence monitoring network.

7.6.1 Land Subsidence Monitoring Protocols

Land Subsidence monitoring protocols are the ones used by DWR for InSAR measurements and interpretation. If the annual monitoring indicates subsidence is occurring at a rate greater than the minimum thresholds, then additional investigation and monitoring may be warranted. In particular, the GSAs will implement a study to assess if the observed subsidence can be correlated to groundwater elevations, and whether a reasonable causality can be established. These protocols are consistent with data and reporting standards described in SGMA Regulation §352.4.

7.6.2 Land Subsidence Data Gaps

There are no data gaps associated with the subsidence monitoring network.

7.7 Interconnected Surface Water Monitoring Network

As described in Section 5.6 and Chapter 4 of this GSP, there is little direct connection between surface water and the 180-Foot, 400-Foot, or Deep Aquifers in the Subbasin. However, the Salinas River is potentially in connection with groundwater in the shallow water-bearing sediments that do not constitute a principal aquifer. The shallow sediments are not used for any significant extraction and have very little monitoring data. This analysis of locations of interconnected surface water is based on best available data; however, the level of interconnection is unclear. As mentioned in Chapter 4, the Salinas Valley Aquitard is not completely continuous, and there are locations where the 180-Foot Aquifer may be in hydraulic connection with overlying sediments. However, groundwater in the 180- and 400-Foot Aquifers is generally not considered to be hydraulically connected to the Salinas River or its tributaries. This aspect of the 180/400-Foot Aquifer Subbasin has been well documented in multiple independent studies (DWR, 1946; DWR, 2018; Durbin, et al., 1978; Kennedy-Jenks, 2004). Additional data are needed to reduce uncertainty and refine the map of interconnected surface waters.

The primary tool for assessing depletions of interconnected surface waters due to pumping will be the SVIHM. The SVIHM will supply surface water discharge, surface water head, baseflow contributions, location of ephemeral or intermittent flowing streams. It will also provide temporal changes in conditions due to variations in stream discharge and regional groundwater extraction, as well as other factors that may be necessary to identify adverse impacts on beneficial uses of the surface water.

Chapter 8 describes the use of the SVIHM model to develop minimum thresholds for the depletion of interconnected surface water. This approach is in accordance with the Monitoring Networks BMP which states [emphasis added]:

> *Monitoring of the interconnected surface water depletions requires the use of tools,* ***commonly modeling approaches****, to estimate the depletions associated with groundwater extraction. Models require assumptions be made to constrain the numerical model solutions. These assumptions should be based on empirical observations determining the extent of the connection of surface water and groundwater systems, the timing of those connections, the flow dynamics of both the surface water and groundwater systems, and hydrogeologic properties of the geologic framework connecting these systems.* [emphasis added]

7.7.1 Interconnected Surface Water Monitoring Protocols

Monitoring protocols for interconnected surface water will be developed when the SVIHM is available and when shallow wells are installed. The protocols will be consistent MCWRA's

current groundwater elevation monitoring protocols, and with data and reporting standards described in SGMA Regulation §352.4.

7.7.2 Interconnected Surface Water Data Gaps

There is very little monitoring data in the shallow sediments, and the level of interconnection to the 180/400-Foot Aquifer is unclear, as described in section 5.6. To address this data gap and develop the needed empirical data regarding the extent and timing of hydrologic connection, the SVBGSA will install two shallow wells along the Salinas River in the 180/400-Foot Aquifer Subbasin, as discussed in Chapter 10. Data from these wells will be used in conjunction with the SVIHM to address the data gap in interconnected surface water.

7.8 Representative Monitoring Sites

Representative monitoring sites (RMS) are defined in the regulations as a subset of monitoring sites that are representative of conditions in the Subbasin. All of the monitoring sites shown in figures and tables in this Chapter are considered RMS (except where noted).

7.9 Data Management System and Data Reporting

The SVBGSA has developed a Data Management System (DMS) that is used to store, review, and upload data collected as part of the GSP development and implementation. The DMS adheres to the following SGMA regulations:

- Article 3, Section §352.6: Each Agency shall develop and maintain a data management system that is capable of storing and reporting information relevant to the development or implementation of the Plan and monitoring of the Subbasin.
- Article 5, Section §354.40: Monitoring data shall be stored in the data management system developed pursuant to Section 352.6. A copy of the monitoring data shall be included in the Annual Report and submitted electronically on forms provided by the Department.

The SVBGSA DMS consists of two SQL databases. The HydroSQL database stores information about each well and water level and extraction time-series data. Fields in the HydroSQL database include:

- Subbasin
- Cadastral coordinates
- Planar coordinates
- Well owner

- Well name
- Well status
- Well depth
- Screened interval top and bottom
- Well type
- Water level elevation
- Annual pumping volume

Streamflow gauge data from the USGS is stored in the HydroSQL similarly to the well water level information.

Water quality data are stored in the EnviroData SQL database, which is linked to the HydroSQL for data management purposes. EnviroData SQL contains fields such as:

- Station
- Parameter
- Sample Date
- Detection (detect or non-detect)
- Value
- Unit

The data used to populate the SVBGSA DMS are listed in Table 7-5. Categories marked with an X indicate datasets that are publicly accessible or available from MCWRA and other sources that were used in populating the DMS. Additional datasets will be added in the future as appropriate, such as recharge or diversion data.

Table 7-5. Datasets Available for Use in Populating the DMS

Data Sets	Data Category						
	Well and Site Information	Well Construction	Aquifer Properties and Lithology (Data to be Added when Available)	Water Level	Pumping (Data to be Added when Available)	Streamflow	Water Quality
DWR (CASGEM)	X	X		X			
MCWRA	X	X		X	X		X
GeoTracker GAMA	X						X
USGS Gage Stations						X	

Data were compiled and reviewed to comply with quality objectives. The review included the following checks:

- Identifying outliers that may have been introduced during the original data entry process by others.
- Removing or flagging questionable data being uploaded in the DMS. This applies to historical water level data and water quality data.

The data were loaded into the database and checked for errors and missing data. The error tables identify water level and/ or well construction data as missing. Another quality check was completed with the water level data by plotting each well hydrograph to identify and remove anomalous data points.

In the future, well log information will be entered for selected wells and other information will be added as needed to satisfy the requirements of the SGMA regulations.

The DMS also includes a publicly accessible web-map hosted on the SVBGSA website; accessed at https://svbgsa.org/gsp-web-map-and-data/. This web-map gives interested parties access to technical information used in the development of the GSP and includes public well data, and analysis such as water level contour maps, seawater intrusion, as well as various local administrative boundaries. In addition, the web-map has functionalities to graph time series of water levels and search for specific wells in the database. This web-map will be regularly updated as new information is made available to the SVBGSA.

8 SUSTAINABLE MANAGEMENT CRITERIA

This chapter defines the conditions that constitute sustainable groundwater management, discusses the process by which the SVBGSA will characterize undesirable results, and establishes minimum thresholds and measurable objectives for each sustainability indicator.

This is the fundamental chapter in the GSP that defines sustainability in the 180/400-Foot Aquifer Subbasin and addresses significant regulatory requirements. The measurable objectives, minimum thresholds, and undesirable results detailed in this chapter define the Subbasin's future conditions and commits the GSA to actions that will meet these criteria. Defining these SMC requires a significant level of analysis and scrutiny, and this chapter includes adequate data to explain how SMC were developed and how they influence all beneficial uses and users.

This chapter is structured to address all of the SGMA regulations regarding SMC. The SGMA regulations are extensive. To retain an organized approach, this chapter follows the same structure for each sustainability indicator. The result is somewhat repetitive, but is complete when addressing the regulations. The SMC are grouped by sustainability indicator. Each section follows a consistent format that contains the information required by Section 354.22 *et. seq* of the regulations and outlined in the SMC BMP (DWR, 2017; CCR, 2016). Each SMC section includes a description of:

- How locally defined significant and unreasonable conditions were developed
- How minimum thresholds were developed, including:
  - The information and methodology used to develop minimum thresholds (§354.28 (b)(1))
  - The relationship between minimum thresholds and the relationship of these minimum thresholds to other sustainability indicators (§354.28 (b)(2))
  - The effect of minimum thresholds on neighboring basins (§354.28 (b)(3))
  - The effect of minimum thresholds on beneficial uses and users (§354.28 (b)(4))
  - Relevant federal, state, or local standards (§354.28 (b)(5))
  - The method for quantitatively measuring minimum thresholds (§354.28 (b)(6))
- How measurable objectives were developed, including:
  - The methodology for setting measurable objectives (§354.30)
  - Interim milestones (§354.30 (a), §354.30 (e), §354.34 (g)(3))
- How undesirable results were developed, including:
  - The criteria for defining undesirable results (§354.26 (b)(2))

- The potential causes of undesirable results (§354.26 (b)(1))
- The effects of these undesirable results on the beneficial users and uses (§354.26 (b)(3))

8.1 Definitions

The SGMA legislation and GSP Regulations contain a number of new terms relevant to the SMC. These terms are defined below using the definitions included in the GSP Regulations. Where appropriate, additional explanatory text is added in italics. This explanatory text is not part of the official definitions of these terms.

- **Interconnected surface water** refers to surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted.

  Interconnected surface waters are sections of streams, lakes, or wetlands where the groundwater table is at or near the ground surface.

- **Interim milestone** refers to a target value representing measurable groundwater conditions, in increments of 5 years, set by an Agency as part of a Plan.

  Interim milestones are targets such as groundwater elevations that will be achieved every five years to demonstrate progress towards sustainability.

- **Management area** refers to an area within a basin for which the Plan may identify different minimum thresholds, measurable objectives, monitoring, or projects and management actions based on differences in water use sector, water source type, geology, aquifer characteristics, or other factors.

- **Measurable objectives** refer to specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions that have been included in an adopted Plan to achieve the sustainability goal for the basin.

  Measurable objectives are goals that the GSP is designed to achieve.

- **Minimum threshold** refers to a numeric value for each sustainability indicator used to define undesirable results.

  Minimum thresholds are indicators of an unreasonable condition. For example, the level of a pump in a well may be a minimum threshold because groundwater levels dropping below the pump level would be an unreasonable condition.

- **Representative monitoring** refers to a monitoring site within a broader network of sites that typifies one or more conditions within the basin or an area of the basin.

- **Sustainability indicator** refers to any of the effects caused by groundwater conditions occurring throughout the basin that, when significant and unreasonable, cause undesirable results, as described in Water Code Section 10721(x).

  The six sustainability indicators relevant to this subbasin include chronic lowering of groundwater levels; reduction of groundwater storage; degraded water quality; land subsidence; seawater intrusion; and depletion of interconnected surface waters.

- **Uncertainty** refers to a lack of understanding of the basin setting that significantly affects an Agency's ability to develop sustainable management criteria and appropriate projects and management actions in a Plan, or to evaluate the efficacy of Plan implementation, and therefore may limit the ability to assess whether a basin is being sustainably managed.

- **Undesirable Result**

  Undesirable Result is not defined in the Regulations. However, the description of undesirable result states that it should be a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the subbasin. An example undesirable result is more than 10% of the measured groundwater elevations being lower than the minimum thresholds. Undesirable results should not be confused with significant and unreasonable conditions. Significant and unreasonable conditions are physical conditions to be avoided; an undesirable result is a quantitative assessment based on minimum thresholds.

8.2 Sustainability Goal

Per Section §354.24 of the GSP Regulations (CCR, 2016), the sustainability goal for the Subbasin has three parts:

- A description of the sustainability goal;
- A discussion of the measures that will be implemented to ensure the Subbasin will be operated within sustainable yield, and;
- An explanation of how the sustainability goal is likely to be achieved.

The goal of this GSP is to manage the groundwater resources of the 180/400-Foot Aquifer Subbasin for long-term community, financial, and environmental benefits to the Subbasin's residents and businesses. This GSP will ensure long-term viable water supplies while maintaining the unique cultural, community, and business aspects of the Subbasin. It is the express goal of this GSP to balance the needs of all water users in the Subbasin.

A number of projects and management actions are included in this GSP and detailed in Chapter 9. Not all of these projects and actions will be implemented. However, some

combination of these will be implemented to ensure the Subbasin is operated within its sustainable yield and achieves sustainability. These management actions and project types include:

Management Actions:

- Agricultural land and pumping allowance retirement
- Outreach and education for agricultural BMPs
- Nacimiento and San Antonio Reservoirs Reoperation
- Restrict Pumping in CSIP Area
- Support and strengthen MCWRA restrictions on additional wells in the Deep Aquifers
- Convene a seawater intrusion working group

Projects:

- In-lieu recharge through direct surface water delivery for irrigation
- Direct recharge through recharge basins and injection wells
- Indirect recharge through decreased evapotranspiration (e.g., removal of invasive species) or increased percolation (e.g., stormwater capture)
- Hydraulic barrier to control seawater intrusion

For each of these project types, a number of priority projects with specific conceptual designs are described in Chapter 9.

The management actions and projects are designed to achieve sustainability within 20 years by one or more of the following means:

- Educating stakeholders and prompting changes in behavior to improve chances of achieving sustainability.
- Increasing awareness of groundwater pumping impacts to promote voluntary reductions in groundwater use through improved water use practices or fallowing crop land.
- Increasing basin recharge by capturing surface water under approved or modified permits.
- Developing new renewable water supplies for use in the Subbasin to offset groundwater pumping.

- Working with MCWRA to effectively re-operate surface water reservoirs to benefit groundwater sustainability.
- Develop a barrier that halts seawater intrusion on the coast.

8.3 General Process for Establishing Sustainable Management Criteria

The SMC presented in this chapter were developed using publicly available information, feedback gathered during public meetings, hydrogeologic analysis, and meetings with SVBGSA staff and Advisory Committee members. The general process included:

- Presentations to the Board of Directors on the SMC requirements and implications.
- Presentations to the Advisory Committee and Subbasin Specific working groups outlining the approach to developing SMC and discussing initial SMC ideas. The Advisory Committee and working groups provided feedback and suggestions for the development of initial SMC.
- Discussions with GSA staff and various Board Members.
- Modifying minimum thresholds and measurable objectives based on input from GSA staff and Board Members.

This general process resulted in the SMC presented in this chapter.

8.4 Management Areas

SGMA allows for the establishment of management areas within a basin or subbasin to distinguish different monitoring and management criteria and facilitate implementation of the GSP. Management areas have not been established in the Subbasin.

8.5 Sustainable Management Criteria Summary

Table 8-1 provides a summary of the SMC for each of the six sustainability indicators. The rationale and background for developing these criteria are described in detail in the following sections. The SMC are individual criteria that will each be met simultaneously, rather than in an integrated manner. For example, the groundwater elevation and seawater intrusion SMCs are two independent SMC that will be achieve simultaneously. The groundwater elevation SMC do not hinder the seawater intrusion SMC, but also, they do not ensure the halting of seawater intrusion by themselves. SMC are developed for all principal aquifers that have sufficient data. Where insufficient data exists, SMC will be developed when data gaps are filled.

Table 8-1. Sustainable Management Criteria Summary

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result	Interim Milestones
Chronic lowering of groundwater levels	Water level minimum thresholds set to 1 foot above 2015 groundwater elevations. See Table 8-2 for wells in the 180- and 400- Foot aquifers	Measured through monitoring well network	Water level measurable objectives set to 2003 groundwater elevations	Over the course of any 1 year, no more than 15% of groundwater elevation minimum thresholds shall be exceeded in any single aquifer and no one well shall exceed its minimum threshold for more than two consecutive years. Allows two exceedances in the 180-Foot aquifer and two exceedances in the 400-Foot aquifer.	See Table 8-3
Reduction in groundwater storage	Minimum threshold set to the estimated long-term future sustainable yield of 112,000 AF/yr. for the entire 180/400-Foot Aquifer Subbasin	Measured through total groundwater extractions. Municipal users and small systems report groundwater extractions to the state. Agricultural pumping will either be collected by MCWRA, or estimated based on crop data	Measurable objective is Identical to the minimum threshold. Pumping is set to the estimated long-term future sustainable yield of 112,000 AF/yr. for the entire 180/400-Foot Aquifer Subbasin	During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the total groundwater pumping shall not exceed the minimum threshold.	Set to 112,000 AF/yr.
Seawater intrusion	Minimum threshold is the 2017 extent of the 500 mg/L chloride isocontour as developed by MCWRA for the 180- and 400- Foot Aquifers. The minimum threshold is the line defined by Highway 1 for the Deep Aquifers.	Seawater intrusion maps developed by MCWRA	Measurable objective is the line defined by Highway 1 for the 180-Foot, 400-Foot, and Deep Aquifers	On average in any 1 year there shall be no mapped seawater intrusion beyond the 2017 extent of the 500 mg/L chloride isocontour.	5-Year: identical to current conditions 10-year: one-third of the way to the measurable objective 15-year: two-thirds of the way to the measurable objective

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result	Interim Milestones
Degraded groundwater quality	Minimum threshold is zero additional exceedances of groundwater quality constituents of concern known to exist in the Subbasin above drinking water or agricultural limits. Exceedances are only measured in supply wells that regularly test for the parameters. See Tables 8-2 and 8-3 for the list of constituents.	Groundwater quality data downloaded annually from state and local sources.	Measurable objective is identical to the minimum threshold. Zero additional exceedances of groundwater quality constituents of concern known to exist in the Subbasin above drinking water or agricultural limits.	On average during any 1 year, no groundwater quality minimum threshold shall be exceeded as a direct result of projects or management actions taken as part of GSP implementation.	Identical to current conditions
Subsidence	To account for InSAR errors, the minimum threshold is no more than 0.1 foot per year of estimated land movement, resulting in zero net long-term subsidence	Measured using DWR provided InSAR data.	Measurable objective is identical to the minimum threshold, resulting in Zero net long-term subsidence.	In any 1 year, there will be zero exceedances of minimum thresholds for subsidence.	Zero long-term subsidence averaged over every 5-year period.
Depletion of interconnected surface water	Set to the estimated average historical rate of stream depletion, adjusted for climate change. This is currently estimated to be 69,700 AF/yr. for future conditions including climate change.	Estimated using the SVIHM integrated model	Identical to the minimum threshold. Set to the estimated average rate of stream depletion of 69,700 AF/yr. for future conditions including climate change	During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the depletion of interconnected surface waters shall not exceed the minimum threshold.	Average annual depletion rate set to 69,700 AF/yr. for every 5-year period.

8.6 Chronic Lowering of Groundwater Elevations SMC

8.6.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were determined based on public meetings and discussions with GSA staff. Significant and unreasonable groundwater elevations in the Subbasin are those that:

- Are at or below the lowest observed groundwater elevations. Public and stakeholder input identified historically low groundwater elevations as significant and unreasonable.
- Cause significant financial burden to local agricultural interests.
- Interfere with other sustainability indicators.

8.6.2 Minimum Thresholds

Section §354.28(c)(1) of the GSP Regulations states that "The minimum threshold for chronic lowering of groundwater elevations shall be the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results" (CCR, 2016).

8.6.2.1 Information and Methodology Used to Establish Minimum Thresholds and Measurable Objectives

The development of minimum thresholds and measurable objectives follow a similar process and are described concurrently in this section. The information used for establishing the chronic lowering of groundwater elevations measurable objectives and minimum thresholds include:

- Feedback from discussions with local stakeholders on challenges and goals.
- Feedback about significant and unreasonable conditions gathered during public meetings.
- Historical groundwater elevation data from wells monitored by the Monterey County Water Resources Agency (MCWRA).
- Maps of current and historical groundwater elevation data.

The general steps for developing minimum thresholds and measurable objectives were:

- Use MCWRA-generated average groundwater elevation change hydrographs to select representative years that represent minimum thresholds and measurable objectives for the Subbasin.

- Use the MCWRA-generated groundwater elevation contour map from the appropriate years to identify minimum threshold and measurable objective values for each monitoring network well.
- Plot the minimum thresholds and measurable objectives on the respective monitoring well hydrographs.
- Visually inspect each hydrograph to check if the minimum threshold and measurable objective are appropriate according to the actual water levels measured during the representative years selected from the groundwater elevation change hydrographs.
- Manually adjust the minimum thresholds and measurable objectives as needed, to better represent conditions at each well.

Each of these steps is described in more detail below.

The MCWRA provided hydrographs of average cumulative groundwater elevation changes for the Pressure Subarea, which covers the 180/400-Foot Aquifer Subbasin. Based on this period of record, a representative climatic cycle from 1967 to 1998 was used to develop values for minimum thresholds and measurable objectives. This representative period also corresponds to important water management milestones for the Salinas Valley Groundwater Basin; water year 1967 marks the beginning of operations at San Antonio Reservoir, with first water releases in November 1966. The Castroville Seawater Intrusion Project (CSIP) began operating in 1998.

The groundwater elevation change hydrograph with preliminary minimum threshold and measurable objectives lines for the Pressure Subarea are shown on Figure 8-1. The Pressure Subarea represents both the 180/400-foot Aquifer Subbasin and the Monterey Subbasin. The average 2015 and 2016 groundwater elevations in the Pressure Subarea are considered significant and unreasonable. The minimum thresholds were therefore set above the 2015 and 2016 groundwater elevations. When looking at the groundwater elevation changes within the representative climatic cycle (Figure 8-1), the historical lowest elevations occurred in 1991 and 1992, at one foot above the 2015 level. Therefore, the Pressure Area minimum thresholds were set one foot above 2015 groundwater elevations.

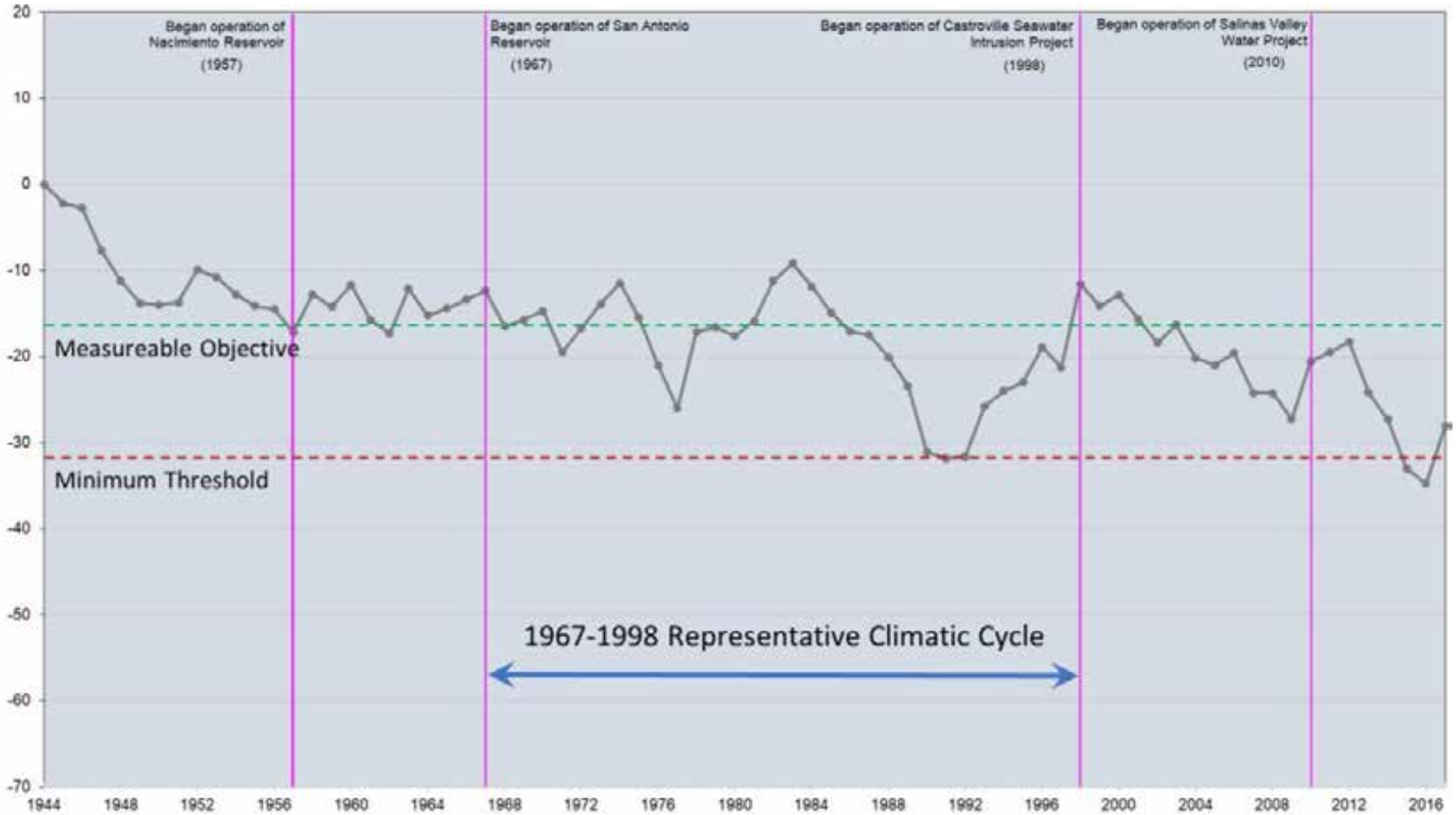


Figure 8-1. Cumulative Groundwater Elevation Change Hydrograph with Selected Measurable Objective and Minimum Threshold for the Pressure Subarea

After the years representing both minimum thresholds and measurable objectives were selected, MCWRA-provided groundwater elevation contour maps for the fall water level measurements of these years were digitized. An additional 1-foot adjustment factor was added to the 2015 map to establish minimum thresholds. Separate maps were created for both the 180-Foot Aquifer and for the 400-Foot Aquifer. No groundwater elevation contour maps currently exist for the Deep Aquifers due to a lack of monitoring data. This is a data gap that will be filled during GSP implementation, and when MCWRA produces a more detailed analysis of the Deep Aquifers.

The minimum threshold contour maps along with the monitoring network wells are shown on Figure 8-2 for the 180-Foot Aquifer and on Figure 8-3 for the 400-Foot Aquifer.

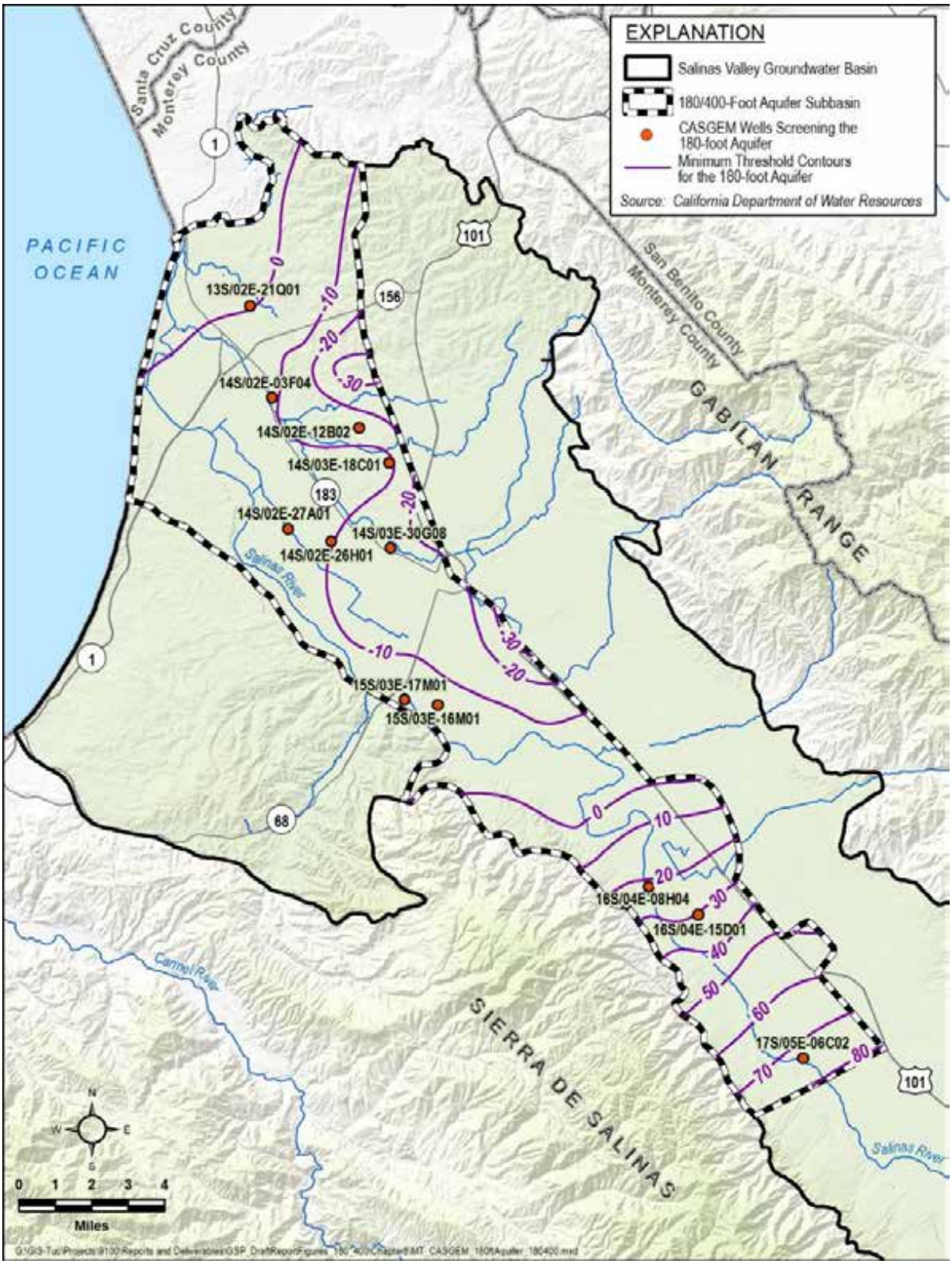


Figure 8-2. Groundwater Elevation Minimum Threshold Contour Map for the 180-Foot Aquifer

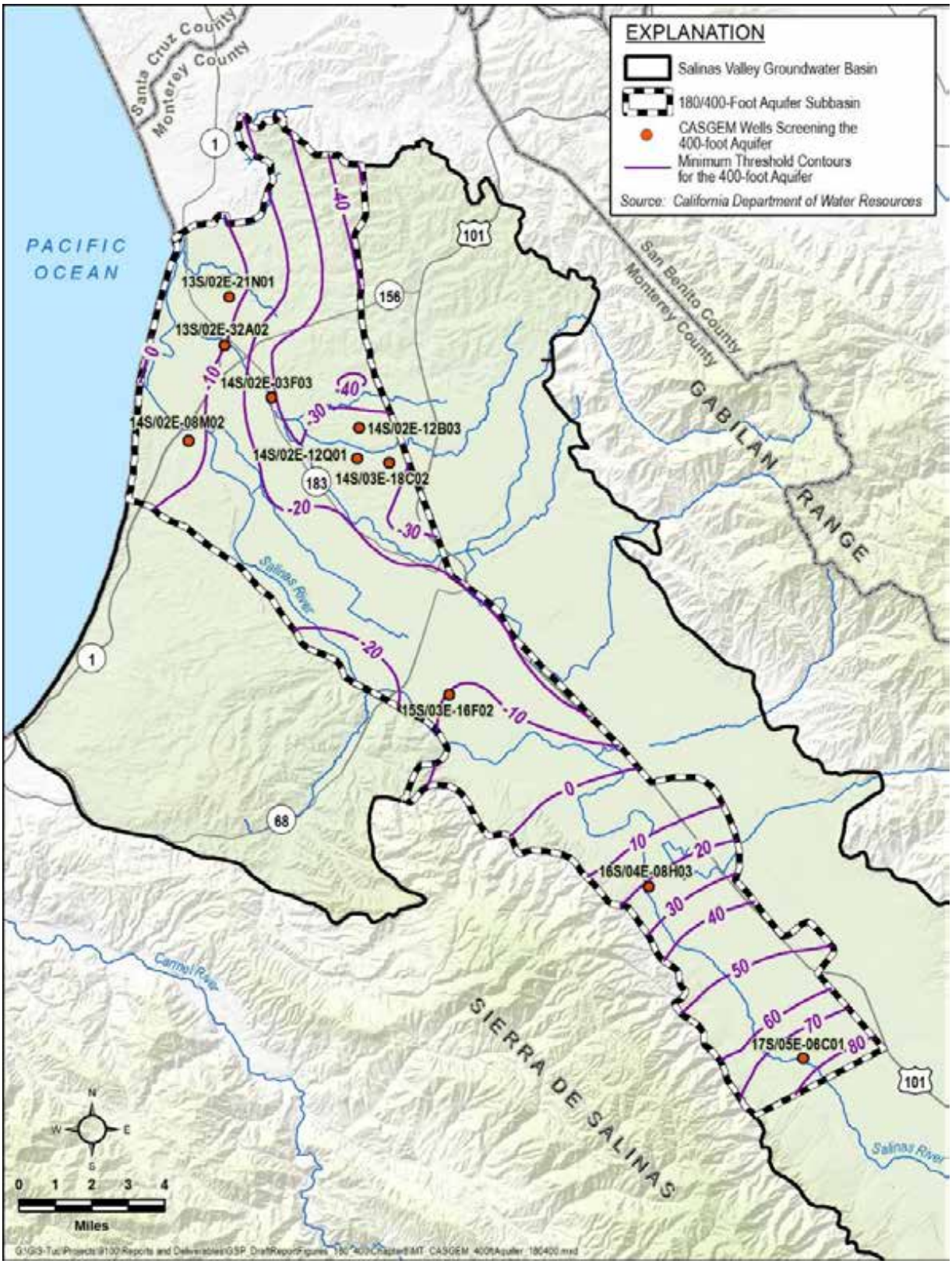


Figure 8-3. Groundwater Elevation Minimum Threshold Contour Map for the 400 Foot Aquifer

The monitoring network well locations were intersected with the contour map to establish the initial minimum threshold for each RMS for chronic lowering of groundwater levels. The initial minimum threshold values were plotted on the respective RMS groundwater elevation hydrographs to visually inspect the applicability of these values for each well. In some cases, the values were not adequate for various reasons including:

- Wells located outside of contour maps
- Deep wells with no contour map available
- Wells located in foothill area where contour maps do not apply
- Interpolated values on the contour maps did not match the individual RMS well values adequately for the month of October and designated year

A detailed review of minimum thresholds and measurable objectives at each RMS well, comparison to the actual measured values at the designated years in October, and professional judgment resulted in a revised set of minimum thresholds and measurable objectives at each RMS well. October was used as the month at which values for minimum thresholds and measurable objectives are established because this is the fall measurement that MCWRA takes every year. Future water levels in October will be compared to these values.

Hydrographs and minimum thresholds for each RMS with well completion information are included in Appendix 8A. These minimum thresholds are selected to avoid the significant and unreasonable conditions outlined above. The minimum threshold values for each well within the groundwater elevation monitoring network are provided in Table 8-2 .

Table 8-2. Chronic Lowering of Groundwater Elevations Minimum Thresholds and Measurable Objectives

Monitoring Site	Aquifer	Minimum Threshold (ft)	Measurable Objective (ft)
13S/02E-21Q01	180-ft Aquifer	3	8
14S/02E-03F04	180-ft Aquifer	-12	-7.1
14S/02E-12B02	180-ft Aquifer	-19	-11.9
14S/02E-26H01	180-ft Aquifer	-25	-18
14S/02E-27A01	180-ft Aquifer	-18.7	-10.7
14S/03E-18C01	180-ft Aquifer	5	10
14S/03E-30G08	180-ft Aquifer	-29	-3.5
15S/03E-16M01	180-ft Aquifer	-16	-4.1
15S/03E-17M01	180-ft Aquifer	-17.2	2.9
16S/04E-08H04	180-ft Aquifer	30	54.8
16S/04E-15D01	180-ft Aquifer	26	55
17S/05E-06C02	180-ft Aquifer	73.5	94.1
13S/02E-21N01	400-ft Aquifer	-15	-7.6
13S/02E-32A02	400-ft Aquifer	-9.9	-5
14S/02E-03F03	400-ft Aquifer	-40	-19.4
14S/02E-08M02	400-ft Aquifer	-12	-5.9
14S/02E-12B03	400-ft Aquifer	-54	-43
14S/02E-12Q01	400-ft Aquifer	-26.3	-13.5
14S/03E-18C02	400-ft Aquifer	-38	-17.4
15S/03E-16F02	400-ft Aquifer	-20	1.2
16S/04E-08H03	400-ft Aquifer	19	48
17S/05E-06C01	400-ft Aquifer	77	89.6
13S/02E-19Q03	Deep Aquifers	-10	5

8.6.2.2 Minimum Thresholds Impact on Domestic Wells

Minimum thresholds for groundwater elevations are compared to the range of domestic well depths in the Subbasin using DWR's Online System for Well Completion Reports (OSWCR) database. This check was done to assure that the minimum thresholds maintain operability in a reasonable percentage of domestic wells. The proposed minimum thresholds for groundwater elevation do not necessarily protect all domestic wells because it is impractical to manage a groundwater basin in a manner that fully protects the shallowest wells. The average computed depth of domestic wells in the Subbasin is 316.6 feet for the domestic wells in the OSWCR database.

The comparison showed the following:

- In the 180-Foot Aquifer, 89% of all domestic wells will have at least 25 feet of water in them as long as groundwater elevations remain above minimum thresholds; and 91% of all domestic wells will have at least 25 feet of water in them when measurable objectives are achieved.

- In the 400-Foot Aquifer, 79% of all domestic wells will have at least 25 feet of water in them provided groundwater elevations remain above minimum thresholds; and 82% of all domestic wells will have at least 25 feet of water in them when measurable objectives are achieved.

8.6.2.3 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

Section 354.28 of the GSP Regulations requires that the description of all minimum thresholds include a discussion about the relationship between the minimum thresholds for each sustainability indicator. In the SMC BMP (DWR, 2017), DWR has clarified this requirement. First, the GSP must describe the relationship between each sustainability indicator's minimum threshold (i.e., describe why or how a water level minimum threshold set at a particular representative monitoring site is similar to or different from water level thresholds in nearby representative monitoring sites). Second, the GSP must describe the relationship between the selected minimum threshold and minimum thresholds for other sustainability indicators (e.g., describe how a water level minimum threshold would not trigger an undesirable result for land subsidence).

The groundwater elevation minimum thresholds are derived from smoothly interpolated groundwater elevations in the Subbasin. Therefore, the minimum thresholds are unique at every well, but when combined represent a reasonable and potentially realistic groundwater elevation map. Because the underlying groundwater elevation map is a reasonably achievable condition, the individual minimum thresholds at RMSs do not conflict with each other.

Groundwater elevation minimum thresholds can influence other sustainability indicators. The groundwater elevation minimum thresholds are selected to avoid undesirable results for other sustainability indicators.

- **Change in groundwater storage**. A significant and unreasonable condition for change in groundwater storage is pumping in excess of the sustainable yield for an extended period of years. Pumping at or less than the sustainable yield will maintain or raise average groundwater elevations in the Subbasin. The groundwater elevation minimum thresholds are set at or above recent groundwater elevations, consistent with the practice of pumping at or less than the sustainable yield. Therefore, the groundwater elevation minimum

thresholds will not result in long term significant or unreasonable change in groundwater storage.

- **Seawater intrusion**. A significant and unreasonable condition for seawater intrusion is seawater intrusion in excess of the extent delineated by MCWRA in 2017. Lower groundwater elevations, particularly in the 180- and 400-Foot Aquifers, could cause seawater to advance inland. The groundwater elevation minimum thresholds are set at or above recent groundwater elevations. Therefore, the groundwater elevation minimum thresholds are intended to not exacerbate, and may help control, the rate of seawater intrusion.
- **Degraded water quality**. A significant and unreasonable condition for degraded water quality is exceeding regulatory limits for constituents of concern in production wells due to actions proposed in the GSP. Water quality could be affected through two processes:
    1. Low groundwater elevations in an area could cause deep poor-quality groundwater to flow upward to levels where supply wells pump groundwater. Because the groundwater elevation minimum thresholds are at or above recent groundwater elevations, there is no mechanism for triggering any new upward flow of deep groundwater. Therefore, the groundwater elevation minimum thresholds are set to avoid deep poor-quality water from impacting shallower production wells.
    2. Changes in groundwater elevation due to actions implemented to achieve sustainability could change groundwater gradients, which could cause poor quality groundwater to flow towards production wells that would not have otherwise been impacted. These groundwater gradients, however, are only dependent on differences between groundwater elevations, not on the groundwater elevations themselves. Therefore, the minimum threshold groundwater elevations do not directly lead to a significant and unreasonable degradation of groundwater quality in production wells.
- **Subsidence**. A significant and unreasonable condition for subsidence is any measurable long-term inelastic subsidence that damages existing infrastructure. Subsidence is caused by dewatering and compaction of clay-rich sediments in response to lowering groundwater elevations. The groundwater elevation minimum thresholds are set at or above recent groundwater elevations. Because future groundwater elevations will be higher than current groundwater elevations, they will not induce additional dewatering of clay-rich sediments; and thus, will not induce additional subsidence.
- **Depletion of interconnected surface waters.** A significant and unreasonable condition for the depletion of interconnected surface waters is groundwater pumping-induced depletion of flow in the Salinas River or its major tributaries in excess of current depletion rates. Lowering average groundwater elevations in areas adjacent to interconnected surface water bodies will increase depletion rates. Because the groundwater elevation minimum thresholds are set at or above recent elevations, future groundwater elevations will not induce additional depletion of interconnected surface

waters. Therefore, the groundwater elevation minimum thresholds will not result in a significant or unreasonable depletion of interconnected surface waters, including groundwater-dependent ecosystems.

8.6.2.4 Effect of Minimum Thresholds on Neighboring Basins and Subbasins

The 180/400-Foot Aquifer Subbasin has four neighboring subbasins within the Salinas Valley Groundwater Basin:

- The Langley Subbasin to the north
- The Eastside Subbasin to the northeast
- The Forebay Subbasin to the south
- The Monterey Subbasin to the West

The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the 180/400-Foot Aquifer Subbasin. These neighboring subbasins are in the process of GSP development for submittal in January 2022. Minimum thresholds for the 180/400-Foot Aquifer Subbasin will be reviewed relative to information developed during the preparation of neighboring subbasins' GSPs and will be updated, as appropriate, to ensure that these minimum thresholds will not prevent the neighboring subbasins from achieving sustainability.

In addition, the Pajaro Valley Basin lies directly to the north of the Subbasin. Because the minimum thresholds in the 180/400-Foot Aquifer Subbasin are above historical low groundwater elevations, it is likely that the minimum thresholds will not prevent the Pajaro Basin from achieving and maintaining sustainability. The SVBGSA will coordinate closely with the Pajaro Valley Water Agency to ensure that the basins do not prevent each other from achieving sustainability.

8.6.2.5 Effects on Beneficial Users and Land Uses

The groundwater elevation minimum thresholds may have several effects on beneficial users and land uses in the Subbasin.

Agricultural land uses and users. The groundwater elevation minimum thresholds prevent continued lowering of groundwater elevations in the Subbasin. This may have the effect of limiting the amount of groundwater pumping in the Subbasin. Limiting the amount of groundwater pumping may limit the amount and type of crops that can be grown in the Subbasin. The groundwater elevation minimum thresholds could therefore limit expansion of the

Subbasin's agricultural economy. This could have various effects on beneficial users and land uses:

- Agricultural land currently under irrigation may become more valuable as bringing new lands into irrigation becomes more difficult and expensive.
- Agricultural land not currently under irrigation may become less valuable because it may be too difficult and expensive to irrigate.

Urban land uses and users. The groundwater elevation minimum thresholds may reduce the amount of groundwater pumping in the Subbasin. This may limit urban growth, or result in urban areas obtaining alternative sources of water. This may result in higher water costs for municipal water users.

Domestic land uses and users. The groundwater elevation minimum thresholds are intended to protect most domestic wells. Therefore, the minimum thresholds will likely have an overall beneficial effect on existing domestic land uses by protecting the ability to pump from domestic wells. However, extremely shallow domestic wells may become dry, requiring owners to drill deeper wells. Additionally, the groundwater elevation minimum thresholds may limit the number of new domestic wells that can be drilled in order to limit future declines in groundwater elevations caused by more domestic pumping.

Ecological land uses and users. Groundwater elevation minimum thresholds may limit the amount of groundwater pumping in the Subbasin and may limit both urban and agricultural growth. This outcome may benefit ecological land uses and users by curtailing the conversion of native vegetation to agricultural or domestic uses, and by reducing pressure on existing ecological land caused by declining groundwater elevations.

8.6.2.6 Relevant Federal, State, or Local Standards

No federal, state, or local standards exist for chronic lowering of groundwater elevations.

8.6.2.7 Method for Quantitative Measurement of Minimum Thresholds

Groundwater elevation minimum thresholds will be directly measured from the monitoring well network. The groundwater elevation monitoring will be conducted in accordance with the monitoring plan outlined in Chapter 7. Furthermore, the groundwater elevation monitoring will meet the requirements of the technical and reporting standards included in the GSP Regulations.

As noted in Chapter 7, the current groundwater elevation monitoring network in the Subbasin across aquifers includes 23 wells. Data gaps were identified in Chapter 7 and will be resolved during implementation of this GSP.

8.6.3 Measurable Objectives

The measurable objectives for chronic lowering of groundwater levels represent target groundwater elevations that are higher than the minimum thresholds. These measurable objectives provide operational flexibility to ensure that the Subbasin can be managed sustainably over a reasonable range of hydrologic variability. Measurable objectives for the chronic lowering of groundwater levels are summarized in Table 8-2. The measurable objectives are also shown on the hydrographs for each RMS in Appendix 8A.

8.6.3.1 Methodology for Setting Measurable Objectives

The methodology for establishing measurable objectives is described in detail in Section 8.6.2.1 and summarized below.

Figure 8-1 shows that there was only a slow downward trend in average groundwater elevations through 2003. Since 2003, water elevations have consistently decreased at a more rapid rate. To ensure that measurable objectives are achievable, a year from the relatively recent past was selected. Groundwater elevations from 2003 were selected as representative of the measurable objectives for the 180/400-Foot Aquifer Subbasin.

The measurable objective contour maps along with the monitoring network wells are shown on Figure 8-4 for the 180-Foot Aquifer, and on Figure 8-5 for the 400-Foot Aquifer.

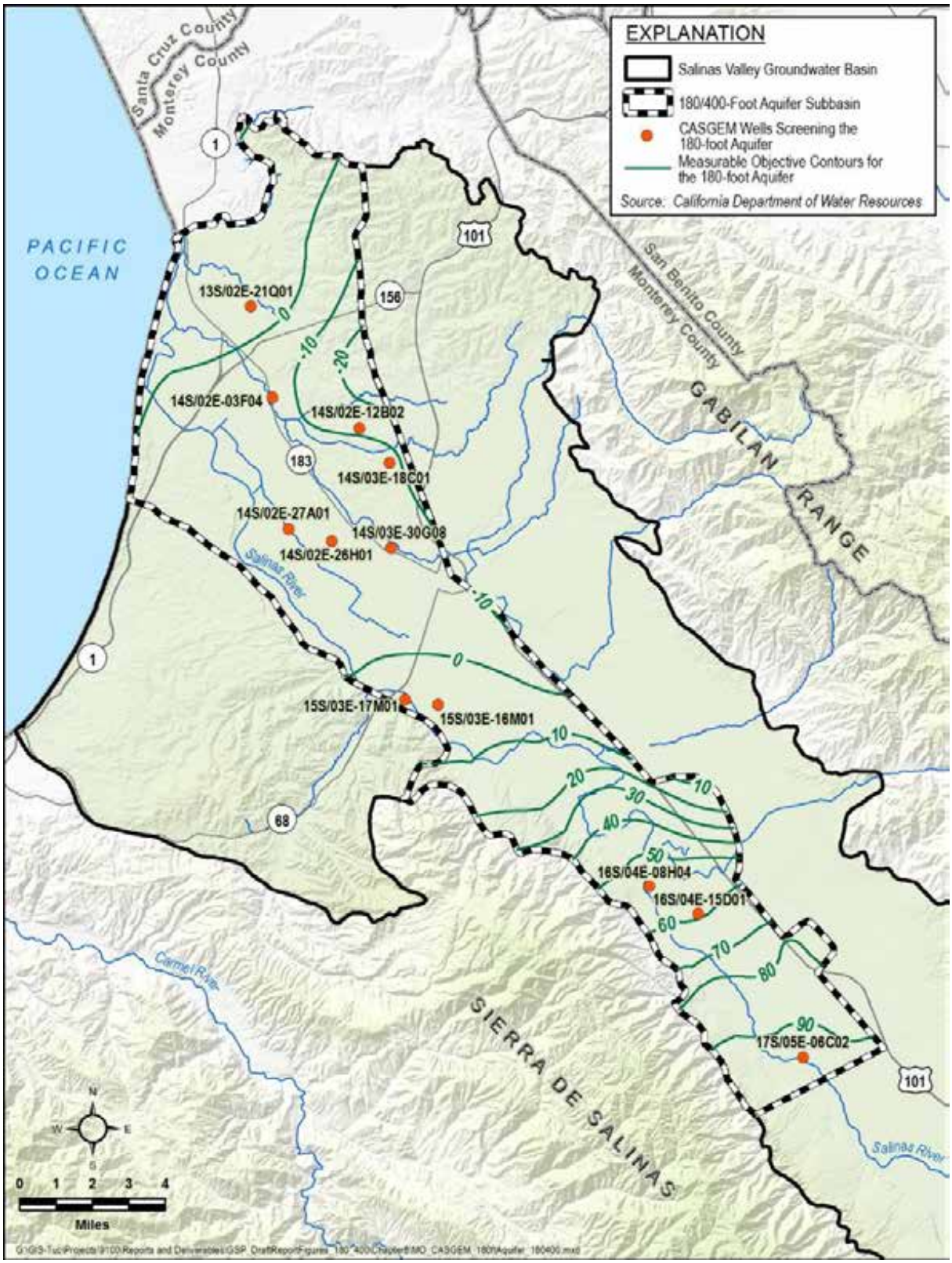


Figure 8-4. Groundwater Elevation Measurable Objective Contour Map for the 180-Foot Aquifer

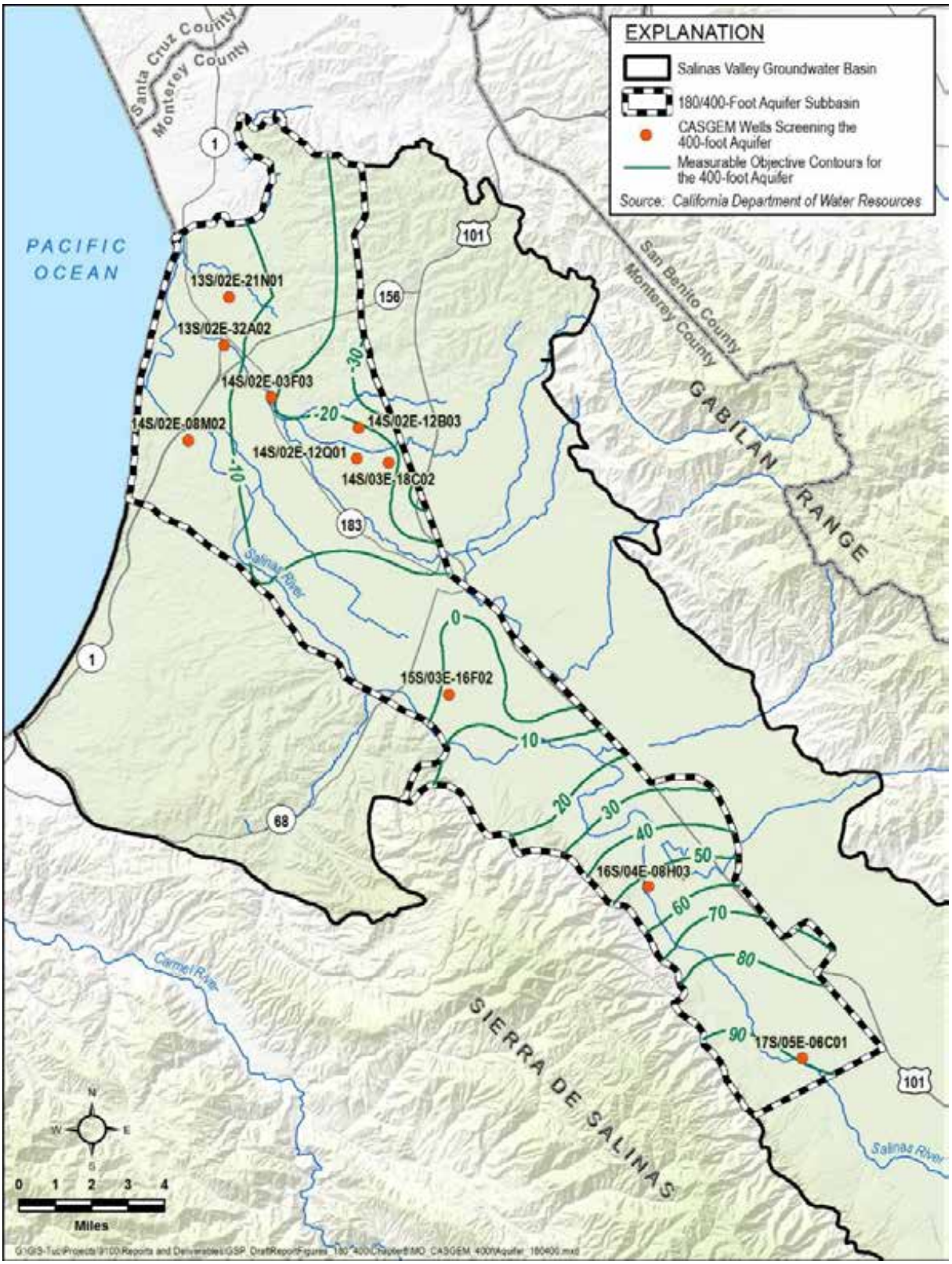


Figure 8-5. Groundwater Elevation Measurable Objective Contour Map for the 400-Foot Aquifer

8.6.3.2 Interim Milestones

Interim milestones for groundwater elevations are shown in Table 8-3. These are only initial estimates of interim milestones. Interim milestones for groundwater elevations will be modified once the SVIHM is available for use.

Table 8-3. Groundwater Elevation Interim Milestones

Monitoring Site	Aquifer	Current Groundwater Elevation ft (assume at 2020)	Interim Milestone at Year 2025 (ft)	Interim Milestone at Year 2030 (ft)	Interim Milestone at Year 2035 (ft)	Measurable Objective (ft) (goal to reach at 2040)
13S/02E-21Q01	180-ft Aquifer	6.2	6.7	7.1	7.6	8
14S/02E-03F04	180-ft Aquifer	-6.2	-6.4	-6.7	-6.9	-7.1
14S/02E-12B02	180-ft Aquifer	-8.3	-9.2	-10.1	-11.0	-11.9
14S/02E-26H01	180-ft Aquifer	-11.8	-13.4	-14.9	-16.5	-18
14S/02E-27A01	180-ft Aquifer	-9.6	-9.9	-10.2	-10.4	-10.7
14S/03E-18C01	180-ft Aquifer	11.9	11.4	11.0	10.5	10
14S/03E-30G08	180-ft Aquifer	-16.3	-13.1	-9.9	-6.7	-3.5
15S/03E-16M01	180-ft Aquifer	-12.4	-10.3	-8.3	-6.2	-4.1
15S/03E-17M01	180-ft Aquifer	-13.2	-9.2	-5.2	-1.1	2.9
16S/04E-08H04	180-ft Aquifer	41	44.5	47.9	51.4	54.8
16S/04E-15D01	180-ft Aquifer	43.06	46.0	49.0	52.0	55
17S/05E-06C02	180-ft Aquifer	78.7	82.6	86.4	90.3	94.1
13S/02E-21N01	400-ft Aquifer	-14.4	-12.7	-11.0	-9.3	-7.6
13S/02E-32A02	400-ft Aquifer	-6.6	-6.2	-5.8	-5.4	-5
14S/02E-03F03	400-ft Aquifer	-13.72	-15.1	-16.6	-18.0	-19.4
14S/02E-08M02	400-ft Aquifer	-12	-10.5	-9.0	-7.4	-5.9
14S/02E-12B03	400-ft Aquifer	-29.6	-33.0	-36.3	-39.7	-43
14S/02E-12Q01	400-ft Aquifer	-24.7	-21.9	-19.1	-16.3	-13.5
14S/03E-18C02	400-ft Aquifer	-18.9	-18.5	-18.2	-17.8	-17.4
15S/03E-16F02	400-ft Aquifer	-16.5	-12.1	-7.7	-3.2	1.2
16S/04E-08H03	400-ft Aquifer	38.5	40.9	43.3	45.6	48
17S/05E-06C01	400-ft Aquifer	54.3	63.1	72.0	80.8	89.6
13S/02E-19Q03	Deep Aquifers	-10.8	-6.9	-2.9	1.1	5

8.6.4 Undesirable Results

8.6.4.1 Criteria for Defining Chronic Lowering of Groundwater Levels Undesirable Results

The chronic lowering of groundwater levels undesirable result is a quantitative combination of groundwater elevation minimum threshold exceedances. For the Subbasin, the groundwater elevation undesirable result is:

> *Over the course of any one year, no more than 15% of the groundwater elevation minimum thresholds shall be exceeded in any single aquifer. Additionally, the minimum threshold in any one well shall not be exceeded for more than two sequential years.*

Undesirable results provide flexibility in defining sustainability. Increasing the percentage of allowed minimum threshold exceedances provides more flexibility but may lead to significant and unreasonable conditions for a number of beneficial users. Reducing the percentage of allowed minimum threshold exceedances ensures strict adherence to minimum thresholds but reduces flexibility due to unanticipated hydrogeologic conditions. The undesirable result was set at 15% to balance the interests of beneficial users with the practical aspects of groundwater management under uncertainty.

The 15% limit on minimum threshold exceedances in the undesirable result allows for four exceedances in the 23 existing monitoring wells: two in the 180-Foot Aquifer and two in the 400-Foot Aquifer. As the monitoring system grows, additional exceedances will be allowed. One additional exceedance will be allowed for approximately every seven new monitoring wells. This was considered a reasonable number of exceedances given the hydrogeologic uncertainty of the Subbasin.

8.6.4.2 Potential Causes of Undesirable Results

An undesirable result for chronic lowering of groundwater levels does not currently exist, since groundwater elevation in 22 out of 23 of the existing monitoring wells (95.7%) in the Subbasin were above the minimum threshold in the most recent Fall groundwater elevation measurements. Conditions that may lead to an undesirable result include the following:

- **Localized pumping clusters**. Even if regional pumping is maintained within the sustainable yield, clusters of high-capacity wells may cause excessive localized drawdowns that lead to undesirable results.
- **Expansion of *de-minimis* pumping**. Individual *de-minimis* pumpers do not have a significant impact on groundwater elevations. However, many *de-minimis* pumpers are often clustered in specific residential areas. Pumping by these *de-minimis* users is not regulated under this GSP. Adding additional domestic *de-minimis* pumpers in these areas may result in excessive localized drawdowns and undesirable results.

- **Extensive, unanticipated drought**. Minimum thresholds were established based on historical groundwater elevations and reasonable estimates of future groundwater elevations. Extensive, unanticipated droughts may lead to excessively low groundwater elevations and temporary undesirable results.

8.6.4.3 Effects on Beneficial Users and Land Uses

The primary detrimental effect on beneficial users from allowing multiple exceedances occurs if more than one exceedance occurs in a small geographic area. Allowing 15% exceedances is reasonable as long as the exceedances are spread out across the Subbasin, and as long as any one well does not regularly exceed its minimum threshold. If the exceedances are clustered in a small area, it will indicate that significant and unreasonable effects are being born by a localized group of landowners. To avoid this, the monitoring system is designed to have broad geographic coverage; ensuring that minimum threshold exceedances cannot be clustered in a single area.

8.7 Reduction in Groundwater Storage SMC

8.7.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were determined based on public meetings, and discussions with GSA staff. Significant and unreasonable changes in groundwater storage in the Subbasin are those that:

- Lead to long-term reduction in groundwater storage, or
- Interfere with other sustainability indicators.

8.7.2 Minimum Thresholds

Section §354.28(c)(2) of the GSP Regulations states that “The minimum threshold for reduction of groundwater storage shall be a total volume of groundwater that can be withdrawn from the subbasin without causing conditions that may lead to undesirable results” (CCR, 2016).

As noted in the regulatory definition of minimum thresholds quoted above, the reduction in groundwater storage minimum threshold is established for the Subbasin as a whole, not for individual aquifers. Therefore, one minimum threshold is established for the entire Subbasin.

The total volume of groundwater that can be annually withdrawn from the Subbasin without leading to a long-term reduction in groundwater storage or interfering with other sustainability indicators is the calculated sustainable yield of the Subbasin. As discussed in Chapter 6, the future long-term sustainable yield of the Subbasin under reasonable climate change assumptions is 112,000 AF/yr. This sustainable yield represents an approximately 7% reduction in groundwater pumping from the projected pumping volumes.

Public and stakeholder input on the significant and unreasonable conditions for groundwater storage suggested a preference for increasing groundwater storage, but not a preference for restricting average year pumping. Therefore, the minimum threshold is set at the long-term future sustainable yield of 112,000 AF/yr.

While the sustainable yield calculated in chapter 6 assumes zero seawater intrusion, it does not account for temporary pumping reductions that may be necessary to achieve the higher groundwater elevations that help mitigate seawater intrusion. Because the minimum thresholds represent long-term management criteria, any temporary pumping reductions needed to raise groundwater elevations are not explicitly incorporated into the thresholds. However, the SVBGSA recognizes that, dependent on the success of various proposed projects and management actions, there may be a number of years when pumping might be held below the minimum threshold to achieve necessary rises in groundwater elevation. The actual amount of allowable pumping from the Subbasin will be adjusted in the future based on the success of projects designed to halt seawater intrusion.

The minimum threshold applies to pumping of natural recharge only. Natural recharge includes items such as recharge from precipitation and percolation of excess irrigation water. Pumping of intentionally recharged water that is not part of the natural recharge is not considered when compared against the minimum threshold. Intentionally recharged water refers to water recharged through injection wells or percolation ponds, with the sole intent of adding water to the aquifer to increase storage and raise water levels.

8.7.2.1 Information and Methodology Used to Establish Minimum Thresholds

The calculations used to estimate the sustainable yield, and the subsequent minimum threshold for reduction in groundwater storage are detailed in Chapter 6. These calculations acknowledge and account for current land use, future urban growth, and anticipated reasonable climate change.

8.7.2.2 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

The minimum threshold for reduction in groundwater storage is a single value for the entire Subbasin. Therefore, the concept of potential conflict between minimum thresholds is not applicable.

The reduction in groundwater storage minimum threshold could influence other sustainability indicators. The reduction in groundwater storage minimum threshold is selected to avoid undesirable results for other sustainability indicators, as outlined below.

- **Chronic lowering of groundwater levels**. Pumping at or below the sustainable yield will maintain or raise average groundwater elevations in the Subbasin. Therefore, the

minimum threshold for reduction in groundwater storage will not result in a significant or unreasonable lowering of groundwater elevations.

- **Seawater intrusion**. Pumping at or below the sustainable yield will maintain or raise average groundwater elevations in the Subbasin. Therefore, the minimum threshold for reduction in groundwater storage will not result in a significant or unreasonable increase in seawater intrusion. However, pumping at the minimum threshold may not, by itself, stop all seawater intrusion. The seawater intrusion minimum thresholds do not depend on the change in storage minimum threshold: exceedance of both minimum thresholds will be avoided independently.
- **Degraded water quality**. Groundwater quality could be affected through two processes:
  1. Low groundwater elevations could result in poor-quality groundwater being drawn upward into production wells from Deep Aquifers. The reduction in storage minimum threshold is set to prevent any reduction in storage, and therefore prevent lower groundwater elevations. Therefore, the reduction in storage minimum threshold will not draw additional poor-quality water from Deep Aquifers towards production wells.
  2. Changes in groundwater elevations could cause changes in groundwater gradients, which could cause poor quality water to flow towards production wells that would not have otherwise been impacted. These groundwater gradients, however, are only dependent on differences between groundwater elevations, not on the groundwater elevations themselves. Therefore, the minimum threshold for reduction in groundwater storage does not directly lead to a significant and unreasonable degradation of groundwater quality in production wells.
- **Subsidence**. The reduction in storage minimum threshold is established to prevent any reduction in storage, and therefore prevent lowering of groundwater elevations. Because future groundwater elevations will be at or higher than existing groundwater elevations, they will not induce any additional dewatering of clay-rich sediments; and will not induce additional subsidence.
- **Depletion of interconnected surface waters**. The reduction in storage minimum threshold is established to prevent further reduction in storage, and therefore prevent lowering of groundwater elevations. Therefore, the change in storage minimum threshold will not induce additional depletion of interconnected surface waters and will not result in a significant or unreasonable depletion of interconnected surface waters.

8.7.2.3 Effect of Minimum Thresholds on Neighboring Basins and Subbasins

The 180/400-Foot Aquifer Subbasin has four neighboring subbasins within the Salinas Valley Groundwater Basin:

- The Langley Subbasin to the north

- The Eastside Subbasin to the northeast
- The Forebay Subbasin to the south
- The Monterey Subbasin to the West

The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the 180/400-Foot Aquifer Subbasin. These neighboring subbasins are in the process of GSP development for submittal in January 2022. Minimum thresholds for the 180/400-Foot Aquifer Subbasin will be reviewed relative to information developed during the preparation of neighboring subbasins' GSPs and will be updated, as appropriate, to ensure that these minimum thresholds will not prevent the neighboring subbasins from achieving sustainability.

In addition, the Pajaro Valley Basin occurs directly to the north. Because the minimum thresholds in the 180/400-Foot Aquifer Subbasin are set at the long-term future sustainable yield, it is likely that the minimum thresholds will not prevent the Pajaro Basin from achieving and maintaining sustainability. The SVBGSA will coordinate closely with the Pajaro Valley Water Agency as it sets minimum thresholds to ensure that the basins do not prevent each other from achieving sustainability.

8.7.2.4 Effect on Beneficial Uses and Users

The reduction in groundwater storage minimum threshold of maintaining pumping at the Subbasin's calculated sustainable yield requires a restriction on the amount of groundwater pumping in the Subbasin. Restricting pumping may impact the beneficial uses and users of the Subbasin.

Agricultural land uses and users. Restricting the amount of groundwater pumping may limit or reduce agricultural production in the Subbasin by reducing the amount of available water. Agricultural lands that are currently not irrigated may be particularly impacted because the additional groundwater pumping needed to irrigate these lands will increase the Subbasin pumping beyond the sustainable yield, violating the minimum threshold.

Urban land uses and users. Restricting the amount of groundwater pumping may increase the cost of water for municipal users in the Subbasin because municipalities may need to find other, more expensive water sources.

Domestic land uses and users. Domestic groundwater users may generally benefit from this minimum threshold. Many domestic groundwater users are *de-minimis* users whose pumping may not be restricted by the projects and management actions adopted in this GSP. By restricting

the amount of groundwater that is pumped from the Subbasin, the *de-minimis* users are protected from overdraft that could impact their ability to pump groundwater.

Ecological land uses and users. Environmental groundwater uses may generally benefit from this minimum threshold. Restricting the amount of groundwater that is pumped from the Subbasin, maintains groundwater supplies at levels similar to present levels which can be used for environmental purposes.

8.7.2.5 Relation to State, Federal, or Local Standards

No federal, state, or local standards exist for reductions in groundwater storage.

8.7.2.6 Method for Quantitative Measurement of Minimum Threshold

The total amount of groundwater withdrawn from the Subbasin will be measured in a number of ways:

- Municipal public water systems and small water systems report their measured groundwater usage to the State of California. These data are available on the State's Drinking Water Information Clearinghouse website. These data will be used to quantify municipal and small system pumping on an annual basis.
- Agricultural pumping will be collected in one of two ways:
    1. Agricultural pumpers may report their pumping directly to the SVBGSA
    2. Pumping will be estimated for agricultural pumpers that do not report their pumping. The annual pumping will be estimated using Monterey County crop data and crop duty estimates, times a multiplier. The multiplier is included in these calculations to disincentivize growers from pumping more than the crop duties, yet only being assessed based on the crop duties used by Monterey County.
- Domestic pumping will be estimated by multiplying the estimated number of domestic users by a water use factor. The current water use factor is assumed to be 0.39 AF/yr. dwelling unit.

The impact of groundwater withdrawals on the amount of groundwater in storage will be checked using the updated SVIHM model. At a minimum, the model will be updated every 5 years with new data and the amount of pumping that occurred in the previous 5 years will be checked against the simulated change in groundwater storage. These verifications will indicate whether reducing pumping to the sustainable yield will result in no net reduction in groundwater storage under average hydrologic conditions, or whether the sustainable yield should be reevaluated.

8.7.3 Measurable Objectives

The measurable objectives for reduction in groundwater storage is the same as the minimum threshold. The measurable objective is set at the long-term future sustainable yield of 112,000 AF/yr.

8.7.3.1 Method for Setting Measurable Objectives

As discussed in Section 8.7, input from stakeholders suggested that they would prefer more groundwater in storage. However, stakeholders also suggested that they would prefer not to attain this increase in groundwater storage by reducing existing pumping during average years. Instead, they prefer to increase groundwater storage through improving local recharge or by other means.

By regulation, the metric used to assess reductions in groundwater storage is an amount of pumping. Therefore, although increases in groundwater storage are preferred, attaining this measurable objective should not be achieved through future pumping reductions. Therefore, the measurable objective is set at the same level as the minimum threshold of 112,000 AF/yr. of pumping.

8.7.3.2 Interim Milestones

The reduction in storage interim milestone is set to 112,000 AF/yr. for each of the 5-year intervals, consistent with the minimum threshold and the measurable objective.

8.7.4 Undesirable Results

8.7.4.1 Criteria for Defining Reduction in Groundwater Storage Undesirable Results

The reduction in groundwater storage undesirable result is a quantitative combination of reduction in groundwater storage minimum threshold exceedances. However, there is only one reduction in groundwater storage minimum threshold. Therefore, no minimum threshold exceedances are allowed to occur and the reduction in groundwater storage undesirable result is:

> *During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the total groundwater pumping shall not exceed the minimum threshold, which is equivalent to the long-term sustainable yield of the aquifers in the Subbasin.*

8.7.4.2 Potential Causes of Undesirable Results

Conditions that may lead to an undesirable result for the reduction in groundwater storage sustainability indicator include the following:

- **Expansion of agricultural or municipal pumping**. Additional agricultural or municipal pumping may result in exceedance of the long-term sustainable yield, an undesirable result.
- **Expansion of *de-minimis* pumping**. Pumping by *de-minimis* users is not regulated under this GSP. Adding domestic *de-minimis* pumpers in the Subbasin may result in excessive pumping and exceedance of the long-term sustainable yield, an undesirable result.
- **Extensive, unanticipated drought**. Minimum thresholds are established based on reasonable anticipated future climatic conditions. Extensive, unanticipated droughts may lead to excessively low groundwater recharge and unanticipated high pumping rates that could cause an exceedance of the long-term sustainable yield.

8.7.4.3 Effects on Beneficial Users and Land Use

The practical effect of the reduction in groundwater storage undesirable result is no net change in groundwater storage during average hydrologic conditions and over the long-term. Therefore, during average hydrologic conditions and over the long-term, beneficial uses and users will have access to the same amount of water in storage that currently exists, and the undesirable result will not have a negative effect on the beneficial users and uses of groundwater. However, pumping at the long-term sustainable yield during dry years will temporarily reduce the amount of groundwater in storage. If this occurs, there could be short-term impacts from a reduction in groundwater in storage on all beneficial users and uses of groundwater. In particular, groundwater pumpers that rely on water from shallower wells may be temporarily impacted as the amount of groundwater in storage drops and water levels in their wells decline.

8.8 Seawater Intrusion SMC

8.8.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were determined based on public meetings, and discussions with GSA staff. Significant and unreasonable seawater intrusion in the Subbasin is:

- Seawater intrusion in excess of the seawater intrusion line defined by MCWRA in 2017.

8.8.2 Minimum Thresholds

Section §354.28(c)(3) of the Regulations states that “The minimum threshold for seawater intrusion shall be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results” (CCR, 2016).

The 2017 extent of the 500 mg/L chloride concentration isocontour as mapped by MCWRA is adopted as the seawater intrusion minimum threshold for both the 180- and 400-Foot Aquifers.

Separate minimum thresholds are defined for the 180-Foot Aquifer and the 400-Foot Aquifer. The line defined by Highway 1 is adopted as the seawater intrusion minimum threshold for the Deep Aquifers.

8.8.2.1 Information and Methodology Used to Establish Minimum Thresholds and Measurable Objectives

The GSP Regulations (CCR, 2016) require the following supporting information when setting the seawater intrusion minimum threshold at a chloride isocontour:

- Section §354.28(c)(3)(A): *Maps and cross-sections of the chloride concentration isocontour that defines the minimum threshold and measurable objective for each principal aquifer.*

- Section §354.28(c)(3)(B): *A description of how seawater intrusion minimum threshold considers the effects of current and projected sea levels.*

Seawater intrusion minimum thresholds are based on seawater intrusion maps developed by the MCWRA. MCWRA publishes estimates of the extent of seawater intrusion every 2 years. The MCWRA maps define the extent of seawater intrusion as the inferred location of the 500 mg/L chloride concentration. These maps are developed through analysis and contouring of the values measured at privately-owned wells and dedicated monitoring wells near the coast, as shown on Figure 7-7 for the 180-Foot aquifer and on Figure 7-8 for the 400-Foot aquifer. The maps and cross sections of seawater intrusion used to develop the minimum thresholds are included in Chapter 5.

The groundwater model that will be used to assess the effectiveness of projects and management actions on seawater intrusion specifically incorporates assumptions for future sea level rise. Therefore, the minimum thresholds and actions to avoid undesirable results will address sea level rise.

Figure 8-6 presents minimum thresholds for seawater intrusion in the 180-Foot Aquifer and Figure 8-7 presents minimum thresholds for seawater intrusion in the 400-Foot Aquifer, represented by the 500 mg/L chloride concentration isocontour.

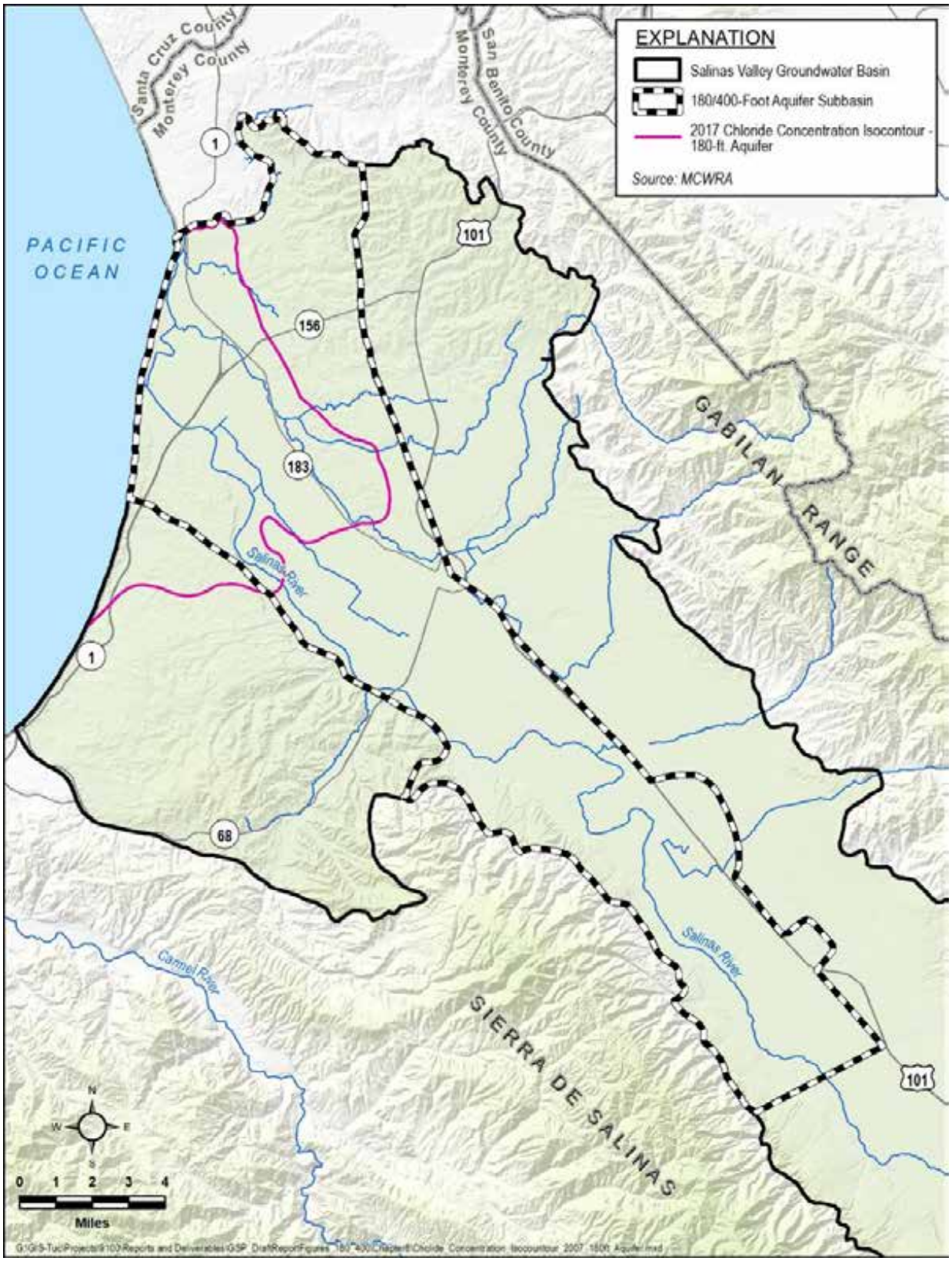


Figure 8-6. Minimum Thresholds for Seawater Intrusion in the 180-Foot Aquifer

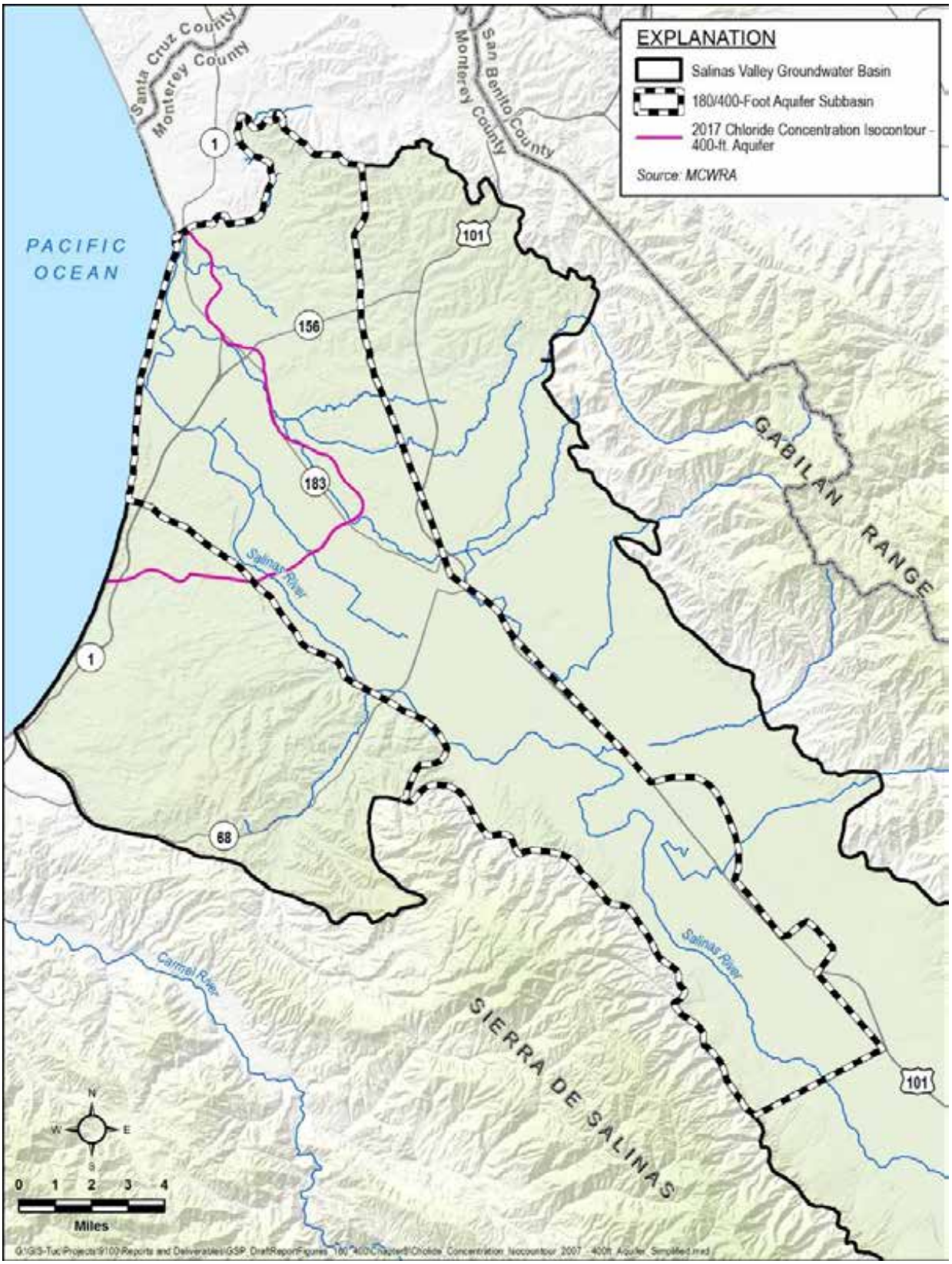


Figure 8-7. Minimum Thresholds for Seawater Intrusion in the 400-Foot Aquifer

8.8.2.2 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

The minimum threshold for seawater intrusion is a single value for each aquifer. The minimum thresholds are set at mapped extend of 2017 seawater intrusion, meaning that the minimum thresholds are currently and simultaneously met in all three aquifers. Therefore, no conflict exists between minimum thresholds measured in various aquifers within the Subbasin.

The seawater intrusion minimum threshold could influence other sustainability indicators as follows:

- **Chronic lowering of groundwater levels**. Groundwater elevations will not be affected by the seawater intrusion minimum thresholds.
- **Change in groundwater storage**. Groundwater storage, as measured by pumping, will not be affected by the seawater intrusion minimum thresholds.
- **Degraded water quality**. The seawater intrusion minimum thresholds may have a beneficial impact on groundwater quality by preventing increases in chloride concentrations in supply wells.
- **Inelastic subsidence**. Inelastic subsidence will not be affected by the seawater intrusion minimum thresholds.
- **Depletion of interconnected surface water**. Interconnected surface water will not be affected by the seawater intrusion minimum thresholds.

8.8.2.3 Effect of Minimum Threshold on Neighboring Basins and Subbasin

The 180/400-Foot Aquifer Subbasin has two neighboring subbasins with seawater intrusion concerns:

- The Monterey Subbasin to the west
- The Pajaro Valley Basin to the north

The SVBGSA is one of two coordinating GSAs for the adjacent Monterey Subbasin. The minimum thresholds and measurable objectives for seawater intrusion was developed in a single process that is coordinated the 180/400-Foot Aquifer Subbasin with the Monterey Subbasin. The Monterey Subbasin is in the process of GSP development for submittal in January 2022. Minimum thresholds for the 180/400-Foot Aquifer Subbasin will be reviewed relative to information developed during the preparation of the Monterey Subbasin GSP and will be updated, as appropriate, to ensure that these minimum thresholds will not prevent the Monterey Subbasin from achieving sustainability.

The Pajaro Valley Basin has submitted an alternative submittal. Because the minimum thresholds in the 180/400-Foot Aquifer Subbasin is no further intrusion, it is likely that the minimum threshold will not prevent the Pajaro Basin from achieving and maintaining sustainability. The SVBGSA will coordinate closely with the Pajaro Valley Water Agency as it sets minimum thresholds to ensure that the basins do not prevent each other from achieving sustainability.

8.8.2.4 Effects on Beneficial Users and Land Uses

Agricultural land uses and users. The seawater intrusion minimum thresholds generally provide positive benefits to the Subbasin's agricultural water users. Preventing additional seawater intrusion ensures that a supply of usable groundwater will exist for beneficial agricultural use.

Urban land uses and users. The seawater intrusion minimum thresholds generally provide positive benefits to the Subbasin's urban water users. Preventing additional seawater intrusion will help ensure an adequate supply of groundwater for municipal supplies.

Domestic land uses and users. The seawater intrusion minimum thresholds generally provide positive benefits to the Subbasin's domestic water users. Preventing additional seawater intrusion will help ensure an adequate supply of groundwater for domestic supplies.

Ecological land uses and users. Although the seawater intrusion minimum thresholds do not directly benefit ecological uses, it can be inferred that the seawater intrusion minimum thresholds provide generally positive benefits to the Subbasin's ecological water uses. Preventing additional seawater intrusion will help prevent unwanted high salinity levels by the coast from impacting ecological groundwater uses.

8.8.2.5 Relevant Federal, State, or Local Standards

No federal, state, or local standards exist for seawater intrusion.

8.8.2.6 Method for Quantitative Measurement of Minimum Threshold

Chloride concentrations are measured in groundwater samples collected from the MCWRA's seawater intrusion monitoring network. These samples are used to develop the inferred location of the 500 mg/L chloride isocontour. The methodology and protocols for collecting samples and developing the 500 mg/L isocontour are detailed in Appendix 7C and Appendix 7D.

8.8.3 Measurable Objectives

8.8.3.1 Method for Setting Measurable Objectives

In the 180/400-Foot Aquifer Subbasin, the measurable objective for the seawater intrusion SMC is to move the 500 mg/L chloride isocontour to the line defined by Highway 1. This will improve the Subbasin's groundwater quality and provide access to usable groundwater to additional beneficial users. This measurable objective may be modified as the projects and actions to address seawater intrusion are refined.

8.8.3.2 Interim Milestones

The interim milestones for seawater intrusion are:

- 5-Year: identical to current conditions
- 10-year: one-third of the way to the measurable objective
- 15-year: two-thirds of the way to the measurable objective

These are only our initial estimates of interim milestones. Interim milestones for seawater intrusion will be modified once the SVIHM is available for use.

8.8.4 Undesirable Results

8.8.4.1 Criteria for Defining Seawater Intrusion Undesirable Results

The seawater intrusion undesirable result is a quantitative combination of chloride concentrations minimum threshold exceedances. There is only one minimum threshold for each of the three aquifers. Because even localized seawater intrusion is not acceptable, the basinwide undesirable result is zero exceedances of minimum thresholds. For the Subbasin, the seawater intrusion undesirable result is:

> *On average in any one year there shall be no exceedances of any minimum threshold.*

8.8.4.2 Potential Causes of Undesirable Results

Conditions that may lead to an undesirable result include the following:

- Increased coastal pumping that could draw seawater more inland.
- Unanticipated high sea level rise.

8.8.4.3 Effects on Beneficial Users and Land Use

The primary detrimental effect on beneficial users and land uses from allowing seawater intrusion to continue or occur in the future is that the pumped groundwater may become saltier and thus impact domestic and municipal wells and associated land uses. Allowing seawater intrusion to continue or occur in the future may also impact agriculture. Chloride moves readily within soil and water and is taken up by the roots of plants. It is then transported to the stems and leaves. Sensitive berries and avocado rootstocks can tolerate only up to 120 mg/L of chloride, while grapes can tolerate up to 700 mg/L or more (University of California Agriculture and Natural Resources, 2002).

8.9 Degraded Water Quality SMC

8.9.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were determined based on public meetings, and discussions with GSA staff. Significant and unreasonable changes in groundwater quality in the Subbasin are increases in a chemical constituent that either:

- Results in groundwater concentrations in a public supply well above an established MCL or SMCL, or
- Leads to reduced crop production.

8.9.2 Minimum Thresholds

Section §354.28(c)(2) of the GSP Regulations states that “The minimum threshold shall be based on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin” (CCR, 2016). The GSP Regulations allow three options for setting degraded water quality minimum thresholds. In this Subbasin, minimum thresholds are based on a number of supply wells that exceed concentrations of constituents determined to be of concern for the Subbasin. The definition of supply wells for constituents of concern that have an MCL or SMCL are public water system wells, small water system wells, and domestic wells. The definition of supply wells for constituents of concern that may lead to reduced crop production are agricultural irrigation supply wells.

As noted in Section 354.28 (c)(4) of the GSP Regulations, minimum thresholds are based on a degradation of groundwater quality, not an improvement of groundwater quality (CCR, 2016). Therefore, this GSP is designed to avoid taking any action that may inadvertently move groundwater constituents that have already been identified in the Subbasin in such a way that the constituents have a significant and unreasonable impact that would not otherwise occur. Constituents of concern must meet two criteria:

1. They must have an established level of concern such as an MCL or SMCL, or a level known to affect crop production.
2. They must have been found in the Subbasin at levels above the level of concern.

Based on the review of groundwater quality in Chapter 5, a variety of constituents of concern (COCs) were identified that may affect both agricultural wells and drinking water supply wells. The constituents of concern for drinking water supply wells include:

- 1,2,3-trichloropropane
- arsenic
- cadmium
- chloride
- fluoride
- hexavalent chromium
- iron
- manganese
- methyl tert-butyl ether (MTBE)
- nitrate
- perchlorate
- thallium
- total dissolved solids (TDS)

Since hexavalent chromium does not currently have an actionable limit, it was eliminated from this list. Should the state of California establish an MCL or SMCL for hexavalent chromium, it will be added to the list of parameters monitored in the drinking water supply wells.

The constituents of concern for agricultural wells include:

- boron
- chloride
- iron
- manganese

These constituents are monitored with the ILRP wells and are known to cause reductions in crop production when irrigation water includes them in concentrations above agricultural water quality objectives.

As discussed in Chapter 7, wells for 3 separate water quality monitoring networks were reviewed and used for developing SMCs:

- Municipal public water system wells, regulated by the SWRCB Department of Drinking Water.

- Small public water system wells, regulated by Monterey County Department of Public Health, which include both state small water systems and local small water systems.

- Agricultural and domestic wells, monitored as part of ILRP by the CCGC. This dataset was obtained from the SWRCB through the GAMA online portal. The data were separated into two data sets, one for domestic wells and the other for agricultural wells for purposes of developing initial draft minimum thresholds and measurable objectives for each type of well and associated beneficial use. Some rural residential wells in the northern part of the Subbasin with groundwater quality problems may not be reporting under the ILRP, and this may constitute a data gap that could be addressed if these landowners begin reporting under the ILRP. However, the SVBGSA will not initiate new sampling of these wells.

Each of these well networks are monitored for different purposes and overseen by different entities, and therefore include different types of water quality parameters. Furthermore, some groundwater quality impacts are detrimental to only certain networks. For example, high nitrates are detrimental to municipal and small water supply systems but are not detrimental to agricultural irrigation wells. Therefore, different sets of groundwater quality parameters are monitored at each monitoring network based on which parameters are reported in the network and which parameters are detrimental to the network (see Table 8-4).

- The municipal public water system wells are sampled for the full suite of 12 COCs. Minimum thresholds are set for these 12 COCs in the municipal public supply wells.

- The small public water system wells are only sampled for arsenic, nitrate and hexavalent chromium. Both arsenic and nitrate have established MCLs. Minimum thresholds are set for these two COC's in the small public water supply wells systems.

- The ILRP wells are sampled for general cations and anions, as well as nitrate and salinity. Minimum thresholds are established in the ILRP wells for both drinking water standards to protect domestic wells, and for agricultural irrigation water quality objectives.

Table 8-4. Summary of Constituents Monitored at Each Well Network

Constituent	Municipal	Small System	Domestic	Agricultural
1,2,3-TCP	✓			
Arsenic	✓	✓		
Boron				✓
Cadmium	✓			
Chloride	✓		✓	✓
Fluoride	✓			
Iron	✓		✓	✓
Manganese	✓		✓	✓
MTBE	✓			
Nitrate	✓	✓	✓	
Perchlorate	✓			
Thallium	✓			
TDS	✓		✓	

The bases for establishing minimum thresholds for each constituent of concern in the 180/400-Foot Aquifer Subbasin are listed in Table 8-5. All MCL and SMCL values reflect California drinking water standards. The agricultural water quality objectives are listed in the Water Quality Control Plan for the Central Coastal Basin (SWRCB, 2017). This table does not identify the numerical minimum thresholds, but rather identifies the foundation for how many additional wells will be allowed to exceed the level of concern. Wells that already exceed this limit are not counted against the minimum thresholds.

Table 8-5. Groundwater Quality Minimum Thresholds Bases

Constituent of Concern	Minimum Threshold Based on Number of Production Wells
Municipal Wells in Monitoring Program	
1,2,3-trichloropropane	Zero additional municipal production wells that are in the GSP monitoring area shall exceed the 1,2,3-trichloropropane MCL of 0.005 ug/L.
Arsenic	Zero additional municipal production wells that are in the GSP monitoring area shall exceed the arsenic MCL of 0.010 mg/L.
Cadmium	Zero additional municipal production wells that are in the GSP monitoring area shall exceed the cadmium MCL of 0.005 mg/L.
Chloride	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the chloride Recommended SMCL of 250 mg/L.
Fluoride	Zero additional municipal production wells that are in the GSP monitoring area shall exceed the fluoride SMCL of 2 mg/L.
Iron	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the iron SMCL of 0.3 mg/L
Manganese	Zero additional municipal or domestic production wells that are in the GSP monitoring program shall exceed the manganese SMCL of 0.05 mg/L
MTBE	Zero additional municipal production wells that are in the GSP monitoring area shall exceed the MTBE MCL of 0.013 mg/L.
Nitrate	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the nitrate MCL of 10 mg/L, measured as nitrogen.
Perchlorate	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the perchlorate MCL of 0.006 mg/L.
Thallium	Zero additional municipal production wells that are in the GSP monitoring area shall exceed the thallium MCL of 0.002 mg/L.
TDS	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the TDS Recommended SMCL of 500 mg/L.
Small Water System Wells in Monitoring Program	
Arsenic	Zero additional small system production wells that are in the GSP monitoring area shall exceed the arsenic MCL of 0.010 mg/L.
Nitrate	Zero additional small system production wells that are in the GSP monitoring program shall exceed the nitrate MCL of 10 mg/L, measured as nitrogen.
ILRP Wells in Monitoring Program - Domestic Well Constituents and Minimum Thresholds	
Chloride	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the chloride MCL of 250 mg/L.
Iron	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the iron SMCL of 0.3 mg/L.
Manganese	Zero additional municipal or ILRP wells that are in the GSP monitoring program shall exceed the manganese SMCL of 0.05 mg/L.
Nitrate	Zero additional ILRP production wells that are in the GSP monitoring program shall exceed the nitrate MCL of 10 mg/L, measured as nitrogen.
Sulfate	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the sulfate Upper SMCL of 500 mg/L.
TDS	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the TDS Recommended SMCL of 500 mg/L.

Constituent of Concern	Minimum Threshold Based on Number of Production Wells
ILRP Wells in Monitoring Program – Agricultural Irrigation Constituents and Minimum Thresholds	
Boron	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the boron agricultural water quality objective of 0.75 mg/L.
Chloride	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the chloride agricultural water quality objective of 350 mg/L.
Iron	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the iron agricultural water quality objective 5 mg/L.
Manganese	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the manganese agricultural water quality objective 0.2 mg/L.

8.9.2.1 Municipal Production Wells

The minimum thresholds for degraded water quality for the municipal production wells are based on the goal of zero additional exceedances in existing wells shown in Table 8-5. However, some exceedances already exist in those wells, and these exceedances will likely continue into the future. The minimum threshold for the number of allowed exceedances is therefore equal to the current number of exceedances. Based on the number of municipal production wells in the existing water quality monitoring network that is described in Chapter 7, the number of existing exceedances from 2015 to February, 2019 for each constituent is shown in Table 8-6.

In addition, exceedances are based on existing wells only. The well networks will be re-assessed every 5 years to identify any new wells that should be added to the monitoring networks. According to the GSP Regulations, the Minimum Thresholds are based on the same number of wells to have exceedances, not necessarily the same wells. An average of water quality samples is used for wells that are measured more than once a year.

Table 8-6. Minimum Thresholds for Degradation of Groundwater Quality for the Municipal Supply Wells Under the Current Monitoring Network (Data from 2015-February, 2019)

Constituent of Concern (COC)	Regulatory Exceedance Standard	Standard Units	Number of Wells in Monitoring Network Sampled for COC	Minimum Threshold - Number of Wells Exceeding Regulatory Standard
123-Trichloropropane	0.005	ug/L	60	2
Arsenic	10	ug/L	58	1
Cadmium	5	ug/L	61	0
Chloride	250	mg/L	41	2
Fluoride	2	mg/L	60	0
Iron	300	ug/L	43	8
Manganese	50	ug/L	42	3
MTBE (Methyl tert-butyl ether	13	ug/L	65	1
Nitrate	10	mg/l	74	9
Perchlorate	6	ug/L	59	0
Thallium	2	ug/L	61	0
Total Dissolved Solids	500	mg/l	41	18

8.9.2.2 Small Public Water Systems Wells

The small water systems monitoring data are based on the County of Monterey Public Health Department routine monitoring of both Local and State Small Water Systems; and cover the period from 2015-2017 in a total of 136 wells. As described in Chapter 7, this network is not currently included in the water quality monitoring network for this GSP due to a lack of well construction and location information. However, an initial analysis on the water quality data for the current network was conducted to establish interim minimum thresholds and measurable objectives that will be updated once the data gap is lifted and a better assessment of this monitoring network can be established. The water quality data set used for this preliminary analysis was derived from an existing online GIS data compilation (Ostermayer, 2017).

The minimum thresholds for degraded water quality for the small public water supply system wells are similarly based on the goal of zero additional exceedances in existing wells shown in Table 8-5. Following a similar process as that of the municipal production wells, the minimum thresholds for degraded water quality in small public water systems is shown in Table 8-7. As with the municipal production wells, exceedances are based on existing wells only. The well networks will be re-assessed during the 5-year GSP Update development to identify any wells that should be included in the monitoring network for small public supply systems.

Table 8-7. Minimum Thresholds for Degradation of Groundwater for the Small Systems Supply Wells Under the Current Monitoring Network (Data from 2015-2017)

Constituent of Concern (COC)	Regulatory Exceedance Standard	Standard Units	Number of Wells in Monitoring Network Sampled for COC from 2015-2017	Minimum Threshold - Number of Wells Exceeding Regulatory Standard
Arsenic	0.01	mg/L	47	1
Nitrate	10	mg/l	136	22

8.9.2.3 Agricultural and Domestic Wells – ILRP

As described in Chapter 7, this network is not currently included in the water quality monitoring network for this GSP because a revised monitoring network under Ag Order 4.0 will be established in 2020. However, an initial analysis of the water quality data for the current ILRP network was conducted to establish interim minimum thresholds and measurable objectives that will be updated once Ag Order 4.0 is finalized and a better assessment of this monitoring network can be established.

The minimum thresholds for degraded water quality for the ILRP wells are similarly based on the goal of zero additional exceedances shown in Table 8-5. Following the same process as that of the municipal production wells, the minimum thresholds for degraded water quality is shown in Table 8-8 for domestic drinking water wells, and in Table 8-9 for agricultural irrigation wells. Based on the number of ILRP wells in the existing water quality monitoring network that is described in Chapter 7, the number of existing exceedances for each constituent is shown for constituents monitored at wells since 2012 to represent recent measurements.

The monitoring well network for the ILRP will change in 2020 with the adoption of Ag Order 4.0. At that time, the new ILRP monitoring network will be incorporated into this GSP, replacing the current network, for water quality monitoring.

Table 8-8. Minimum Thresholds for Degradation of Groundwater Quality for ILRP Domestic Wells Under the Current Monitoring Network (Data from 2012-2018)

Constituent of Concern (COC)	Regulatory Exceedance Standard	Standard Units	Number of Wells in Monitoring Network Sampled for COC from 2012-2018	Minimum Threshold - Number of Wells Exceeding Regulatory Standard
Chloride	250	mg/L	172	29
Iron	0.3	mg/L	37	12
Manganese	0.05	mg/L	37	4
Nitrate	10	mg/l	179	51
Sulfate	500	mg/l	172	43
TDS	500	mg/l	148	111

Table 8-9. Minimum Thresholds for Degredation of Groundwater Quality for Agricultural Use in ILRP Wells Under the Current Monitoring Network (Data from 2012-2018)

Constituent of Concern (COC)	Agricultural Usage Water Quality Objective	Water Quality Objective Units	Number of Wells in Monitoring Network Sampled for COC from 2012-2018	Minimum Threshold - Number of Wells Exceeding Water Quality Objective
Boron	0.75	mg/L	95	0
Chloride	350	mg/L	311	28
Iron	5	mg/L	90	3
Manganese	0.2	mg/L	90	2

8.9.2.4 Information and Methodology Used to Establish Water Quality Minimum Thresholds and Measurable Objectives

The exceedances shown in Table 8-6, Table 8-7, Table 8-8, and Table 8-9 were based on a review of recent datasets. The information used for establishing the degradation of groundwater quality minimum thresholds includes:

- Historical groundwater quality data from municipal, small systems, agricultural, and domestic production wells in the Subbasin
- Federal and State drinking water quality standards
- Central Coast Basin Plan assessment of water quality objectives for agricultural water use
- Feedback from GSA staff members and public members

The historical groundwater quality data used to establish groundwater quality minimum thresholds are presented in Chapter 5. Based on the reviews of historical and current groundwater quality data, federal and state drinking water standards, and irrigation water quality needs, the SVBGSA agreed that these standards are appropriate to define groundwater quality minimum thresholds.

8.9.2.5 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

Because SGMA does not require projects or actions to improve groundwater quality, there will be no direct actions under the GSP associated with the groundwater quality minimum thresholds. Therefore, there are no actions that directly influence other sustainability indicators. However, preventing migration of poor groundwater quality may limit activities needed to achieve minimum thresholds for other sustainability indicators.

- **Chronic lowering of groundwater levels**. Groundwater quality minimum thresholds could influence groundwater elevation minimum thresholds by limiting the types of water that can be used for recharge to raise groundwater elevations. Water used for recharge cannot exceed any of the groundwater quality minimum thresholds. In addition, a change in groundwater elevations may cause a change in groundwater flow direction which in turn could cause poor water quality to migrate into areas of good water quality.
- **Change in groundwater storage**. Nothing in the groundwater quality minimum thresholds promotes pumping in excess of the sustainable yield. Therefore, the groundwater quality minimum thresholds will not result in an exceedance of the groundwater storage minimum threshold.
- **Seawater intrusion**. Nothing in the groundwater quality minimum thresholds promotes additional pumping that could exacerbate seawater intrusion. Therefore, the groundwater quality minimum thresholds will not result in an exceedance of the seawater intrusion minimum threshold.
- **Subsidence**. Nothing in the groundwater quality minimum thresholds promotes additional pumping that could cause subsidence. Therefore, the groundwater quality minimum thresholds will not result in an exceedance of the subsidence minimum threshold.
- **Depletion of interconnected surface waters.** Nothing in the groundwater quality minimum thresholds promotes additional pumping or lower groundwater elevations adjacent to interconnected surface waters. Therefore, the groundwater quality minimum thresholds will not result in a significant or unreasonable depletion of interconnected surface waters.

8.9.2.6 Effect of Minimum Thresholds on Neighboring Basins and Subbasins

The anticipated effect of the degraded groundwater quality minimum thresholds on each of the neighboring subbasins is addressed below.

The 180/400-Foot Aquifer Subbasin has four neighboring subbasins within the Salinas Valley Groundwater Basin:

- The Langley Subbasin to the north
- The Eastside Subbasin to the northeast
- The Forebay Subbasin to the south
- The Monterey Subbasin to the West

The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the 180/400-Foot Aquifer Subbasin. These neighboring subbasins are in the process of GSP development for submittal in January 2022. Minimum thresholds for the 180/400-Foot Aquifer Subbasin will be reviewed relative to information developed during the preparation of neighboring subbasins' GSPs and will be updated, as appropriate, to ensure that these minimum thresholds will not prevent the neighboring subbasins from achieving sustainability. In addition, the Pajaro Valley Basin lies directly to the north of the Subbasin. Because the minimum thresholds in the 180/400-Foot Aquifer Subbasin are to prevent migration of poor-quality water, it is likely that the minimum thresholds will not prevent the Pajaro Basin from achieving and maintaining sustainability. The SVBGSA will coordinate closely with the Pajaro Valley Water Agency as it sets minimum thresholds to ensure that the basins do not prevent each other from achieving sustainability.

8.9.2.7 Effect on Beneficial Uses and Users

Agricultural land uses and users. The degradation of groundwater quality minimum thresholds generally provides positive benefits to the Subbasin's agricultural water users. Preventing additional agricultural supply wells from exceeding levels that could reduce crop production ensures that a supply of usable groundwater will exist for beneficial agricultural use.

Urban land uses and users. The degradation of groundwater quality minimum thresholds generally provides positive benefits to the Subbasin's urban water users. Preventing constituents of concern in additional drinking water supply wells from exceeding MCLs or SMCLs ensures an adequate supply of groundwater for municipal supplies.

Domestic land uses and users. The degradation of groundwater quality minimum thresholds generally provides positive benefits to the Subbasin's domestic water users. Preventing constituents of concern in additional drinking water supply wells from exceeding MCLs or SMCLs ensures an adequate supply of groundwater for domestic supplies.

Ecological land uses and users. Although the groundwater quality minimum thresholds do not directly benefit ecological uses, it can be inferred that the degradation of groundwater quality minimum thresholds provide generally positive benefits to the Subbasin's ecological water uses. Preventing constituents of concern from migrating will prevent unwanted contaminants from impacting ecological groundwater uses.

8.9.2.8 Relation to State, Federal, or Local Standards

The degradation of groundwater quality minimum thresholds specifically incorporates state and federal standards for drinking water.

8.9.2.9 Method for Quantitative Measurement of Minimum Thresholds

Degradation of groundwater quality minimum thresholds will be directly measured from existing or new municipal, domestic, or agricultural supply wells. Groundwater quality will be measured through existing monitoring programs.

- Exceedances of MCLs and SMCLs will be monitored from annual water quality reports submitted to the California Division of Drinking Water and the County of Monterey by municipalities and small water systems.
- Exceedances of crop production based minimum thresholds will be monitored as part of the ILRP as discussed in Chapter 7.

Initially, the review of MCLs and SMCLs will be centered around the constituents of concern identified above. If during review of the water quality data additional constituents appear to exceed MCLs and SMCLs, minimum thresholds and measurable objectives will be developed for these additional constituents.

8.9.3 Measurable Objectives

The measurable objectives for degradation of groundwater quality represent target groundwater quality distributions in the Subbasin. SGMA does not mandate the improvement of groundwater quality. Therefore, the SVBGSA has set the measurable objectives identical to the minimum thresholds, as defined in Table 8-6, Table 8-7, Table 8-8, and Table 8-9.

8.9.3.1 Method for Setting Measurable Objectives

As described above, measurable objectives are set to be identical to the minimum thresholds and therefore follow the same method as detailed in Section 8.7.2.4.

8.9.3.2 Interim Milestones

Interim milestones show how the GSA anticipates the Subbasin will gradually move from current conditions to meeting the measurable objectives over the next 20 years of implementation. Interim milestones are set for each 5-year interval following GSP adoption.

The measurable objectives for degradation of groundwater quality are set at current conditions; there is no anticipated degradation of groundwater quality during GSP implementation that results from the implementation of projects and actions as described in Chapter 9. Therefore, the expected interim milestones are identical to current conditions.

8.9.4 Undesirable Results

8.9.4.1 Criteria for Defining Undesirable Results

By regulation, the degradation of groundwater quality undesirable result is a quantitative combination of groundwater quality minimum threshold exceedances. For the Subbasin, any groundwater quality degradation is unacceptable as a direct result of GSP implementation. Some groundwater quality changes are expected to occur independent of SGMA activities; because these changes are not related to SGMA activities they do not constitute an undesirable result. Therefore, the degradation of groundwater quality undesirable result is:

> *During any one year, no groundwater quality minimum threshold shall be exceeded when computing annual averages at each well, as a direct result of projects or management actions taken as part of GSP implementation.*

8.9.4.2 Potential Causes of Undesirable Results

Conditions that may lead to an undesirable result include the following:

- **Required Changes to Subbasin Pumping**. If the location and rates of groundwater pumping change as a result of projects implemented under the GSP, these changes could alter hydraulic gradients and associated flow directions, and cause movement of one of the constituents of concern towards a supply well at concentrations that exceed relevant standards.
- **Groundwater Recharge**. Active recharge of imported water or captured runoff could modify groundwater gradients and move one of the constituents of concern towards a supply well in concentrations that exceed relevant limits.

- **Recharge of Poor-Quality Water**. Recharging the Subbasin with water that exceeds an MCL, SMCL, or level that reduces crop production will lead to an undesirable result.

8.9.4.3 Effects on Beneficial Users and Land Use

The undesirable result for degradation of groundwater quality is avoiding groundwater degradation due to actions directly resulting from GSP implementation. Therefore, the undesirable result will not impact the use of groundwater and will not have a negative effect on the beneficial users and uses of groundwater. This undesirable result, however, only applies to groundwater quality changes directly caused by projects or management actions implemented as part of this GSP. This undesirable result does not apply to groundwater quality changes that occur due to other causes.

8.10 Subsidence SMC

8.10.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were assessed based on public meetings and discussions with GSA staff. Significant and unreasonable rates of land subsidence in the Subbasin are those that lead to a permanent subsidence of land surface levels that impact infrastructure. Significant and unreasonable subsidence in the Subbasin is defined as follows:

- Any inelastic land subsidence that impacts infrastructure and is caused by lowering of groundwater elevations occurring in the Subbasin is significant and unreasonable.

Subsidence can be elastic or inelastic. Inelastic subsidence is generally irreversible. Elastic subsidence is the small, reversible lowering and rising of the ground surface. This SMC only concerns inelastic subsidence. Currently, InSAR data provided by DWR shows that no inelastic subsidence has been measured in the 180/400-Foot Aquifer Subbasin.

8.10.2 Minimum Thresholds

Section 354.28(c)(5) of the Regulations states that “The minimum threshold for land subsidence shall be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results” (CCR, 2016). Because it is difficult to assess a-priori where subsidence may interfere with surface land uses and where it may not, a single minimum threshold is set for the entire Subbasin.

Based on an analysis of potential measurement errors in the InSAR data, as discussed in the following section, the subsidence minimum threshold is that the InSAR measured subsidence between June of one year and June of the subsequent year shall be no more than 0.1 foot, resulting in zero long-term subsidence.

8.10.2.1 Information Used and Methodology for Establishing Subsidence Minimum Thresholds

Minimum thresholds were established using InSAR data available from DWR. The general minimum threshold is for no long-term irreversible subsidence in the Subbasin. The InSAR data provided by DWR, however, is subject to measurement error. DWR has stated that, on a statewide level, for the total vertical displacement measurements between June 2015 and June 2018, the errors are as follows (Brezing, personal communication):

1. The error between InSAR data and continuous GPS data is 16 mm (0.052 feet) with a 95% confidence level
2. The measurement accuracy when converting from the raw InSAR data to the maps provided by DWR is 0.048 feet with 95% confidence level.

By simply adding the errors 1 and 2, the combined error is 0.1 foot. While this is not a robust statistical analysis, it does provide an estimate of the potential error in the InSAR maps provided by DWR. A land surface change of less than 0.1 feet is therefore within the noise of the data and is not dispositive of subsidence in the Subbasin.

Additionally, the InSAR data provided by DWR reflects both elastic and inelastic subsidence. While it is difficult to compensate for elastic subsidence, visual inspection of monthly changes in ground elevations suggest that elastic subsidence is largely seasonal. Figure 8-8 shows the ground level changes at a randomly selected point in the Subbasin (Latitude 36.69318, Longitude -121.72295). This figure demonstrates the general seasonality of the elastic subsidence. To minimize the influence of elastic subsidence on the assessment of long-term, permanent subsidence, changes in ground level will only be measured annually from June of one year to June of the following year.

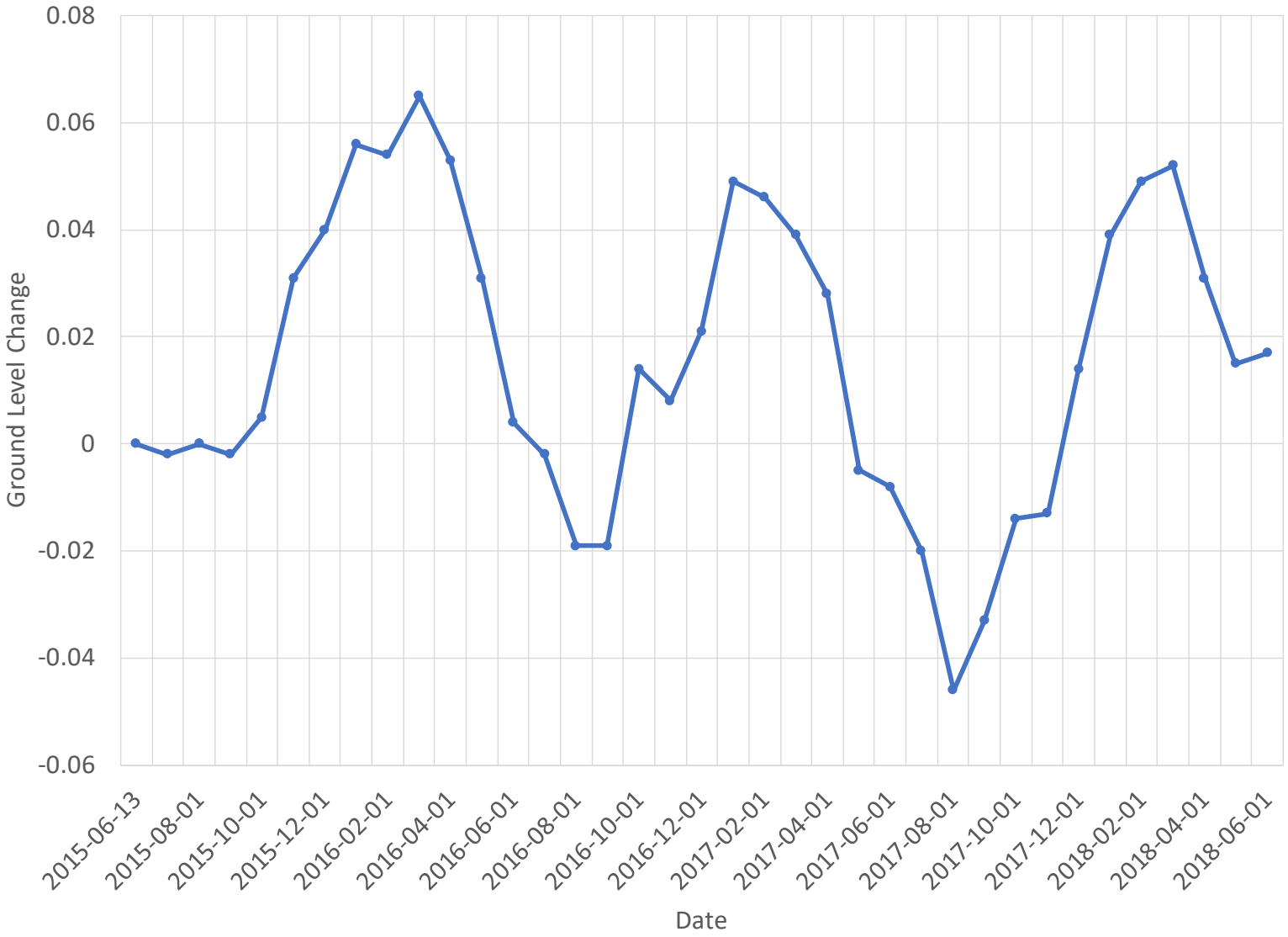


Figure 8-8. Seasonal Ground Surface Change at Point 36.69318, -121.72295

8.10.2.2 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

Subsidence minimum thresholds have little or no impact on other minimum thresholds, as described below.

- **Chronic lowering of groundwater levels**. Subsidence minimum thresholds will not result in significant or unreasonable groundwater elevations.
- **Change in groundwater storage**. The subsidence minimum thresholds will not change the amount of pumping and will not result in a significant or unreasonable change in groundwater storage.
- **Seawater intrusion**. The subsidence minimum thresholds will not induce additional advancement of seawater intrusion along the coast.
- **Degraded water quality**. The subsidence minimum thresholds will not change the groundwater flow directions or rates, and therefore and will not result in a significant or unreasonable change in groundwater quality.
- **Depletion of interconnected surface waters**. The ground level subsidence minimum thresholds will not change the amount or location of pumping and will not result in a significant or unreasonable depletion of interconnected surface waters.

8.10.2.3 Effect of Minimum Thresholds on Neighboring Basins and Subbasins

The 180/400-Foot Aquifer Subbasin has four neighboring subbasins within the Salinas Valley Groundwater Basin:

- The Langley Subbasin to the north
- The Eastside Subbasin to the northeast
- The Forebay Subbasin to the south
- The Monterey Subbasin to the West

The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the 180/400-Foot Aquifer Subbasin. These neighboring subbasins are in the process of GSP development for submittal in January 2022. Minimum thresholds for the 180/400-Foot Aquifer Subbasin will be reviewed relative to information developed during the preparation of neighboring subbasins' GSPs and will be updated, as appropriate, to ensure that these minimum thresholds will not prevent the neighboring subbasins from achieving sustainability. In addition,

the Pajaro Valley Basin lies directly to the north of the Subbasin. Because the minimum thresholds in the 180/400-Foot Aquifer Subbasin is zero subsidence, it is likely that the minimum thresholds will not prevent the Pajaro Basin from achieving and maintaining sustainability. The SVBGSA will coordinate closely with the Pajaro Valley Water Agency as it sets minimum thresholds to ensure that the basins do not prevent each other from achieving sustainability.

8.10.2.4 Effects on Beneficial Uses and Users

The subsidence minimum thresholds are set to prevent any long-term inelastic subsidence that could harm infrastructure. Available data indicate that there is currently no long-term subsidence occurring in the Subbasin that affects infrastructure, and reductions in pumping are already required by minimum thresholds for other sustainability indicators. Therefore, the subsidence minimum thresholds do not require any additional reductions in pumping and there is no negative impact on any beneficial user.

8.10.2.5 Relation to State, Federal, or Local Standards

There are no federal, state, or local regulations related to subsidence.

8.10.2.6 Method for Quantitative Measurement of Minimum Threshold

Minimum thresholds will be assessed using DWR-supplied InSAR data.

8.10.3 Measurable Objectives

The measurable objectives for ground surface subsidence represents target subsidence rates in the Subbasin. Because the minimum thresholds of zero net long-term subsidence are the best achievable outcome, the measurable objectives are identical to the minimum thresholds.

8.10.3.1 Method for Setting Measurable Objectives

The measurable objectives are set to the groundwater elevations that result in zero long-term subsidence. These groundwater elevations are identical to the minimum threshold groundwater elevations.

8.10.3.2 Interim Milestones

Subsidence measurable objectives are set at current conditions of no long-term subsidence. There is no change between current conditions and sustainable conditions. Therefore, the interim milestones are identical to current conditions of keeping groundwater elevations above historical lows.

8.10.4 Undesirable Results

8.10.4.1 Criteria for Defining Undesirable Results

By regulation, the ground surface subsidence undesirable result is a quantitative combination of subsidence minimum threshold exceedances. For the 180/400-Foot Subbasin, no long-term subsidence that impacts infrastructure is acceptable. Therefore, the ground surface subsided undesirable result is:

> *In any one year, there will be zero exceedances of the minimum thresholds for subsidence.*

Should potential subsidence be observed, the SVBGSA will first assess whether the subsidence may be due to elastic subsidence. If the subsidence is not elastic, the SVBGSA will undertake a program to correlate the observed subsidence with measured groundwater elevations.

8.10.4.2 Potential Causes of Undesirable Results

Conditions that may lead to an undesirable result include a shift in pumping locations. Shifting a significant amount of pumping to an area that is susceptible to subsidence could trigger subsidence that has not been observed before.

8.10.4.3 Effects on Beneficial Users and Land Use

The undesirable result for subsidence does not allow any subsidence to occur in the Subbasin. Therefore, there is no negative effect on any beneficial uses and users.

8.11 Depletion of Interconnected Surface Water SMC

Areas exist in the Subbasin where shallow groundwater may be connected to the surface water system. There is evidence that shallow sediments occur above the confined 180-Foot aquifer that are connected to the surface water system. However, there is almost no groundwater pumping in this area and it is not identified as a principal aquifer.

8.11.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were assessed based on public meetings, and discussions with GSA staff. Significant and unreasonable depletion of interconnected surface water in the Subbasin is depletion of interconnected surface water flows that may prevent the MCWRA from meeting biological flow requirements in the Salinas River, or would induce an unreasonable impact on other beneficial uses and users such as surface water rights holders. The GSA does not have authority to manage reservoir releases and is not required to manage surface waters.

The U.S. Army Corps of Engineers has re-initiated consultation with the National Marine Fisheries Service (NMFS) on the Biological Opinion for the Salinas Valley Water Project (NMFS, 2007). Therefore, no biological opinion currently regulates environmental flows in the Salinas River. MCWRA, however, continues to manage flows in the Salinas River under the previous, 2007 biological opinion as a safe harbor practice. Until a new biological opinion is developed, and a Habitat Conservation Plan (HCP) is drafted by MCWRA, this GSP will use the 2007 biological opinion as guidance to establish the effects of stream depletion due to groundwater pumping.

The 2007 NMFS biological opinion was developed using measured streamflows between 1995 and 2005. The measured streamflows used in the biological opinion reflect current surface water depletion rates, and therefore current depletion rates are already incorporated into the river management plan. Furthermore, releases from Nacimiento Reservoir and San Antonio Reservoir are designed to maintain required environmental flows with current groundwater pumping. Because steelhead flow requirements were being met under the 2007 biological opinion, surface water depletion rates were not unreasonable with regards to maintaining environmental flow requirements. This assessment will be revisited after the new HCP is drafted by MCWRA.

In addition to managing the river for environmental needs, the Salinas River is managed to maintain adequate water supply for other beneficial uses. The Nacimiento and San Antonio reservoirs provide flood control benefits as well as groundwater recharge benefits through its sandy channels, where water rights holders along the river can pump out water according to their water rights.

Currently, there is significant leakage from the Salinas River to the underlying groundwater, but it is not considered unreasonable with regards to riparian rights holders. To the extent that groundwater pumping depletes surface water flows, these depletions, and the potential surface water limitations, would be injurious only if the surface water right holders held rights senior to the groundwater pumpers. Riparian rights holders and groundwater pumpers both have correlative rights to the common water pool. As stated in the SVWC v. MCWRA Report of Referee (SWRCB Referee, 2019):

> *The common source doctrine applies to groundwater and surface waters that are hydrologically connected and integrates the relative priorities of the rights without regard to whether the diversion is from surface or groundwater.*

Because groundwater pumping rights and riparian surface water rights are correlative under this finding, groundwater pumping-induced depletions that limit surface water rights are considered potentially significant, but not unreasonable.

8.11.2 Minimum Thresholds

Section 354.28(c)(6) of the Regulations states that "The minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results" (CCR, 2016). Minimum thresholds only apply to the interconnected stream reaches.

As stated in Chapter 6, the estimated average future surface water depletion rate in the 180/400-Foot Aquifer Subbasin is approximately 69,700 AF/yr. based on the SVIHM. This is considered a reasonable estimate of the current surface water depletion. However, without good historical data or a numerical model, it is difficult to assess whether and where the stream is connected to underlying groundwater. Furthermore, without simulating a no-pumping scenario and comparing it to a current pumping scenario, it is not possible to determine how much of the surface water depletion is due to pumping.

As stated above, the current rate of stream depletion from pumping is not considered significant and unreasonable. Therefore, the minimum threshold for depletion of interconnected surface water is currently set to the current average rate of 69,700 AF/yr. This estimate will be modified when the SVIHM becomes available. As soon as the model is available, new depletions will be computed based on more complete analysis, and new minimum threshold will be set during implementation of the GSP.

8.11.2.1 Information Used and Methodology for Establishing Depletion of Interconnected Surface Water Minimum Thresholds

The minimum thresholds for depletion of interconnected surface water are developed using the definition of significant and unreasonable conditions described above, public information about critical habitat, public information about water rights described below, and the Subbasin water budget analysis.

A summary of surface water diversions by riparian water rights holders on the Salinas River and its tributaries within the 180/400-Foot Aquifer Subbasin is provided in Table 8-10. The diversion data were obtained from queries of the DWR eWRIMS water rights management system and represent all surface water diversions as self-reported by water-rights holders with points of diversion located within the Subbasin boundaries. Some of the diversions shown in Table 8-10 may be reported to MCWRA as groundwater pumping, resulting in a double counting of these extractions.

Table 8-10. Surface Water Diversions on the Salinas River and its Tributaries in the 180/400-Foot Aquifer Subbasin

	2010	2011	2012	2013	2014	2015	2016	2017
Diversions (Acre-Feet)	6,359	6,498	7,277	9,579	8,689	8,164	8,065	7,431

Figure 8-9 presents the average monthly total diversions on the Salinas River for the period 2010 to 2017. In the 180/400-Foot Aquifer Subbasin, the largest diversions occur in the summer months, as expected, to satisfy agricultural irrigation needs.

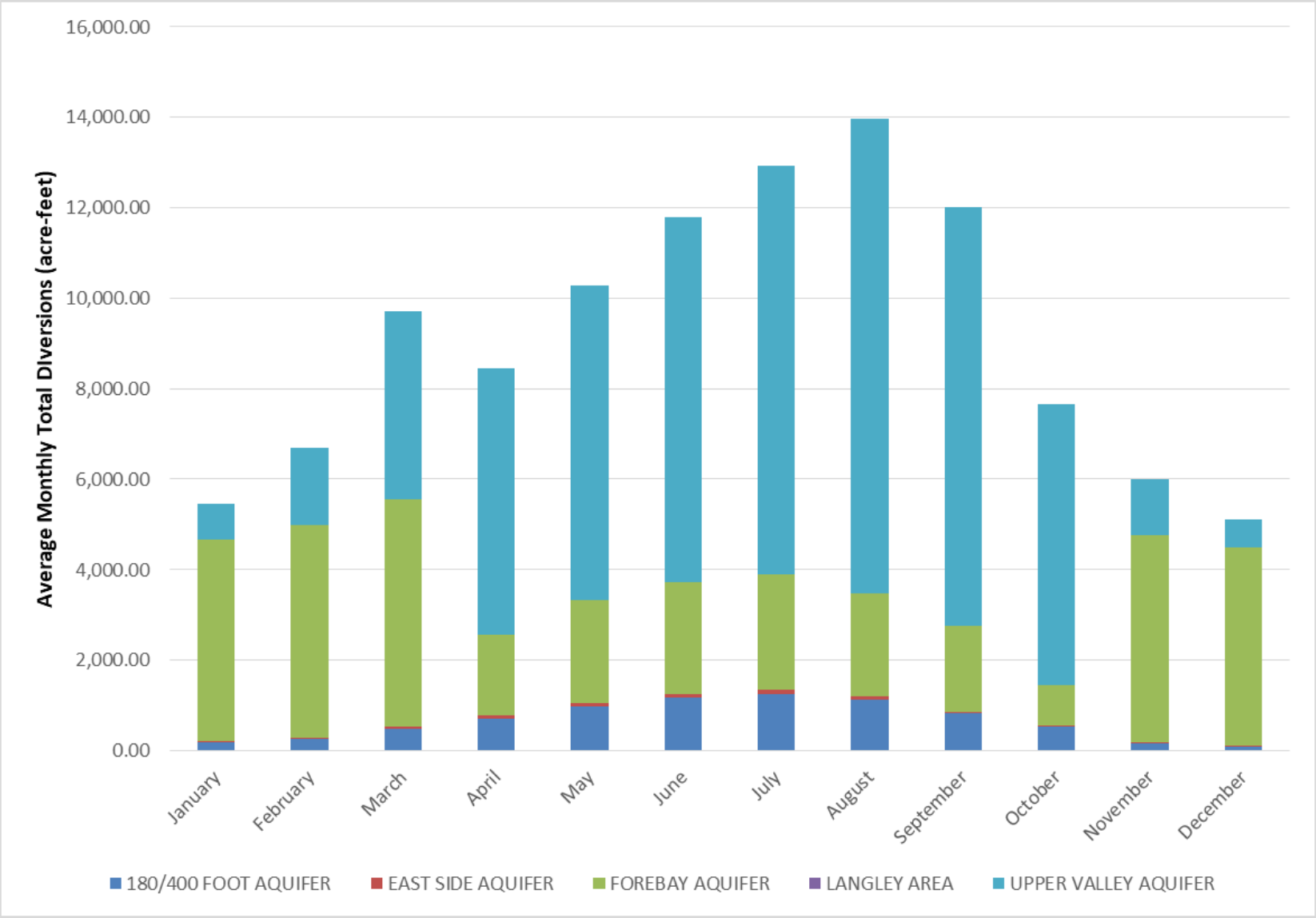


Figure 8-9. Average Monthly Total Salinas River Diversions by Subbasin

8.11.2.2 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

The minimum threshold for depletion of surface water is a single value for the entire Subbasin. Therefore, no conflict exists between minimum thresholds measured at various locations within the Subbasin.

The depletion of surface water minimum threshold could influence other sustainability indicators as follows:

- **Chronic lowering of groundwater levels**. Capping the amount of surface water depletion could limit the amount of natural streamflow percolation that would otherwise maintain groundwater elevations. However, the surface water depletion minimum thresholds do not directly influence the chronic lowering of groundwater elevations minimum thresholds
- **Change in groundwater storage**. The depletion of surface water minimum threshold may limit the amount of pumping near rivers and streams. This limitation on pumping could also limit losses of groundwater storage. The depletion of surface water minimum threshold is therefore consistent with the change in groundwater storage minimum threshold.
- **Seawater intrusion**. Seawater intrusion will not be affected by the depletion of surface water minimum thresholds.
- **Degraded water quality**. Water quality will not be affected by the depletion of surface water minimum thresholds.
- **Inelastic subsidence**. Inelastic subsidence will not be affected by the depletion of surface water minimum thresholds.

8.11.2.3 Effect of Minimum Thresholds on Neighboring Basins and Subbasins

The 180/400-Foot Aquifer Subbasin has four neighboring subbasins within the Salinas Valley Groundwater Basin:

- The Langley Subbasin to the north
- The Eastside Subbasin to the northeast
- The Forebay Subbasin to the south
- The Monterey Subbasin to the West

The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these

subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the 180/400-Foot Aquifer Subbasin. These neighboring subbasins are in the process of GSP development for submittal in January 2022. Minimum thresholds for the 180/400-Foot Aquifer Subbasin will be reviewed relative to information developed during the preparation of neighboring subbasins' GSPs and will be updated, as appropriate, to ensure that these minimum thresholds will not prevent the neighboring subbasins from achieving sustainability. In addition, the Pajaro Valley Basin occurs directly to the north. There is no surface water connection between the Pajaro Valley and the 180/400-Foot Aquifer Subbasin, and therefore the minimum thresholds for depletion of interconnected surface waters does not influence the ability of Pajaro Valley to achieve sustainability.

8.11.2.4 Effect on Beneficial Uses and Users

Table 3-9 of the *Salinas River Long-Term Management Plan* (MCWRA, 2019) includes a list of 18 different designated beneficial uses on certain reaches of the river. In general, the major beneficial uses on the Salinas River are:

- Surface water diversions for agricultural, urban/industrial and domestic supply
- Groundwater pumping from recharged surface water
- Freshwater habitat
- Rare, threated or endangered species, such as the Steelhead Trout
- CSIP diversions

The depletion of surface water minimum thresholds may have varied effects on beneficial users and land uses in the Subbasin.

Agricultural land uses and users. The depletion of surface water minimum threshold prevents lowering of groundwater elevations adjacent to certain parts of streams and rivers. This has the effect of limiting the amount of groundwater pumping in these areas. Limiting the amount of groundwater pumping may limit the quantity and type of crops that can be grown in these adjacent to streams and rivers.

Urban land uses and users. The depletion of surface water minimum threshold prevents lowering of groundwater elevations adjacent to certain parts of streams and rivers. This may limit the amount of urban pumping near rivers and streams, which could limit urban growth in these areas. Also, if pumping is limited, municipalities may have to obtain alternative sources of water to achieve urban growth goals. If this occurs, this may result in higher water costs for municipal water users.

Domestic land uses and users. The depletion of surface water minimum threshold may benefit existing domestic land users and uses by maintaining shallow groundwater elevations near streams and protecting the operability of relatively shallow domestic wells. However, these minimum thresholds may limit the number of new domestic wells that can be installed near rivers or streams in order to limit the additional drawdown from the new wells.

Ecological land uses and users. The depletion of surface water minimum thresholds prevents further degradation of ecological impacts from groundwater pumping.

8.11.2.5 Relation to State, Federal, or Local Standards

The minimum thresholds are developed in accordance with NMFS streamflow requirements.

8.11.2.6 Method for Quantitative Measurement of Minimum Threshold

The updated SVIHM will serve as the primary approach for monitoring depletion of surface water when it becomes available. At a minimum, the model will be updated every 5 years and the amount of surface water depletion that occurred in the previous 5 years will be estimated.

The model's ability to estimate surface water depletion relies on it reasonably simulating shallow groundwater elevations adjacent to interconnected surface water bodies. Therefore, additional shallow wells will be installed adjacent to interconnected stream reaches to verify the representativeness of the updated SVIHM. Further details on the number and locations of these shallow wells are included in Chapter 7.

8.11.3 Measurable Objectives

The measurable objective for depletion of surface water is the same as the minimum threshold. The measurable objective is set at the long-term depletion rate of 69,700 AF/yr.

8.11.3.1 Method for Setting Measurable Objectives

Discussions with GSA staff and stakeholder suggested that stakeholder prefer improving the health of the Salinas River during times of natural flow, but agree that summer flows are reservoir dominated and do not necessarily mimic the natural flow system. Stakeholders showed no preference for reducing leakage from river flows that are meant to intentionally recharge the groundwater basin. Therefore, there is no need to set a measurable objective different than the minimum threshold.

8.11.3.2 Interim Milestones

Depletion of interconnected surface water measurable objectives are set at current conditions; there is no anticipated increase or decrease in surfaced water depletion during GSP

implementation. Therefore, the expected interim milestones are identical to current conditions. The interim milestones for the total calculated depletion of interconnected surface water is shown in Table 8-11.

Table 8-11. Depletion of Interconnected Surface Water Interim Milestones

5-Year Depletion Rate (AF/yr.)	10-Year Depletion Rage (AF/yr.)	15-Year Depletion Rate (AF/yr.)
69,700	69,700	69,700

8.11.4 Undesirable Results

8.11.4.1 Criteria for Defining Undesirable Results

By regulation, the depletion of interconnected surface water undesirable result is a quantitative combination of minimum threshold exceedances. There is only one reduction in depletion of interconnected surface water minimum threshold. Therefore, no minimum threshold exceedances are allowed to occur and the reduction in groundwater storage undesirable result is:

> *During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the depletion of interconnected surface waters shall not exceed the single minimum threshold.*

8.11.4.2 Potential Causes of Undesirable Results

Conditions that may lead to an undesirable result for the depletion of interconnected surface waters include the following:

- **Localized pumping increases**. Even if the Subbasin is adequately managed at the Subbasin scale, increases in localized pumping near interconnected surface water bodies could unreasonably increase surface water depletion.
- **Expansion of riparian water rights**. Riparian water rights holders often pump from wells adjacent to the Salinas River. Pumping by these riparian water rights holder users is not regulated under this GSP. Additional riparian pumpers near interconnected reaches of rivers and streams may result in excessive localized surface water depletion.
- **Changes in Nacimiento and San Antonio Reservoir Releases**. Since the Salinas River is dependent on reservoir releases for sustained summer flows, when diversions are at the highest level, any decrease in reservoir flows during that time could be detrimental to the interconnected surface waters by increases depletions and could cause undesirable results to beneficial users.

- **Extensive, unanticipated drought**. Minimum thresholds were established based on anticipated future climatic conditions. Extensive, unanticipated droughts may lead to excessively low groundwater elevations that increase surface water depletion rates.

8.11.4.3 Effects on Beneficial Users and Land Use

The depletion of surface water undesirable result is to have no net change in surface water depletion during average hydrologic conditions and over the long-term. Therefore, during average hydrologic conditions and over the long-term, the undesirable result will not have a negative effect on the beneficial users and uses of groundwater. However, pumping during dry years could temporarily increase rates of surface water depletions. Therefore, there could be short-term impacts on all beneficial users and uses of the surface water during dry years.

9 PROJECTS AND MANAGEMENT ACTIONS

9.1 Introduction

This chapter describes the projects and management actions that will allow the Subbasin to attain sustainability in accordance with §354.42 and §354.44 of the SGMA regulations. This chapter includes a description of a water charges framework, proposed groundwater management actions, and proposed projects. In this GSP, the term groundwater management actions generally refers to activities that support groundwater sustainability without infrastructure; projects are activities supporting groundwater sustainability that require infrastructure.

The water charges framework, management actions, and projects in this GSP are designed to achieve a number of outcomes including:

- Achieving groundwater sustainability by meeting Subbasin-specific sustainable management criteria by 2040
- Providing equity between who benefits from projects and who pays for projects
- Providing a source of funding for project implementation
- Providing incentives to constrain groundwater pumping within limits

The management actions and projects included in this chapter outline a framework for achieving sustainability, however many details must be negotiated before any of the projects and management actions can be implemented. Costs for implementing projects and actions are in addition to the agreed-upon funding to sustain the operation of the GSA, and the funding needed for monitoring and reporting. The collection of projects and management actions included in this chapter demonstrate that sufficient options exist to reach sustainability. Not all projects and actions have to be implemented to attain sustainability, and they have not yet all been agreed-upon by stakeholders. Therefore, the projects and management actions included here should be considered a list of options that will be refined during GSP implementation.

This GSP is developed as part of an integrated sustainability plan that is being developed by the SVBGSA to achieve groundwater sustainability in all six of the Salinas Valley Groundwater Basin subbasins under its authority. Therefore, the projects and actions included in this GSP are part of a larger set of integrated projects and actions for the entire Salinas Valley Groundwater Basin. All of the integrated projects and management actions for the Salinas Valley Groundwater Basin are included in this GSP, although the benefit may be limited in this Subbasin.

The negotiations and discussions regarding specific projects will occur while the GSPs for the five remaining subbasins in the Valley are being drafted. The discussions will likely continue during the early years of GSP implementation. Members of the SVBGSA and stakeholders in the

Subbasin should view the list of projects and management actions as a starting point for more detailed discussions. Where appropriate, details that must be agreed upon are identified for each management action or project. The projects and management actions included in this chapter are supported by the best available information and best available science; however, further information may need to be collected in the implementation period to refine projects and management actions.

As a means to compare projects, this chapter estimates the cost per acre-foot for each project or action as appropriate. The cost per acre-foot is the amortized cost of the project divided by the annual yield. It is not the cost of irrigation. Because most growers will be allowed to pump some groundwater and irrigate with that groundwater, water supplied by the projects in this chapter represent only a portion of each grower's irrigation water. Therefore, actual costs seen by growers are proportional to the grower's individual need for project water.

The approach to implementing the water charges framework, management actions, and projects will provide individual landowners and public entities flexibility in how they manage water and how the Subbasin achieves groundwater sustainability. All groundwater pumpers will be allowed to make individual decisions on how much groundwater they pump based on their perceived best interests.

9.2 Water Charges Framework

The proposed water charges framework is the fundamental structure for managing groundwater pumping and funding projects. This framework is designed to achieve two important outcomes:

1. Promote voluntary pumping reductions; and
2. Fund new water supply projects by charging fees for various levels of pumping.

Many details of the water charges framework will be developed through negotiations during the first three years of GSP implementation. Depending on the outcome of the negotiations, long-term GSP implementation may be funded by the water charges framework, other financing method as permitted by SGMA and other state law, or a combination thereof.

If implemented as outlined in this chapter, a similarly structured water charges framework with a tiered structure of charges will be applied in all subbasins of the Salinas Valley Groundwater Basin. However, details such as pumping allowance quantities and tier charges will be different for each subbasin, because the demand and sustainable yield varies by subbasin. Each subbasin's water charges framework will reflect the specific hydrogeology and conditions of that subbasin.

The water charges framework includes the following components, described further below.

- **Exempt Groundwater Pumpers** may include *de-minimis* pumpers or other classes of pumpers that are not managed by this GSP.
- **Sustainable Pumping Allowances** are a base amount of groundwater pumping assigned to each non-exempt groundwater pumper. The sum of all sustainable pumping allowances and exempt groundwater pumping is the sustainable yield of the Subbasin. The sustainable yield will be regularly reassessed based on improved data and tools.
- **Transitional Pumping Allowances** are the difference between current assumed pumping and the sustainable pumping allowance. These transitional pumping allowances may be reduced over time to move from current pumping practices to sustainable pumping.
- **Supplementary Pumping** is all groundwater pumping above the sustainable and transitional pumping allowance.
- Sustainable and transitional pumping allowances are quantified for every non-exempt groundwater pumper. These allowances are not water rights. Instead, they are pumping amounts that form the basis of a financial fee structure to both implement the regulatory functions of the SVBGSA and fund new water supply projects.
- Pumping is recorded annually for all non-exempt pumpers.
- All pumpers are charged based on a tiered rate structure. Groundwater pumped within the sustainable pumping allowance is charged a base rate called Tier 1 – Sustainable Pumping Charge. Groundwater pumped in excess of the sustainable pumping allowance is charged a rate called Tier 2 – Transitional Pumping Charge. This charge is for any pumping above the sustainable pumping allowance but within their transitional allowance. Any groundwater pumped above the transitional pumping allowance is subject to Tier 3 - Supplementary Pumping Charge. This charge is for the excess amount that is pumped above the Tier 1 and Tier 2 charges.
- Tier 1 funds are used to implement the regulatory functions of implementing SGMA. This may include developing and implementing an improved water metering program, regular data collection and monitoring, negotiating program details, acquiring water rights or contracts, conducting feasibility studies for projects, and permitting and developing one or more of the management actions or projects described in this chapter.
- Tier 2 and Tier 3 funds are used to build projects and pay annual costs of purchasing and treating water supplies that have a defined benefit to individuals or groups.
- Transitional pumping allowances are phased out over 10 to 15 years to encourage pumping within the sustainable yield.

The fee structure in the water charges framework is designed to promote conservation and voluntary pumping reductions. Individual groundwater pumpers may choose to switch to less water-intensive crops, implement water use efficiencies, fallow a portion of their land, or

transition to non-groundwater sources. Alternatively, if reducing pumping is not the best economic option, a pumper may instead opt to pay the overproduction Tier 2 and Tier 3 charges.

The tiered fee structure and allowances will not be uniform across the subbasins of the Salinas Valley Groundwater Basin in the final water charges framework agreement. The fee structures and pumping allowances in each subbasin will be developed in accordance with, or acknowledging, all existing laws, judgments, water management agreements, and established water rights.

The following sections detail the components of the suggested water charges framework outlined above.

9.2.1 Well Registration and Metering

All groundwater production wells, including wells used by *de-minimis* pumpers, must be registered with the SVBGSA. If the well has a meter, the meter must be calibrated on a regular schedule in accordance with manufacturer standards and any programs developed by the SVBGSA or MCWRA. Well registration is intended to establish a relatively accurate count of all the active wells in the Subbasin. Well metering is intended to improve estimates of the amount of groundwater extracted from the Subbasin. SGMA does not allow metering of *de-minimis* well users, and therefore well metering is limited to non-*de minimis* wells. The details of the well registration program, and how it integrates with existing ordinances and requirements, will be developed during the first 2 years of GSP implementation.

9.2.2 Pumping Allowances

Pumping allowances are established to enable development of the tiered pumping charge system, and calculation of over-pumping surcharges and supplemental charges. Pumping allowances are not a water right. The proposed process for establishing initial pumping allowances is as follows. This process may be modified based on negotiations during the first three years of implementation:

- **Sustainable Pumping Allowances**: All land parcels located outside of the service area of a municipal water provider, and land parcels located within the service area of a municipal water provider that are actively farmed as of 2017, will receive a sustainable yield pumping allowance based on a pro-rata share of their subbasin's sustainable yield. The methodology for determining pro-rata shares will be developed during the first three years of GSP implementation. The pro-rata shares may be based on some combination of land acreage, historical crop types grown on the parcel, standardized crop duties for the particular subbasin, historical groundwater use, or other factors. Because the sustainable pumping allowances are designed to limit pumping to the Subbasin's

sustainable yield, it is likely that in the 180/400-Foot Aquifer Subbasin, the pro-rata sustainable allowances will be less than the current groundwater use in the Subbasin.

Sustainable allowances for municipal and industrial groundwater pumpers will be addressed when sustainable pumping allowances are being developed for agricultural pumpers. Because these allowances are not water rights, municipal and industrial water users will be able to pump groundwater even without a quantified sustainable allowance. However, if municipal and industrial groundwater pumpers are not provided a sustainable allowance, any groundwater pumping by these entities will be subject to the Tier 2 Transitional Pumping Charge and Tier 3 Supplemental Pumping Charge.

- **Transitional Pumping Allowances**: In addition to any sustainable pumping allowance that may be assigned, agricultural, municipal, industrial, and other groundwater pumpers will receive a transitional pumping allowance. The transitional pumping allowance will be quantified based on the difference between a groundwater user's actual historical pumping amounts (estimated or measured) and their sustainable allowance. The purpose of this transitional allowance is to ensure that no pumper is required to immediately reduce their pumping, but rather pumpers have an opportunity to reduce their pumping over a set period of time. Maximum annual pumping between 2012 and 2017 will be used to determine transitional pumping allowances. These years are chosen for general consistency with the future water budget calculations which is based on current land use.
- **Transitional Pumping Allowance Phase-out**: Transitional pumping allowances will be phased out until total pumping allowances in each subbasin are less than or equal to the calculated sustainable yield. The phase-out may occur over a time span of 10 to 15 years. The extent and timing of the phase-outs will vary by subbasin to achieve sustainability. The specific phase-out amounts and timing will be determined in negotiations during the first three years of GSP implementation and may be periodically modified by the SVBGSA.
- ***De minimis* Pumpers**: Notwithstanding the foregoing, *de minimis* pumpers are exempt from the fees under the water charges framework.
- **CSIP Water Users**: Some of the projects proposed below will decrease groundwater pumping through additional CSIP deliveries. CSIP water users may have separate allowances that promote CSIP use and acknowledge limitations on the ability to pump groundwater in the CSIP area.

Figure 9-1 shows an example of how the sustainable allowance, transitional allowance, and supplemental charges work together for pumpers not relying on CSIP. In this example, a parcel is assigned a sustainable allowance of 100 AF/yr., which is shown in blue. The SVBGSA will apply the Tier 1 Sustainable Pumping Charge to any pumping within that allowance. The example parcel shown on Figure 9-1 currently pumps 128 AF/yr. Therefore, the initial transitional pumping allowance is 28 AF/yr., which is shown in yellow. This transitional

allowance will be phased out over 10 years. The SVBGSA will apply the Tier 2 Transitional Pumping Charge to any pumping within the transitional allowance. Any pumping above the transitional allowance will be subject to the Tier 3 Supplemental Pumping Charge. This is shown by the dark orange bars. Beginning in year 10, any pumping above the sustainable allowance will be subject to the Tier 3 Supplemental Pumping Charge because there is no transitional allowance beginning in that year.

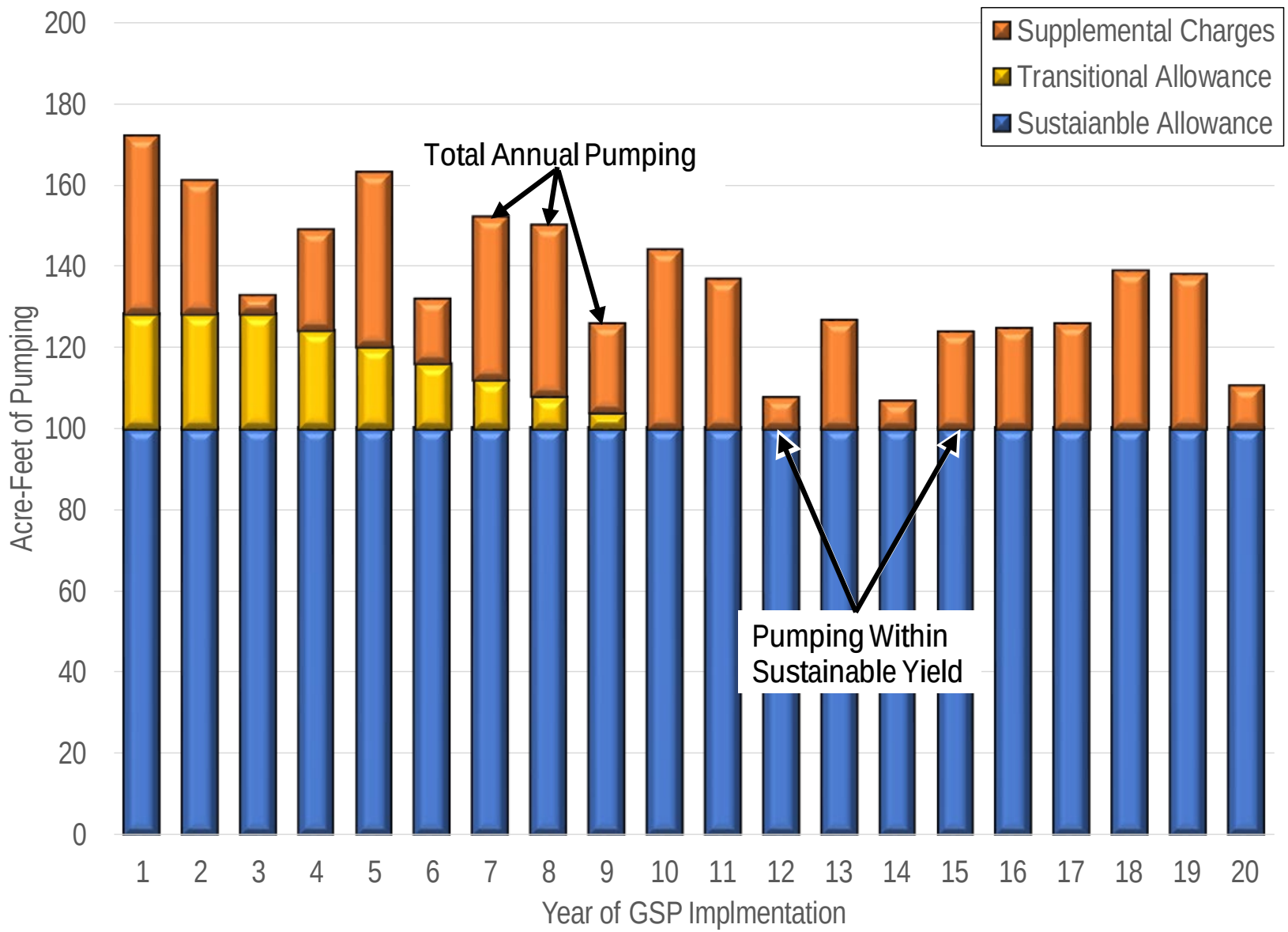


Figure 9-1. Example Pumping Allowances

9.2.3 Carryover and Recharge

To provide pumpers the flexibility to pump more during dry years and less during wet years, the unused portion of a pumping allowance for a given year may be carried over for use in subsequent years. The maximum amount a pumper can carryover is limited to an amount equal to that pumper's current, single year, sustainable pumping allowance. The SVBGSA may elect to impose an annual loss factor that reduces a pumper's carryover credits due to natural hydrogeologic losses from the Subbasin. The exact loss percentage will be agreed to in the final water charges framework.

The carryover element of pumping allowances allows groundwater pumpers to pump more water only if they have previously banked pumping credits. This prevents a pumper from pumping carryover credits that they assume may occur in the future, and directly addresses the requirements of the SGMA regulations §354.44(b)(9) which requires that, "chronic lowering of groundwater levels or depletion of supply during periods of drought is offset by increases in groundwater levels or storage during other periods" (CCR, 2016).

Water intentionally recharged by an individual or entity will be recognized by award of recharge credit to the recharging individual or entity on a 1 AF for 1 AF basis, subject to losses that the SVBGSA may elect to impose. Recharge credit balances will be reduced or debited when the recharged water is recovered. The SVBGSA will develop a system of confirming and accounting for recharge credits and debits as discussed in Section 9.2.6.

9.2.4 Relocation and Transfer of Pumping Allowances

Pumping allowances may be moved between properties temporarily or permanently within the Subbasin. Such re-location of pumping allowances is subject to review by the SVBGSA to ensure that such relocation or transfer does not prevent the sustainability goal from being met. The SVBGSA will model the effects of the relocation to assess any significant and unreasonable impacts from the proposed relocation. Relocating pumping allowances provides pumpers with flexibility to manage their land, water resources, and finances as they desire. Pumping allowances could also be permanently or temporarily transferred between different owners and could be used for another pumping purpose.

9.2.5 Non-Irrigated Land

Although much of the land in the 180/400-Foot Aquifer Subbasin is either currently under irrigation or is supplied by municipalities, there is some land that may be currently fallow. The GSP recognizes that owners of such land may wish to begin pumping in the future consistent with their overlying rights. Such pumping is not limited by this GSP. The SVBGSA may wish to provide sustainable allowances to all landowners, effectively diminishing the allowance of

current irrigators. Optionally, non-exempt pumpers who do not receive an initial pumping allowance may:

1. Acquire pumping allowance from willing sellers subject to SVBGSA approval, and/or
2. Pay the surcharges associated with pumping above their pumping allowance.

The final approach to addressing allowances for fallow land will be developed in the first three years of GSP implementation.

9.2.6 Administration, Accounting, and Management

The SVBGSA will administer the water charges program. Administrative duties will include developing initial pumping allowances; tracking pumping allowance ownership; accounting for water use; accounting for carryover credits and recharge credits; calculating, assessing, and collecting fees; and reviewing proposed re-location and transfer of pumping allowances. The SVBGSA would use water charges revenues to fund projects that develop new water supplies for the benefit of the 180/400-Foot Aquifer Subbasin.

9.2.7 Details to be Developed

The sections above present an initial structure for the water charges framework; however, stakeholders must agree to a number of details before the SVBGSA initiates the water charges framework. An initial list of details that must be negotiated are presented below to provide SVBGSA members and stakeholders an understanding of the range of specifics that are open for negotiation during the first three years of implementation.

- Are *de-minimis* pumpers that pump less than 2 AF/yr. for domestic purposes exempt from the water charge framework and other management actions?
- Are any class of pumpers other than *de-minimis* pumpers exempt from the water charge framework and other management actions?
- How are sustainable pumping allowances set?
- How are transitional allowances phased out in the Subbasin? Over what time frame are pumping allowances ramped down?
- What is the Tier 1 Sustainable Pumping Charge?
- What is the Tier 2 Transitional Pumping Charge?
- What is the Tier 3 Supplemental Pumping Charge?

- What is an equitable balance between the Tier 1 Sustainable Pumping Charge collected in the 180/400-Foot Aquifer Subbasin and the Tier 1 Sustainable Pumping Charge collected in other subbasins?
- What is an equitable balance between the Tier 2 Transitional Pumping Charge collected in the 180/400-Foot Aquifer Subbasin and the Tier 2 Transitional Pumping Charge collected in other subbasins?
- What is an equitable balance between the Tier 3 Supplemental Pumping Charge collected in the 180/400-Foot Aquifer Subbasin and the Tier 3 Supplemental Pumping Charge collected in other subbasins?
- How is currently non-irrigated (e.g., fallowed) land addressed?
- How are municipalities addressed?
- What are the limits and parameters of the carryover and recharge options?
- What is involved in approving relocation or transfer of pumping credits?

9.3 Management Actions

Management actions are new or revised non-structural programs or policies that are intended to reduce or optimize local groundwater use. Management actions will be implemented only if they are deemed cost effective or necessary to achieve sustainability.

9.3.1 All Management Actions Considered for Integrated Management of the Salinas Valley Groundwater Basin

This GSP is part of an integrated plan for managing groundwater in all six subbasins of the Salinas Valley Groundwater Basin that are managed by the SVBGSA. The projects and management actions described in this GSP constitute an integrated management program for the entire Valley. The program's projects and management actions were selected from a larger set of potential actions. Appendix 9A includes the full list of potential management actions that were considered for the Valley-wide integrated management program.

The SVBGSA assessed the potential management actions listed in Appendix 9A for effectiveness in achieving sustainability throughout the Basin. It selected five management actions as the most reliable, implementable, cost-effective, and acceptable to stakeholders. The first three management actions benefit the entire Salinas Valley Groundwater Basin; the last three management actions are specific to the 180/400-Foot Aquifer Subbasin. The sections below describe how the SVBGSA will implement each management action, if stakeholders decide to pursue them.

9.3.2 Priority Management Action 1: Agricultural Land and Pumping Allowance Retirement

The SVBGSA may use water charges revenues to acquire and retire irrigated land and/or pumping allowances (potentially including carryover credits and recharge credits) to reduce pumping. If pursued, the SVBGSA will complete all acquisitions on a voluntary basis from willing sellers at negotiated market prices. The SVBGSA would cease irrigation on acquired land to reduce pumping. The SVBGSA will coordinate with other local agencies and stakeholders to determine beneficial uses of the acquired land, such as establishing native vegetation or converting to other habitat.

Landowners selling pumping allowances to the SVBGSA separate from land will be permitted to convert their land to other uses in compliance with the County of Monterey's General Plan. The number of *de-minimis* wells authorized on converted land will be based on the amount of pumping allowance sold to the SVBGSA. The final ratio of sold pumping allowance to the number of *de-minimis* wells allowed will be agreed to in the final water charges framework. For illustrative purposes, one *de-minimis* well could be authorized for every 20 to 40 AF of pumping allowance sold to the SVBGSA. The details of how much pumping must be retired for every *de-minimis* pumper allocation will be developed during the first three years of GSP implementation.

9.3.2.1 Relevant Measurable Objectives

The measurable objectives benefiting from land retirement include:

- Groundwater elevation measurable objectives, depending on the location of the land retirement. Less pumping will result in higher groundwater elevations.
- Groundwater storage measurable objective. This measurable objective is based on total pumping in the Subbasin, therefore land retirement with reduced pumping contributes to meeting this objective and will help achieve the goal of reducing total extractions to the long-term sustainable yield.
- Land subsidence measurable objectives, depending on the location of the land retirement. Land retirement will reduce the pumping stress on the local aquifer(s) and thereby reduce the potential for subsidence.
- Seawater intrusion measurable objective, depending on the location of the land retirement. Land retirement near the coast will reduce the pumping stress that causes groundwater elevations to drop below levels that cause seawater intrusion.

9.3.2.2 Expected Benefits and Evaluation of Benefits

The primary benefit from land retirement is reduced Subbasin pumping. A second benefit is either halting the decline of or raising groundwater elevations. Depending on the location of the land retirement, ancillary benefits of shallower groundwater elevations may include avoiding subsidence, reducing surface water depletion rates, and reducing seawater intrusion rates. Because it is unknown how many landowners will willingly enter the land retirement program, it is difficult to quantify the expected benefits at this time.

Reductions in groundwater pumping will be measured directly and recorded in the water charges framework database. Changes in groundwater elevation will be measured with the groundwater elevation monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. A direct correlation between agricultural land retirement and changes in groundwater elevations is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.3.2.3 Circumstances for Implementation

Agricultural land retirement relies on willing sellers. No other triggers are necessary or required. The circumstance for implementation is for willing sellers to contact the SVBGSA.

9.3.2.4 Public Noticing

Any agricultural land retirement achieved through a land sale will be recorded with the County of Monterey Office of the Tax Assessor. All agricultural land retirement, whether through sale of land or pumping allowance, will be recorded in the publicly accessible portion of the water charges framework database.

9.3.2.5 Permitting and Regulatory Process

No permitting or regulatory processes are necessary for buying land or pumping allowances.

9.3.2.6 Implementation Schedule

The option for land retirement will begin immediately after the water charges framework is finalized and adopted. Although the land retirement program is ongoing, it is reliant on willing sellers and will likely be implemented intermittently.

9.3.2.7 Legal Authority

California Water Code §10726.2 provides GSAs the authority to purchase, among other things, land, water rights, and privileges.

9.3.2.8 Estimated Cost

Market values for agricultural land eligible for sustainable yield and transitional pumping allowances are reported to range from $26,000 per acre to $70,000 per acre (American Society of Farm Managers and Rural Appraisers, 2019). While some vineyards have sold for higher prices, it is unlikely that the SVBGSA will seek to acquire and retire the Subbasin's highest-quality vineyard land due to cost considerations.

As an example, assuming that retiring one acre of eligible land would reduce pumping by 3 AF and that the SVBGSA can acquire and retire land for $26,000 per acre to $70,000 per acre, the cost per acre-foot of pumping reduction will range from approximately $8,700 per acre-foot to $23,300 per acre-foot. If amortized over 25 years at a 6% interest rate, these one-time capital expenditures are equivalent to annualized costs of approximately $680 per acre-foot to $1,820 per acre-foot.

9.3.3 Priority Management Action 2: Outreach and Education for Agricultural BMPs

Priority Management Action 2 advances outreach and education programs that support innovative irrigation and agricultural practices across the Salinas Valley Groundwater Basin. These programs will educate farmers, promote water conservation, crop sustainability, and crop advancements. They will include improving data collection for agricultural efficiency. These programs will help minimize the impacts of potentially reduced groundwater supplies to the agricultural community.

Outreach and education for agricultural BMPs will provide funding to farmers for outreach and education on new technologies, potential pilot programs, and other innovative ideas that support the overall advancement of the farming community and ultimately provide an overall benefit to the sustainability of the groundwater basin. Outreach and education may include education on GDEs and surface water depletions to promote overall water management in the Valley.

9.3.3.1 Relevant Measurable Objectives

The measurable objectives benefiting from outreach and education include:

- Groundwater elevation measurable objectives. Outreach and education will focus on reducing pumping and water conservation methods. Less pumping will result in higher groundwater elevations.

- Groundwater storage measurable objective. This measurable objective is based on total pumping in the Subbasin; therefore, the education and outreach will focus on identifying best management practices that will reduce pumping and will help achieve the goal of reducing total extractions to the long-term sustainable yield.

- Land subsidence measurable objectives. Outreach and education will focus on reducing pumping and water conservation methods, thereby reducing the pumping stress on the local aquifer(s) and reducing the potential for subsidence.

- Seawater intrusion measurable objective, depending on the location. Decreased water use near the coast will reduce the pumping stress that causes groundwater elevations to drop below the level that causes seawater intrusion.

- Depletion of interconnected surface water measurable objective. Education on GDEs and interconnected surface water may result in reduced surface water depletions.

9.3.3.2 Expected Benefits and Evaluation of Benefits

The primary benefit of implementing an outreach and education program is to provide the latest technologies and opportunities to farmers, allowing them to reduce pumping while realizing the same crop yields. This program could also be a mechanism for grant opportunities, funded through the SVBGSA to identify pilot programs and other innovative technological advancements that could provide an overall groundwater basin benefit.

9.3.3.3 Circumstances for Implementation

The circumstance for implementation is for willing farmers to participate in an education and outreach program and to work with the SVBGSA to identify conservation opportunities. No other triggers are necessary or required.

9.3.3.4 Public Noticing

There will be public noticing of education and outreach programs.

9.3.3.5 Permitting and Regulatory Process

No permitting or regulatory processes are necessary for an education and outreach program.

9.3.3.6 Implementation Schedule

The option for an outreach and education program will begin immediately after the water charges framework is finalized and adopted. This program will be ongoing.

9.3.3.7 Legal Authority

No authority is needed to promote outreach and education.

9.3.3.8 Estimated Cost

The Outreach and Education Program would be an annual program that would be implemented. The SVBGSA would set aside approximately $100,000 each year to promote opportunities for education seminars, grant writing tasks, etc. focused on best management practices in the agricultural industry.

9.3.4 Priority Management Action 3: Reservoir Reoperation

Reservoir reoperation entails working closely with MCWRA, National Marine Fisheries Service, and other stakeholders on developing a revised HCP, and a related plan for managing Nacimiento and San Antonio Reservoir flows into the Salinas River. The purpose of this management action is to operate the reservoirs to achieve two goals:

1. Allow surface flow releases to recharge groundwater in the various subbasins of the Salinas Valley Groundwater Basin almost every winter
2. Allow river flows to better reach the SRDF diversion when needed

Reservoir reoperations would more tightly integrate environmental flows with sustainable groundwater management activities in the Valley to improve water availability for agricultural users and other groundwater users. The major beneficiaries of this management action would be the Upper Valley and Forebay Subbasins, as they receive most of the river percolation. There is limited benefit for the 180/400-Foot Aquifer Subbasin, primarily to allow enough water to flow to the SRDF for CSIP operations.

Reservoir operations are controlled by MCWRA, and therefore the SVBGSA cannot directly modify reservoir operations. Over the next few years, MCWRA will develop an HCP that establishes the reservoir operating rules for the Nacimiento and San Antonio Reservoirs. The HCP offers an opportunity for reservoirs to be explicitly operated for improved groundwater management as well as environmental flows and flood control. The SVBGSA will participate in developing the HCP to implement the reservoir operations in a way that promotes this management action.

9.3.4.1 Relevant Measurable Objectives

The measurable objectives benefiting from reservoir reoperation include:

- Groundwater elevation measurable objectives. Re-operating the Salinas River reservoirs will allow for more surface water to percolate to groundwater, primarily in the Upper Valley and the Forebay Subbasins, and would recharge groundwater subbasins and raise groundwater elevations.

- Groundwater storage measurable objective. Increased groundwater recharge near the Salinas River will help improve groundwater storage.
- Land subsidence measurable objectives. Increased groundwater recharge near the Salinas River will help reduce or prevent subsidence.
- Seawater intrusion measurable objective. By allowing additional surface flows to reach the SRDF, more surface water will be used in the CSIP area with reduced pumping which would result in lower seawater intrusion potential.
- Interconnected surface water measurable objective. By allowing more flows to stay in the Salinas River year-round, the areas that are interconnected would stay connected to groundwater and benefit all beneficial users on the river.

9.3.4.2 Expected benefits and evaluation of benefits

The primary benefit from reservoir reoperation is additional groundwater recharge in the subbasins and more flexible use of the groundwater in storage. A second benefit is the availability of water at the SRDF diversion to allow for greater surface water use in the CSIP area. HCP development will also assess and likely enhance environmental benefits.

Because of the pending HCP on the Salinas River, the details of the future reservoir operations are unknown. The SVBGSA will work collaboratively with MCWRA to make sure the reservoirs are operated in a manner to benefit groundwater recharge and help with the sustainable management of the Salinas Valley Groundwater Basin.

9.3.4.3 Circumstances for implementation

The San Antonio and Nacimiento Reservoirs are currently operated by MCWRA to satisfy multiple beneficial uses. This management action will be implemented when MCWRA develops the HCP. The pending HCP will prescribe additional criteria for reservoir operations. As part of these new rules, the SVBGSA will work with MCWRA to work winter flow releases into the criteria for operations.

9.3.4.4 Public noticing

This management action is part of the MCWRA HCP process, and the public noticing will occur as part of the HCP development.

9.3.4.5 Permitting and Regulatory Process

This management action will follow the ongoing permitting and regulatory process used by MCWRA for reservoir operations.

9.3.4.6 Legal Authority

The SVBGSA does not have any authority over surface water management or reservoir operations. Thus, the SVBGSA will work collaboratively with MCWRA on developing appropriate reservoir operation rules that benefit groundwater recharge.

9.3.4.7 Implementation Schedule

The reservoir reoperation management action schedule will be contingent upon the development and finalization of the HCP and other reservoir operations criteria. The implementation schedule will start as soon as new reservoir operations criteria are developed in collaboration with MCWRA. The HCP is scheduled to be completed within the next three to five years.

9.3.4.8 Estimated Cost

The estimated costs are related to SVBGSA participation in the HCP process. This will include attending meetings and providing comments to the HCP. MCWRA will fund the completion of the HCP, therefore, the costs for development of the HCP are not included in the cost estimate. For costing purposes, we have assumed the HCP is a three-year process. SVBGSA participation will cost approximately $50,000 per year, for a total cost of $150,000.

9.3.5 Priority Management Action 4: Restrict Pumping in CSIP Area

A number of the priority projects included in Section 9.4 are designed to ensure a reliable, year-round supply of water to growers in the CSIP area. These projects will remove any need for groundwater pumping in the CSIP area. To promote use of CSIP water, the SVBGSA will pass an ordinance preventing any pumping for irrigating agricultural lands served by CSIP. To ensure adequate water supplies for CSIP, the CSIP supplementary wells will be exempt from the restrictions in this ordinance.

9.3.5.1 Relevant Measurable Objectives

The measurable objectives benefiting from pumping restriction in the CSIP Area include:

- Groundwater elevation measurable objectives. Restricting pumping will limit drawdowns that may lead to significant and unreasonable groundwater elevations.
- Groundwater storage measurable objective. Reducing pumping will directly help the SVBGSA reach the pumping goals in the groundwater storage measurable objective.
- Land subsidence measurable objectives. Reduced groundwater pumping yields higher groundwater elevations, helping reduce or prevent subsidence.

- Seawater intrusion measurable objective. Reducing pumping may reduce landward gradients that induce seawater intrusion. This will lower seawater intrusion potential.

9.3.5.2 Expected benefits and evaluation of benefits

The primary benefit from the CSIP pumping restrictions is controlling Subbasin pumping. A secondary benefit is either halting the decline of, or raising, groundwater elevations from the reduced pumping. An ancillary benefit from shallower groundwater elevations may include avoiding subsidence and reducing seawater intrusion.

Reductions in groundwater pumping will be measured directly through the improved metering program and recorded in the data management system. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using DWR's InSAR maps as detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing mapping approach as detailed in Chapter 7. A direct correlation between the CSIP pumping restrictions and changes in groundwater elevations is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.3.5.3 Circumstances for implementation

CSIP pumping restrictions will only be implemented after the CSIP optimization projects are implemented, providing a reliable supply of water to growers in the CSIP area.

9.3.5.4 Public Noticing

Public meetings will be held to inform groundwater pumpers and other stakeholders that the CSIP pumping reduction program is being developed. The CSIP pumping reduction program will be developed in an open and transparent process. Groundwater pumpers and other stakeholders will have the opportunity at these meetings to provide input and comments on the process and the program elements.

9.3.5.5 Permitting and Regulatory Process

The CSIP pumping reduction program is subject to CEQA. The CSIP pumping reduction program would be developed in accordance with all applicable groundwater laws and respect all groundwater rights.

9.3.5.6 Legal Authority

California Water Code §10726.4 (a)(2) provides GSAs the authorities to control groundwater extractions by regulating, limiting, or suspending extractions from individual groundwater wells or extractions from groundwater wells in the aggregate (CWC, 2014).

9.3.5.7 Implementation Schedule

CSIP pumping restrictions will be implemented within 1 year of substantially completing the CSIP projects (Priority Projects 2, 3, 4, and 5).

9.3.5.8 Estimated cost

The SVBGSA will support the development of a mandatory pumping reduction program. The implementation of the program will be through MCWRA and is estimated to take 2 years to develop. The support of the implementation program will be $50,000 for 2 years or a total of $100,000. This does not include the cost of the CEQA permitting or any ongoing program oversight.

9.3.6 Priority Management Action 5: Support and Strengthen Monterey County Restrictions on Additional Wells in the Deep Aquifers

Monterey County Ordinance 5302 temporarily restricts drilling new wells in the Deep Aquifers in portions of the 180/400-Foot Aquifer Subbasin: generally northwest of Davis Road. In the portions of the Subbasin southeast of Davis Road, it is the intent and purpose of the ordinance to require testing to ensure new wells do not extract water from the Deep Aquifers. Exceptions are made for replacement wells, domestic wells, and municipal supply wells. This is a temporary urgency ordinance pending development of permanent regulations.

SVBGSA will work with Monterey County to extend this ordinance to prevent any new wells from being drilled into the Deep Aquifers until more information is known about the Deep Aquifers' sustainable yield. MCWRA plans to complete this study of the Deep Aquifers over the next three years, when funding becomes available. SVBGSA will comment on the MCWRA study of the Deep Aquifers to ensure that the study and the resulting permanent regulations will promote groundwater sustainability as defined in this GSP.

9.3.6.1 Relevant Measurable Objectives

The measurable objectives benefiting from Deep Aquifers pumping restrictions include:

- Groundwater elevation measurable objectives. Restricting the number of pumping wells will limit groundwater drawdown that may lead to significant and unreasonable groundwater elevations.

- Groundwater storage measurable objective. Restricting the number of pumping wells will directly help the SVBGSA reach the pumping goals in the groundwater storage measurable objective.

- Land subsidence measurable objectives. Restricting the number of pumping wells yields higher groundwater elevations, helping reduce or prevent subsidence.

- Seawater intrusion measurable objective. Restricting the number of pumping wells may reduce landward gradients that induce seawater intrusion. This will lower seawater intrusion potential. Restricting the number of pumping wells in the Deep Aquifers will also reduce the likelihood of vertical migration of impaired groundwater from overlying aquifers.

9.3.6.2 Expected benefits and evaluation of benefits

The primary benefit from the Deep Aquifers pumping restrictions is reduced Subbasin pumping in an aquifer with limited data. A second benefit is either halting the decline or raising groundwater elevations from the restricted pumping. An ancillary benefit from shallower groundwater elevations may include avoiding subsidence and reducing seawater intrusion.

Restrictions in groundwater pumping will be measured directly through the improved metering program and recorded in the data management system. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using DWR's InSAR maps as detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing mapping approach as detailed in Chapter 7. A direct correlation between the Deep Aquifers pumping restrictions and changes in groundwater elevations is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.3.6.3 Circumstances for implementation

SVBGSA will support extension of Ordinance 5302 immediately. Deep Aquifers pumping will only be allowed after MCWRA completes its study of the Deep Aquifers' sustainable yield.

9.3.6.4 Public Noticing

Public meetings will be held to inform groundwater pumpers and other stakeholders that the Deep Aquifers study is being developed, and that additional pumping restrictions may result from this study. The Deep Aquifers pumping restriction program will be developed in an open and transparent process. Groundwater pumpers and other stakeholders will have the opportunity at these meetings to provide input and comments on the process and the program elements.

9.3.6.5 Permitting and Regulatory Process

The pumping restriction program would be developed in accordance with all applicable groundwater laws and respect all groundwater rights.

9.3.6.6 Legal Authority

California Water Code §10726.4 (a)(2) provides GSAs the authorities to control groundwater extractions by regulating, limiting, or suspending extractions from individual groundwater wells or extractions from groundwater wells in the aggregate (CWC, 2014).

9.3.6.7 Implementation Schedule

SVBGSA will support extension of Ordinance 5302 immediately.

9.3.6.8 Estimated cost

The Deep Aquifers study and subsequent regulations will be developed by MCWRA. SVBGSA will supply oversight and support. The estimated cost for this oversight and support is $40,000 per year for 4 years for a total of $160,000.

9.3.7 Priority Management Action 6: Seawater Intrusion Working Group

SVBGSA will develop and coordinate a working group to address the issues associated with seawater intrusion. The working group will develop consensus on the current understanding of seawater intrusion in the Subbasin and adjacent subbasins subject to seawater intrusion, identify data gaps, and develop a broad-based plan for controlling seawater intrusion. The working group will include local agencies, landowners, stakeholders, and technical experts. The preliminary goal of the working group will be to develop consensus on the science of seawater intrusion in the Salinas Valley Groundwater Basin. The ultimate goal of the working group is to develop a comprehensive set of projects and management actions that control seawater intrusion while providing cost effective water supplies for the region.

9.3.7.1 Relevant Measurable Objectives

The measurable objective benefiting from a seawater intrusion working group includes:

- Seawater intrusion measurable objective.

9.3.7.2 Expected benefits and evaluation of benefits

The primary benefit from this seawater intrusion working group is to pull together the best available science, data, and understanding of local seawater intrusion causes and potential resolutions. The outcome of this working group is an agreed-to approach for managing seawater intrusion.

9.3.7.3 Circumstances for implementation

The working group will be implemented within one year of GSP adoption. No additional circumstances are needed. SVBGSA will lead the formation of such a working group and identify interested parties. In addition, SVBGSA will schedule and lead the meetings and outcomes of this group.

9.3.7.4 Public Noticing

Meetings and outcomes of this working group will be made publicly available.

9.3.7.5 Permitting and Regulatory Process

No permitting and regulatory processes apply to this Management Action.

9.3.7.6 Legal Authority

No authority is needed to develop a working group.

9.3.7.7 Implementation Schedule

SVBGSA will start the working group in 2020.

9.3.7.8 Estimated Cost

The estimated cost for consultant support to this working group is $125,000 per year for two years for a total of $250,000.

9.4 Projects

Projects involve new or improved infrastructure that are intended to help the SVBGSA meet SMCs in the Subbasin. Several potential projects that are currently being pursued by other agencies are included in this GSP. These projects are considered sufficiently established and will be constructed independently of, or in cooperation with, this GSP.

Projects fall into two categories:

- **Priority Projects**: The priority projects are the generally more cost-effective projects that could be implemented under the GSP. However, not all Priority Projects may be required depending on final benefit of each project.

- **Alternative Projects**: The alternative projects are the generally less cost-effective projects. Depending on the efficacy of the priority projects, one or more of the alternative projects may be implemented to meet the SMCs.

An overview of the project types and process through which all projects were considered are described in Sections 9.4.1 and 9.4.2. Priority Projects and Alternative Projects are described in Sections 9.4.3 and 9.4.4. General project provisions for all projects are listed together in Section 9.4.5, including permitting and regulatory processes, public noticing, and legal authority required for projects.

9.4.1 Overview of Project Types

There are four major types of projects that can be developed to supplement the Subbasin's groundwater supplies or limit seawater intrusion:

1. In-lieu recharge through direct delivery of water to replace groundwater pumping
2. Direct recharge through recharge basins or wells
3. Indirect recharge through decreased evapotranspiration or increased infiltration
4. Hydraulic barrier to control seawater intrusion

9.4.1.1 Project Type 1: In-Lieu Recharge through Direct Delivery

Direct delivery projects use available water supplies in lieu of groundwater. This option offsets the use of groundwater, allowing the groundwater basin to recharge naturally. Direct delivery projects rely on the construction of a pipeline to deliver the water to agricultural or municipal users, as well as pump stations and storage facilities to handle supply and demand variations. Direct delivery is a highly efficient method to reduce groundwater pumping because it directly offsets and decreases the amount of water pumped from the aquifer, allowing the principal aquifer groundwater elevations to rebound through natural recharge. One of the drawbacks of direct delivery is that the delivered water must be available during the dry season, a time period when water supplies are less likely to be available, especially during a dry year.

9.4.1.2 Project Type 2: Direct Recharge through Recharge Basins and Wells

Direct recharge of aquifers can be done through recharge basins or injection wells. Intentional, direct recharge is commonly referred to as Managed Aquifer Recharge (MAR), or Flood-Managed Aquifer Recharge (Flood-MAR) if recharge is done with flood water. Several of the projects listed in this chapter fall into this project type.

Recharge basins are large artificial ponds that are filled with water that seeps from the basin into the groundwater system. Recharge efficiencies can range greatly and the recharge efficiency of a recharge basin is contingent on the properties of the underlying soil, losses to evaporation, and potential seepage into streams or shallow sediments before it can recharge the deeper aquifers. Recharge efficiencies are difficult to measure without sophisticated subsurface monitoring.

Recharge through recharge basins can occur year-round; although efficiency might be lower during the rainy seasons if underlying soils are already saturated. Recharge basins have the advantage of generally being less expensive to build and operate than in-lieu distribution systems or injection systems.

Injection wells are used to inject available water supplies directly into the groundwater basin. Injection can occur year-round, including during the rainy season. Injection wells are typically more efficient at raising groundwater elevations than recharge basins because they target specific aquifers; although a well's recharge ability is affected by the surrounding aquifer properties. The injected water typically flows through the aquifer from the injection location to locations with lower groundwater elevations. The rate of travel depends on the hydraulic conductivity of the aquifer. Although they have a very high efficiency, injection wells are generally more expensive to operate than recharge basins. Additionally, injection wells require higher quality water than recharge basins.

9.4.1.3 Project Type 3: Indirect Recharge through Decreased Evapotranspiration or Increased Percolation

Increased groundwater supply can be achieved through either a decrease in evapotranspiration or an increase in rainfall percolation. Example projects include removal of invasive species from riparian corridors (decreased evapotranspiration) and stormwater capture (increased percolation).

Stormwater capture projects are typically relatively low yield per acre compared to direct recharge basins (Section 9.4.1.2), however they can cover relatively large areas without negative impacts to land use. Stormwater capture may additionally provide water quality benefits. Removal of invasive species in riparian corridors may provide multiple benefits such as flood control benefits. Implementation costs for these projects are typically capital intensive with only minor long-term maintenance costs. Thus, the water supply benefit/cost ratio can increase significantly over the long term.

9.4.1.4 Project Type 4: Hydraulic Barrier to Control Seawater Intrusion

A proposed hydraulic barrier would consist of a network of wells drilled a short distance inland from the coast and aligned approximately parallel to the coastline, across the width of the Subbasin. A hydraulic barrier can be operated as a recharge barrier, wherein water is injected into the wells and the resulting groundwater level mound creates the hydraulic barrier; Or the barrier can be operated as an extraction barrier, wherein the wells are pumped and the resulting groundwater level trough creates the hydraulic barrier. Recharge barriers require a source of water for recharge; extraction barriers require an end-use for the pumped water. Either configuration would require conveyance piping and may require water treatment.

9.4.2 All Projects Considered for Integrated Management of the Salinas Valley Groundwater Basin

This GSP is part of an integrated plan for managing groundwater in all six subbasins of the Salinas Valley Groundwater Basin under the jurisdiction of the SVBGSA. The projects listed in this GSP constitute an integrated management program for the entire Valley. The SVBGSA selected these projects from a larger set of potential projects. Appendix 9B lists the potential projects that were considered for the Valley-wide integrated management program.

The SVBGSA assessed potential projects listed in Appendix 9B for cost effectiveness in achieving sustainability throughout the Basin. It selected thirteen projects for further consideration based on the projects being the most reliable, implementable, cost-effective, and acceptable to stakeholders. These 13 projects were separated into priority projects and alternative projects. The priority projects are generally the most cost effective, and some subset of the priority projects will be implemented in the Salinas Valley Groundwater Basin as part of the six Salinas Valley GSPs. Alternative projects may be implemented in the Basin based on further analysis of the effectiveness of the priority projects, water availability, and refined cost estimates.

9.4.3 Selected Priority Projects for Integrated Management of the Salinas Valley Groundwater Basin

This GSP includes nine projects as priority projects. Some subset of these priority projects will be implemented as part of the six Salinas Valley Groundwater Subbasin GSPs. The priority projects may need to be supplemented by additional alternative projects in each subbasin to achieve sustainability. The alternative projects are described in Section 9.4.4 of this GSP. The nine priority projects are summarized in Table 9-1.

Table 9-1. Priority Projects

Priority Project #	Project Name	Water Supply	Project Type
1	Invasive Species Eradication	N/A	Indirect Recharge
2	Optimize CSIP Operations	Recycled Water	In Lieu Recharge
3	Modify M1W Recycled Water Plant	Recycled Water	In Lieu Recharge
4	Expand Area Served by CSIP	Recycled Water	In Lieu Recharge
5	Maximize Existing SRDF Diversion	Salinas River	In Lieu Recharge
6	Seawater Intrusion Pumping Barrier	N/A	SWI Barrier
7	11043 Diversion Facilities Phase I: Chualar	Salinas River	Direct Recharge
8	11043 Diversion Facilities Phase II: Soledad	Salinas River	Direct Recharge
9	SRDF Winter Flow Injection	Salinas River	Direct Recharge

Short descriptions of each priority project are included below. Generalized costs are also included for planning purposes. Components of these projects, including facility locations, pipeline routes, recharge mechanisms, and other details may change in future analyses. Therefore, each of the projects listed below should be treated as a generalized project representative of a range of potential project configurations.

9.4.3.1 Project Cost Assumptions and Analysis Tools

Assumptions that were used to develop project cost estimates are provided in Appendix 9C. Assumptions and issues for each project need to be carefully reviewed and revised during the pre-design phase of each project. Project designs, and therefore costs, could change considerably as more information is gathered.

The cost estimates included below are order of magnitude estimates. These estimates were made with little to no detailed engineering data. The expected accuracy range for such an estimate is within +50% or –30%. The cost estimates are based on our perception of current conditions at the project location. They reflect our professional opinion of costs at this time and are subject to change as project designs mature.

Capital costs include major infrastructure, such as pipelines, pump stations, customer connections, turnouts, injection wells, recharge basins, and storage tanks. Capital costs also include 30% contingency for plumbing appurtenances, 15% increase for general conditions, 15% increase for contractor overhead and profit, and 8.75% for sales tax. Engineering, legal, administrative, and project contingencies were assumed to be 30% of the total construction cost

and included within the capital cost. Land acquisition at $45,000/acre was also included within capital costs.

Annual operations and maintenance (O&M) fees include the costs to operate and maintain new project infrastructure. O&M costs also include any pumping costs associated with new infrastructure. O&M costs do not include O&M or pumping costs associated with existing infrastructure, such as existing Salinas Valley Reclamation Plant (SVRP) costs, because these are assumed to be part of water purchase costs. Water purchase costs are assumed to include repayment of loans for existing infrastructure; however, these purchase costs will need to be negotiated. The terms of such a negotiation could vary widely.

Capital costs were annualized over 25 years and added with annual O&M costs and water purchase costs to determine an annualized dollar per acre-foot ($/AF) cost for each project.

Because the SVIHM was not available to SVBGSA, a simplified groundwater model was developed to assess the approximate benefits of each project. While the simplified model is not as accurate as the SVIHM, it is adequate for comparing projects and actions. A description of the groundwater model is included in Appendix 9D.

9.4.3.2 Preferred project 1: Invasive Species Eradication

The SVBGSA will support and enhance existing programs eradicating *arundo donax* and other invasive species along the Salinas River in partnership with the Resource Conservation District of Monterey County. This project will reduce evapotranspiration from these invasive plants, leaving more water in the Salinas River and increasing aquifer recharge or reducing the amount of water required to be released from Nacimiento and San Antonio Reservoirs.

The Salinas River watershed has a significant population of the invasive weed *arundo donax* and a smaller population of tamarisk, mostly from Gonzales to King City. The Salinas River watershed has the second-largest infestation of non-native *arundo donax* in California: approximately 1,500 to 1,800 acres. The Resource Conservation District of Monterey County is the lead agency on an estimated 15 to 20-year effort to fully eradicate *arundo donax* from the Salinas River Watershed. Concurrent with this program, *arundo donax* is also removed by landowners participating in the Salinas Stream Maintenance Program. The Salinas River Stream Maintenance Program is managed by the Salinas River Management Unit Association and the Monterey County Water Resource Agency. The two programs complement one another with regards to goals and eradication techniques for *arundo donax* and tamarisk within the Salinas River.

Demonstration efforts beginning in 2014 included removal of *arundo donax* from approximately 75 acres in the Chualar and Gonzales areas. Additional phases, which have or are being funded through grants by the Wildlife Conservation Board and USDA and with support from other

agencies and voluntary landowners, are removing *arundo donax* from an additional 425 acres between Gonzales and Soledad and to re-treat other areas as necessary to prevent re-growth. An estimated 1,000 to 1,300 acres of invasive species still remains in the river channel and removal is currently unfunded.

This preferred project proposes continuing the efforts of clearing all invasive species throughout the entire Salinas River channel. Although the aerial imagery and ground surveys show the largest infestations between King City and Chualar, there are patches upstream of King City and downstream of Chualar. The proposed project would include three distinct phases: initial treatment, re-treatment, and on-going monitoring and maintenance treatments.

The initial treatment phase includes mechanical and/or chemical treatment of the remaining 1,000 to 1,300 acres of invasive species removal in all areas of the river that have yet to be treated. The re-treatment phase includes re-treatment of the initial 500 acres that have already had an initial treatment and re-treatment of all 1,500 to 1,800 acres over a 3-year period. The final phase is the on-going monitoring and maintenance treatment phase. This phase requires annual monitoring for re-growth of the invasive species or new invasive species and chemical treatment every three to five years.

9.4.3.2.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Groundwater elevation measurable objective
- Groundwater storage measurable objective

9.4.3.2.2 Expected Benefits and Evaluation of Benefits

This project is included here as part of the complete Valley-wide groundwater management program. The primary benefit from this project is increased groundwater recharge due to reduced evapotranspiration in the southern Salinas Valley subbasins. Based on currently available data, the expected benefit of this project is between 4 and 20 AF/yr. per acre which results in 6,000 AF to 36,000 AF/yr. of water that would remain in the river, or would not be required to be released from Nacimiento and/or San Antonio Reservoirs. During the implementation period, these numbers will be refined with evaporation studies that are more regionally specific and accurate; and that will demonstrate the variation between dry, wet, and normal years. Actual benefits will be further documented following completion of ongoing evapotranspiration studies being conducted by the Resource Conservation District of Monterey County, California State University Monterey Bay and University of California Santa Barbara.

Figure 9-2 shows the expected groundwater elevation benefit, in feet, in the 180-Foot Aquifer from this project. Figure 9-3 shows the expected groundwater elevation benefit, in feet, in the

400-Foot Aquifer from this project. The benefit is greatest at the south end of the 180/400-Foot Aquifer Subbasin, where there is no extensive aquitard separating the aquifers from the Salinas River. Model results suggest that this project reduces seawater intrusion by approximately 890 AF/yr. on average.

Invasive species removal has other benefits in addition to water savings. Thick stands of invasive species can, over time, lead to a narrower river channel, increasing flow velocities, eroding channel banks, and blocking bridge structures when large portions of vegetation break loose. Invasive species also crowd out native species and remove valuable riparian habitats which harbor bird species and provide shading, bank stability, and lower temperatures for instream habitat and associated species such as steelhead.

Reductions in groundwater pumping will be measured directly and recorded in the water charges framework database. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between invasive species eradication and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

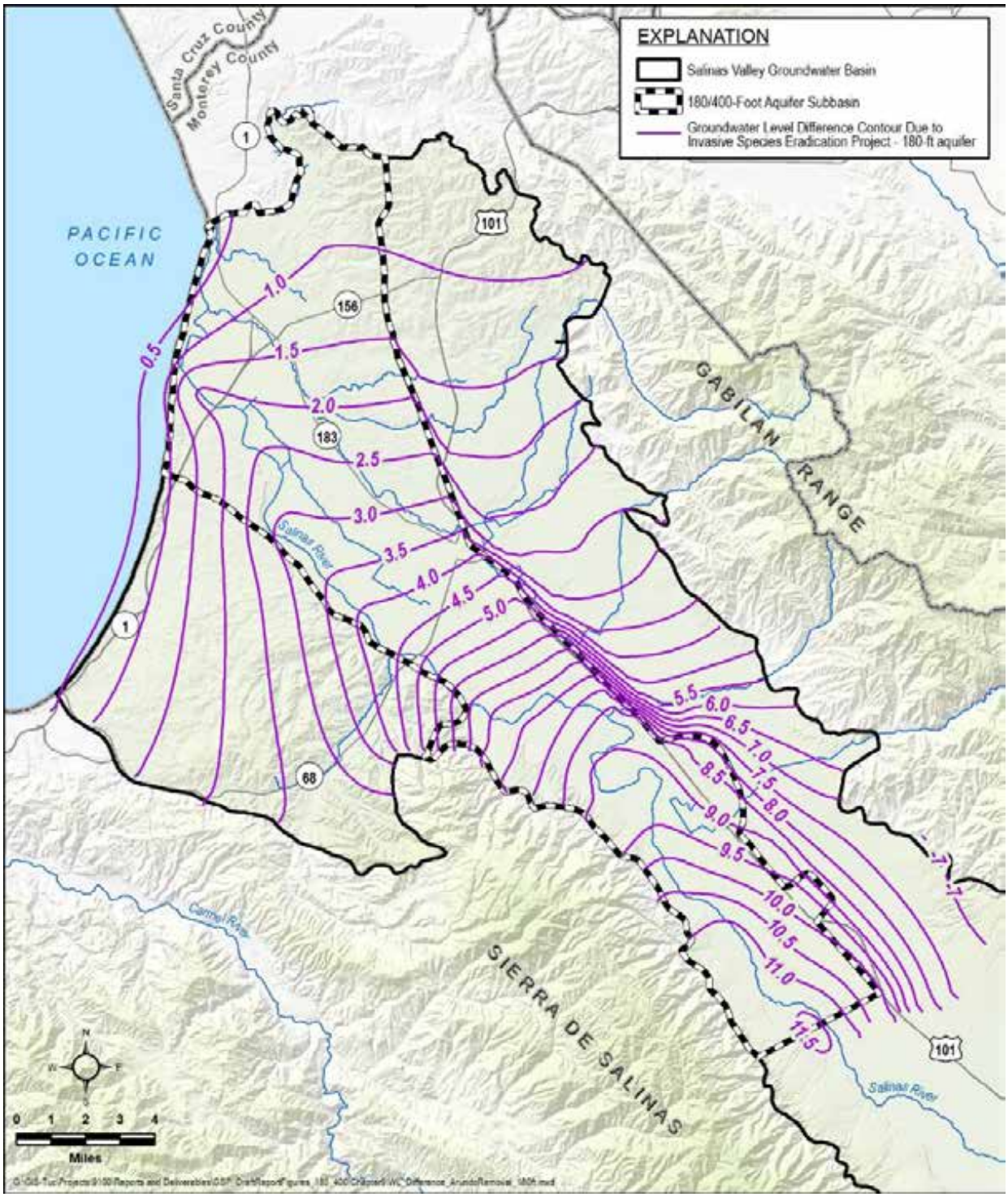


Figure 9-2. Estimated Groundwater Elevations Benefit in the 180-Foot Aquifer from Arundo Removal

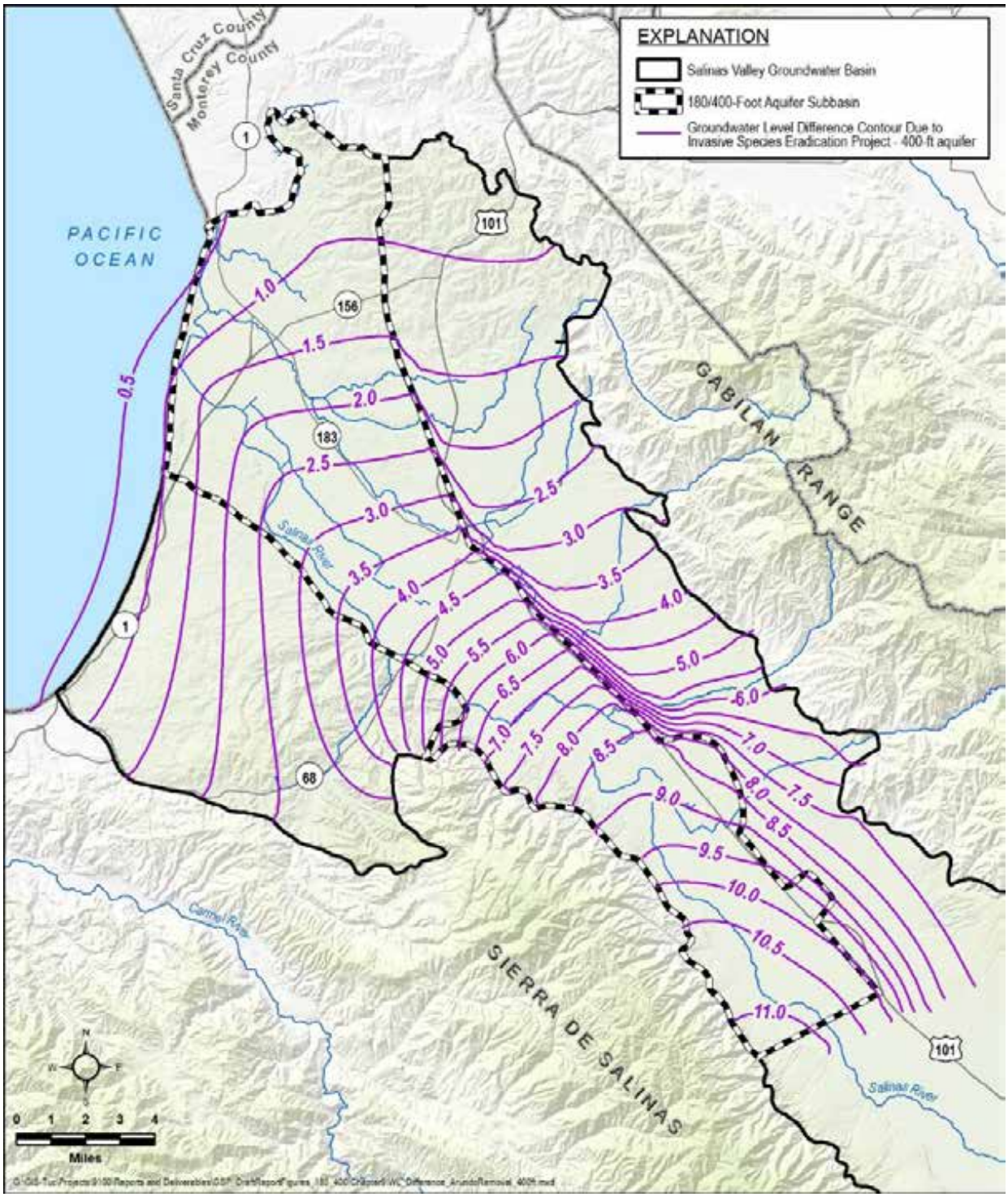


Figure 9-3. Estimated Groundwater Elevations Benefit in the 400-Foot Aquifer from Arundo Removal

9.4.3.2.3 Circumstances for Implementation

Invasive species eradication is a preferred project that is already ongoing in the Salinas Valley Groundwater Basin. Supporting these ongoing efforts will be initiated as soon as funds become available. No additional circumstances for implementation are necessary.

9.4.3.2.4 Public Noticing

The public noticing practices and requirements of the existing invasive species eradication programs will be continued as part of this project.

9.4.3.2.5 Permitting and Regulatory Process

The permitting process of the existing invasive species eradication programs will be continued as part of this project.

9.4.3.2.6 Implementation Schedule

The implementation schedule is presented on Figure 9-4. It is anticipated that Phase I will take two years. Phase II will overlap with Phase I and take an additional two to three years. Phase III, which is on-going maintenance will continue past Year three.

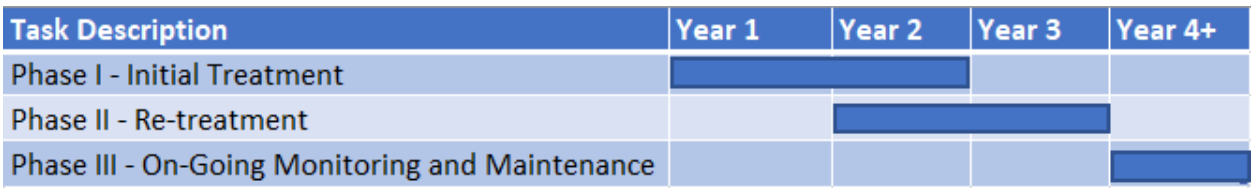


Figure 9-4. Implementation Schedule for Invasive Species Eradication

9.4.3.2.7 Legal Authority

The SVBGSA will use the legal authority for invasive species eradication contained in the existing eradication program.

9.4.3.2.8 Estimated Cost

Estimated capital cost for the invasive species eradication project is estimated at $35,230,000. Annual O&M costs are anticipated to be approximately $325,000. The indirect projected yield for the invasive species eradication project is estimated at 20,000 AF per year. The amortized cost of water for this project is estimated at $160/AF/yr.

CSIP PROJECTS

Preferred projects 2, 3, 4, and 5 all work together to improve and expand the performance of the CSIP system. The goal of these four projects, taken together, is to provide a reliable, year-round supply of water to all growers in the current CSIP system, and to expand the system as possible. The four projects are presented here as individual projects, even though they are all part of an integrated CSIP strategy.

9.4.3.3 Preferred Project 2: Optimize CSIP Operations

The CSIP system is operated and maintained by M1W under a contract with MCWRA. MCWRA and M1W have started evaluating opportunities to optimize the CSIP distribution system. This preferred project provides support for various elements of the MCWRA optimization project that is directly beneficial to the sustainability of the groundwater basin. The costs for a portion of this project will be funded directly through MCWRA. Additional funding will be provided by SVBGSA.

The CSIP distribution system has known flow and pressure constraints. The CSIP system will be optimized to better accommodate diurnal and seasonal fluctuation in irrigation demand, maximizing use of water supplied from the SVRP and the SRDF, thereby reducing the need for groundwater pumping. Furthermore, this project aligns CSIP irrigation with water availability, rather than on demand, to ensure the available supply water can be used to a greater extent.

The downsizing of flow meters and isolation valves at the time of construction of the CSIP system resulted in water delivery constraints. In addition, there is not enough water storage within the system to take advantage of all the available supplies. These bottlenecks in the system and lack of storage lead to the need for CSIP supplementary wells to meet total irrigation needs when either the treated or diverted water is not available, or the pressure is not sufficient.

The approach for CSIP system optimization includes the following general activities:

1. Hydraulic Modeling. This activity will develop and calibrate a hydraulic model of the CSIP water distribution system, will identify the hydraulic deficiencies in the system, and recommend upgrades to enhance the delivery system. This activity is currently being completed by MCWRA, therefore the costs for this component of the project are not included in the costs identified below.
2. Irrigation/Scheduling System Development. This activity will develop a program that will allow growers to order and schedule their water deliveries; reducing peak demands in the system. Part of the irrigation scheduling program will introduce incentives for farmers to modify irrigation practices (e.g., tiered charge pricing) which will promote use of water during off-peak times. In addition, real-time SCADA monitoring capabilities of the distribution system would be added.

3. Add Water Storage. This activity will add storage capacity for recycled water and SRDF water deliveries throughout the water distribution system. The hydraulic modeling will identify preferred locations for storage that would provide the most benefit to the system. Additional storage reservoirs will allow the CSIP system to store water produced by the SVRP or diverted by SRDF during low demand periods for later delivery when demand is high. Storage reservoirs would also assist in maintaining adequate pressure in the existing system and provide more flexibility in the timing of SVRP and SRDF deliveries. Additional storage may also reduce the need to drill additional CSIP supplementary wells.
4. Piping Upgrades. The hydraulic model will identify deficiencies in the water distribution system that will require piping upgrades. The exact piping upgrades are unknown. This component of the project is a placeholder for anticipated upgrades required to the system to assist in the regulation of flow and pressure.

9.4.3.3.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Groundwater elevation measurable objective
- Groundwater storage measurable objective
- Seawater intrusion measurable objectives
- Land subsidence measurable objectives

9.4.3.3.2 Expected Benefits and Evaluation of Benefits

The primary benefit from CSIP optimization includes reduction or avoidance of groundwater pumping from wells in the CSIP area throughout the year. Two sets of wells pump groundwater in the CSIP area: CSIP standby wells and CSIP supplementary wells. CSIP standby wells are privately owned wells used to provide groundwater for irrigation either in lieu of, or in addition to, irrigation water provided by the CSIP system. CSIP supplementary wells are MCWRA owned wells that provide water to the CSIP system when the combination of SVRP and SRDF water is insufficient to meet demands. This project will benefit other subbasins, such as the Monterey and Eastside subbasins by reducing pumping that impacts the neighboring subbasins.

Figure 9-5 shows the expected groundwater elevation benefit in the 180-Foot Aquifer from projects 2, 3, and 5, combined. Figure 9-9 shows the expected groundwater elevation benefit in the 400-Foot Aquifer from projects 2, 3, and 5, combined. These projects were combined into a single simulation because of how closely they are intertied. Model results suggest that these projects reduce seawater intrusion by approximately 2,200 AF/yr. on average.

Figure 9-7 presents the CSIP standby well pumping data since 1993. Historical pumping data provided by MCWRA indicates that since 2010, the average pumping of CSIP standby wells located within the CSIP distribution area is around 2,000 AF/yr. The combination of projects 2, 3, and 5 are intended to eliminate this pumping by standby wells.

Figure 9-8 presents the historical pumping for CSIP supplementary wells. A sharp decline in pumping occurred in 2010 when the SRDF came online. Omitting years 2014 through 2016 when the SRDF was offline, the average CSIP supplementary well yield since 2010 is approximately 3,350 AF/yr. Combining the average CSIP standby well pumping and the CSIP supplementary well pumping yields an average benefit of approximately 5,500 AF/yr. of reported well pumping within the CSIP area that could be offset by projects 2, 3, and 5.

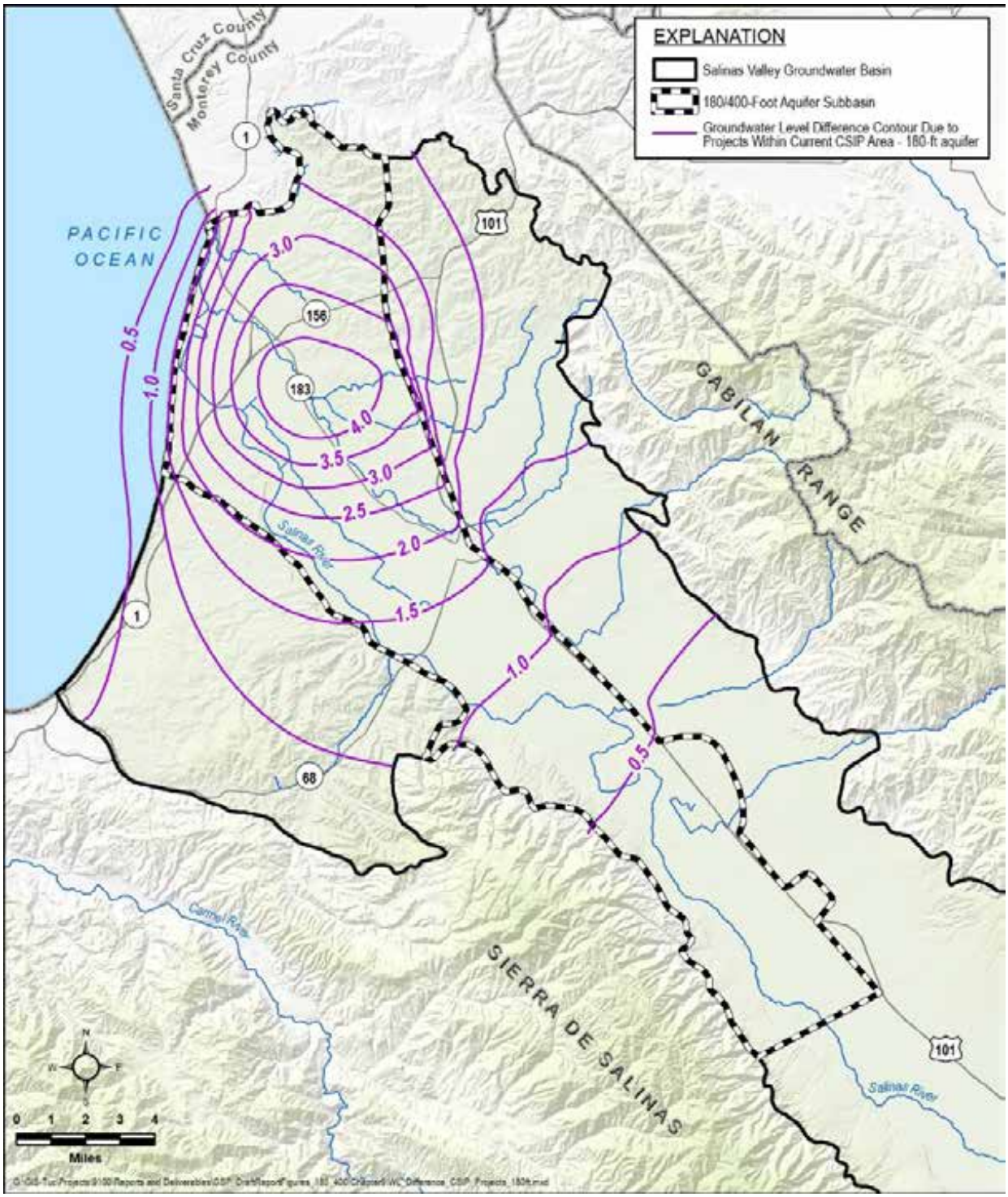


Figure 9-5. Estimated Groundwater Elevation Benefit in the 180-Foot Aquifer from All CSIP Projects

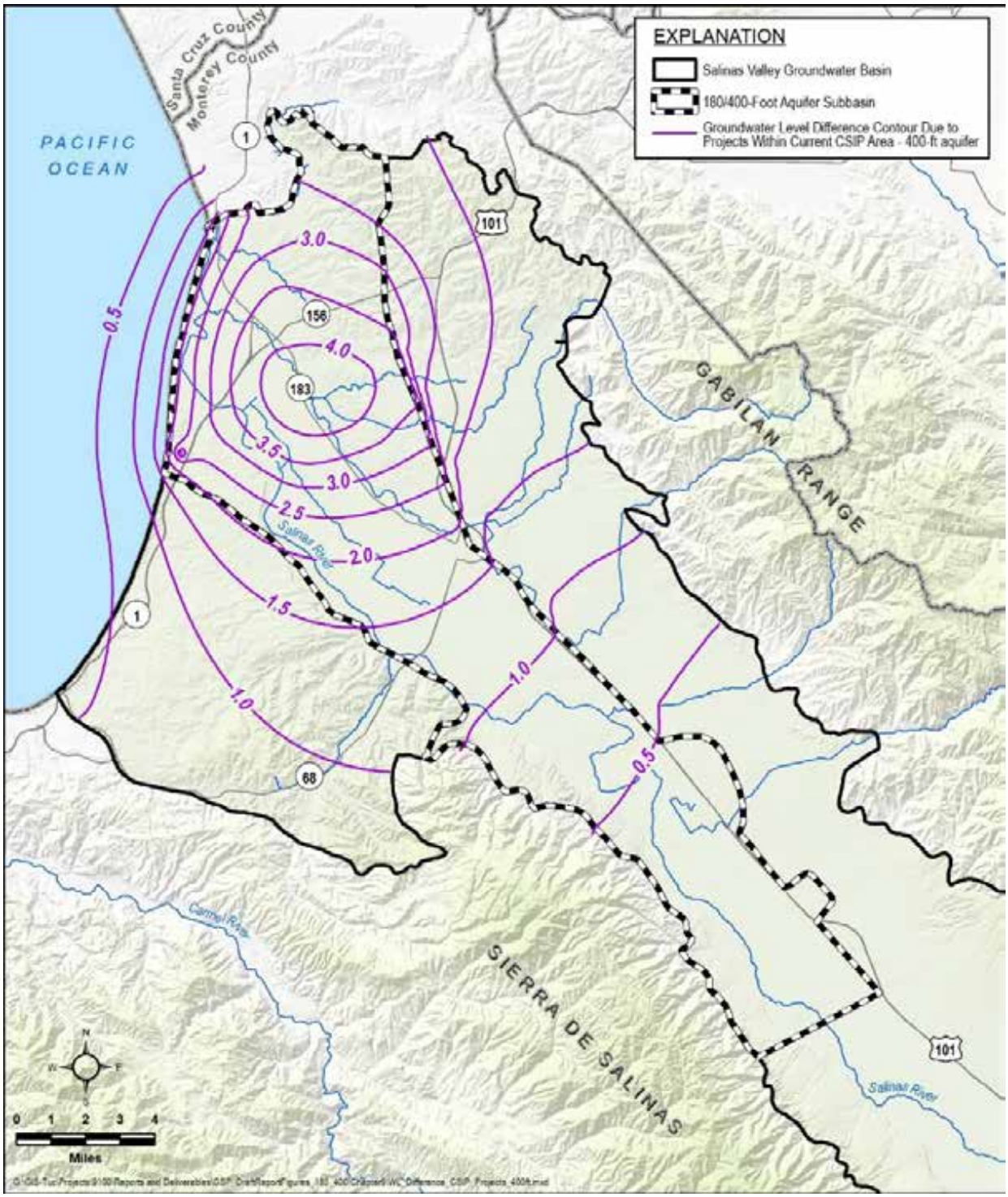


Figure 9-6. Estimated Groundwater Elevation Benefit in the 400-Foot Aquifer from All CSIP Projects

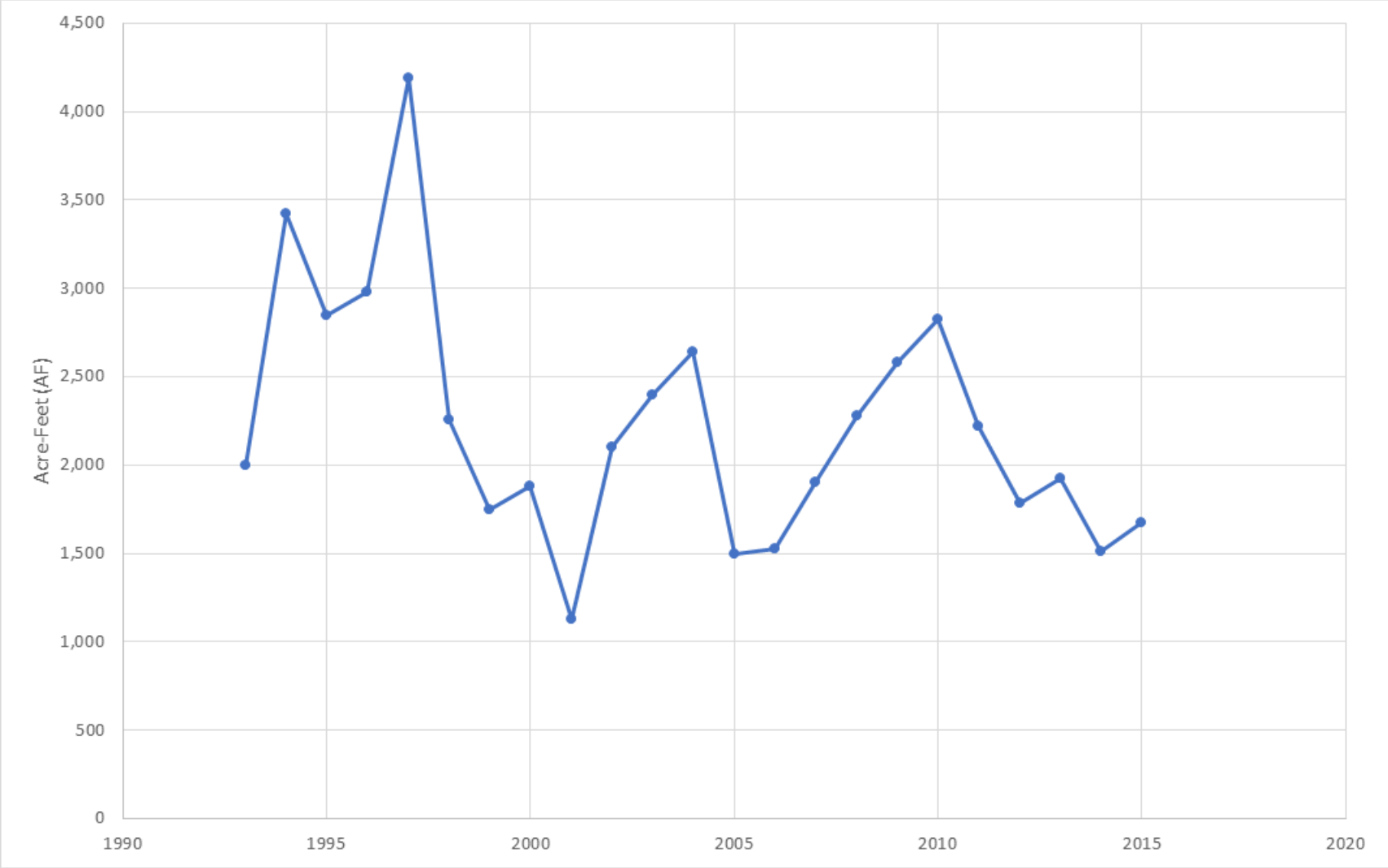


Figure 9-7. CSIP-Standby Wells within the CSIP Program Area - Standby Active (CSIP-SBA) Well Production 1993 to 2015

Figure 9-8. CSIP Supplementary Well Production 1999 to 2018

Reductions in groundwater pumping will be measured directly and recorded in the water charges framework database. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between CSIP optimization and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.4.3.3.3 Circumstances for Implementation

The CSIP optimization project is a preferred project that builds on plans currently being initiated by MCWRA. Supporting and expanding these ongoing efforts will be initiated as soon as funds become available. No additional circumstances for implementation are necessary.

9.4.3.3.4 Legal Authority

MCWRA, who owns and operates the CSIP system, is a member of the SVBGSA. Therefore, optimizing the CSIP system is a benefit to one of the SVBGSA members. The SVBGSA will work in cooperation with MCWRA to modify and optimize the CSIP system.

9.4.3.3.5 Implementation Schedule

The implementation schedule is presented on Figure 9-9. It is anticipated to take three to six years to implement.

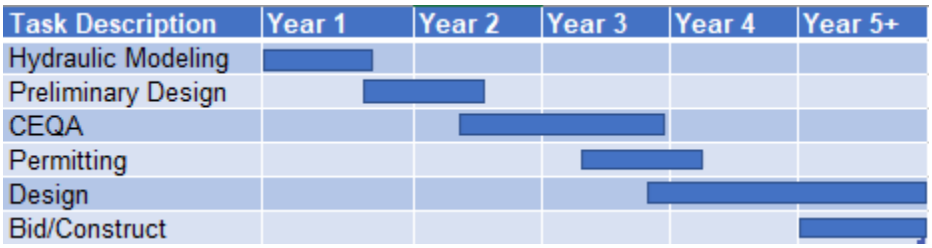


Figure 9-9. Implementation Schedule for CSIP Optimization

9.4.3.3.6 Estimated Cost

Estimated capital cost for the CSIP optimization project is estimated at $16,400,000. Annual O&M costs are anticipated to be approximately $200,000. The projected yield for the CSIP optimization project is estimated at 5,500 AF/yr. The amortized cost of water for this project is estimated at $270/AF/yr.

9.4.3.4 Preferred Project 3: Modify Monterey One Water Recycled Water Plant – Winter Modifications

Monterey One Water's Regional Wastewater Treatment Plant (RTP) has a maximum capacity of 29.6 mgd. Currently, the facility is only treating 16 to18 mgd of influent wastewater. During the wet weather months, 100% of all secondary treated wastewater is discharged to the ocean, forgoing the opportunity for beneficial reuse. During the wet weather months, there is some demand for recycled water in the CSIP system; however, M1W cannot produce tertiary treated water at a rate lower than 5 mgd, which is needed to supply the growers in the winter. As a result, growers turn to the groundwater basin for their irrigation needs during these months. Modifications are required at the M1W RTP in order to efficiently treat and deliver recycled water during the wet weather months.

Under the M1W Recycled Water Plant Modifications Project, the SVRP will be improved to allow delivery of tertiary treated wastewater to the CSIP system when recycled water demand is less than 5 mgd. Monterey One Water (M1W) is currently designing and permitting this project (Monterey One Water, 2018). SVBGSA will work closely with M1W to support and implement this project.

Table 9-2 provides the groundwater well pumping for the past 7 years during the winter months when the SVRP plant is not on-line. This results in an average wet weather pumping rate of 1,100 AF/yr.; with a minimum of 300 AF/yr. in wet years, and a maximum of 1,790 AF/yr. in dry years. The SVRP improvements would largely eliminate the need for this wintertime pumping. The demand for water during the winter from the SVRP will also increase with the Preferred Project 4; increasing the potential Project Yield from 1,100 AF/yr. to an estimated 1,300 AF/yr.

Table 9-2. Groundwater Winter Well Pumping FY 2011-2012 to FY 2017-2018

	Dec 2011-Jan 2012	Dec 2012-Jan 2013	Dec 2013 - Jan 2014	Nov 2014-Jan 2015	Nov 2015-Feb 2016	Nov 2016-Mar 2017	Nov 2017-Mar 2018
November				303	213	325	28
December	723	52	730	38	199	223	38
January	1,067	253	509	516	96	62	183
February					520	102	907
March						580	90
Total	1,790	305	1,239	857	1,028	1,292	1,246

9.4.3.4.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Groundwater elevation measurable objective

- Groundwater storage measurable objective
- Seawater intrusion measurable objectives
- Land subsidence measurable objectives

9.4.3.4.2 Expected Benefits and Evaluation of Benefits

The primary benefit from M1W SVRP Modifications is additional water supply to the CSIP system during low-demand wet weather months, reducing groundwater pumping. The M1W SVRP Modifications project has the potential to yield up to 1,100 AF/yr. through in-lieu recharge, providing an alternative to groundwater sources in the existing CSIP area and an additional 200 AF/yr. in the expanded CSIP area. This project will benefit other subbasins, such as the Eastside and Monterey Subbasins by reducing pumping that impacts the neighboring subbasins.

Figure 9-5 shows the expected groundwater elevation benefit in the 180-Foot Aquifer from projects 2, 3, and 5, combined. Figure 9-9 shows the expected groundwater elevation benefit in the 400-Foot Aquifer from projects 2, 3, and 5, combined. These projects were combined into a single simulation because of how closely they are intertied. Model results suggest that these projects reduce seawater intrusion by approximately 2,200 AF/yr. on average.

Reductions in groundwater pumping will be measured directly and recorded in the water charges framework database. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between M1W improvements and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.4.3.4.3 Circumstances for Implementation

The SVRP modifications project is currently being planned and implemented by M1W as part of the Pure Water Monterey Groundwater Replenishment Project. No other circumstances for implementation are necessary.

9.4.3.4.4 Legal Authority

The SVRP modification project is currently being planned and implemented by M1W. No legal authority is necessary.

9.4.3.4.5 Implementation Schedule

The implementation schedule is presented on Figure 9-10. It is anticipated to take approximately two years to implement.

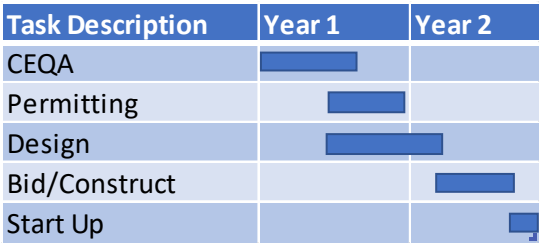


Figure 9-10. Implementation Schedule for M1W SVRP Modifications

9.4.3.4.6 Estimated Cost

The project cost will be covered through delivery charges to existing CSIP customers. Because a funding mechanism for this project has already been identified, these costs will not be incorporated into the Water Charges Framework.

The following estimates are provided by the MCWRA's *New Source Water Supply Study, Final Report*. Estimated capital cost for the M1W Winter Modification project was estimated at $1,493,000 (Raftelis Financial Consultants, 2018). The amortized cost of water for this project is estimated at $90/AF.

9.4.3.5 Preferred Project 4: Expand Area Served by CSIP

The CSIP expansion project involves enlarging the system's service area, thereby increasing the demand for recycled water in the spring and fall and lessening dependence on existing groundwater wells. The existing CSIP supplies may not be sufficient to meet the summertime demand of the expanded CSIP area without an increase in water supply from the SRDF or another source. If additional water supply sources are available in the summer, the expanded service area will be supplied summer irrigation water. The CSIP Optimization Project (Priority Project 2) will be required to be implemented before water has the potential to be supplied to the expanded CSIP area during the summer.

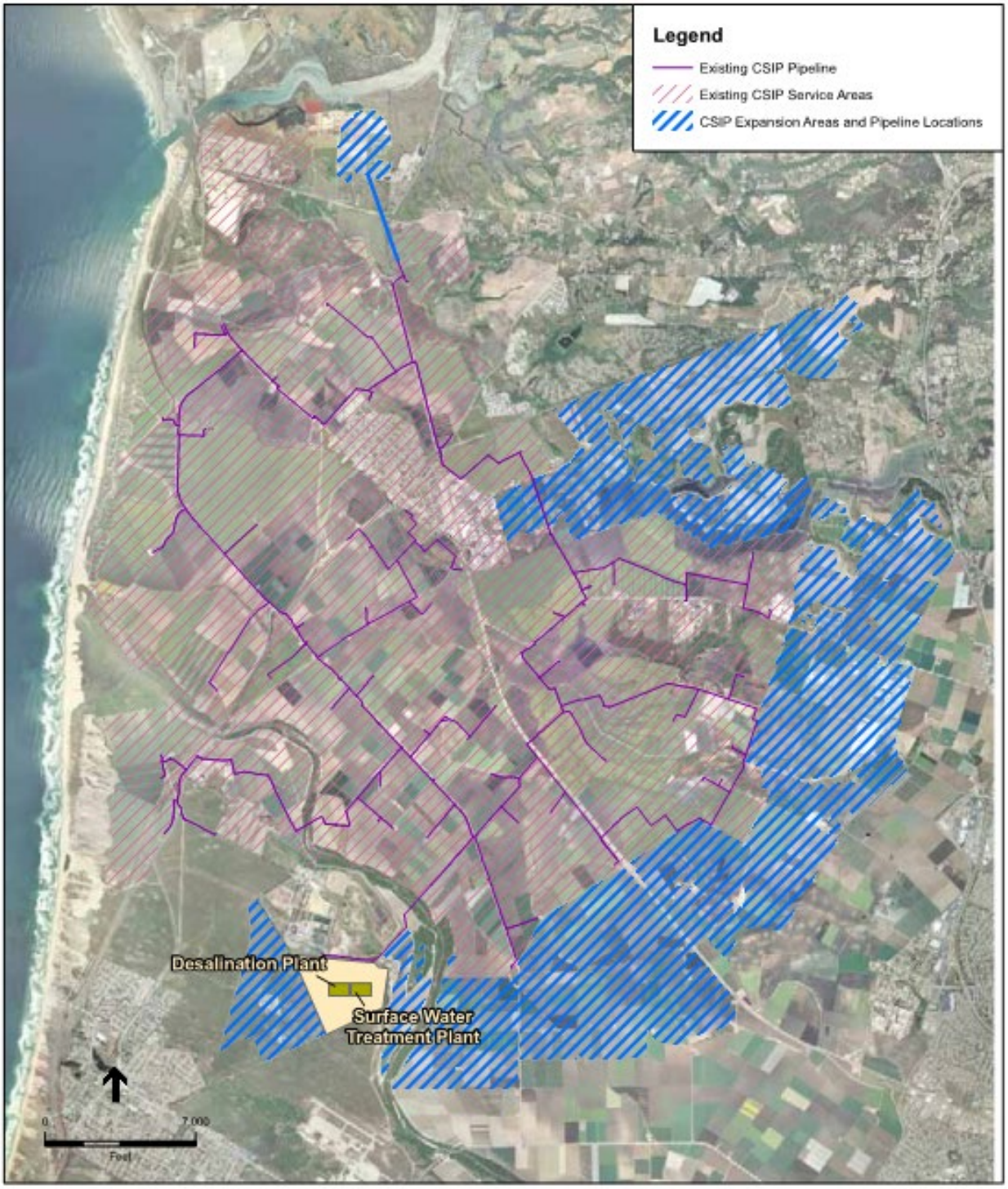
In previous studies, approximately, 8,500 acres have been identified on the north, east and south sides of the existing CSIP service area that could be included in the expanded service area. These areas were identified in the *Cal-Am Coastal Water Project Draft Environmental Impact Report* (ESA, 2009), and are shown on Figure 9-11. Other studies have suggested smaller expansions. In 2011, MCRWA considered approximately 3,500 acres for annexation into the CSIP service area as displayed on Figure 9-12. More recently, the May 2018 *Progress Report on Pure Water Monterey Expansion*, stated the current plan for expansion considers an additional 3,500 acres, a 29% increase in its service area (Monterey One Water, 2018).

Based on the report *Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin*, a working group was established that recommended beginning an annexation plan for expanding the CSIP service area concurrently with optimizing the existing CSIP system (MCWRA, 2017b). The working group recommended expanding into areas nearest the advancing seawater intrusion front. The annexation plan would be implemented after 2020.

Assuming 3,500 acres of new farmland are annexed into the system, and with an assumed unit agricultural water demand of 2.8 AF/acre (MCWRA, 2017b), the expanded area may present an additional demand of 9,900 AF/yr. Initial estimates reported in the 2009 *Cal-Am Coastal Project Draft EIR* (ESA, 2009) suggested the 8,500 acre expansion proposal might require an additional 14,000 AF/yr. of water. Assuming the lesser of these two estimates, the 9,900 AF/yr. of deliveries would offset an equal amount of pumping from the Subbasin. The final size and location of CSIP expansion will be determined through additional hydraulic modeling and engineering that identifies the most cost-effective areas for expansion.

The CSIP expansion would include construction of a new distribution network. The distribution network will be developed only after the final location of CSIP expansion is agreed upon. Extrapolating from the existing CSIP system, the expanded area may include on the order of 13 miles of new pipeline. Because the existing distribution system is at its hydraulic capacity, the new network would likely be a pressurized system separate from the existing distribution system pipelines. A new 48” transmission main would extend from the existing SVRP storage pond to the expanded service area; with the exception of a smaller diameter pipeline serving an area southwest of the M1W SVRP. A crossing of the Salinas River would be required. Pipeline diameters would decrease further downstream in the distribution network. Turnouts would be installed for each new agricultural use customer.

Locations to be served in the expanded area would prioritize areas where risk of seawater intrusion is highest. Additional considerations include the cost of tank storage and booster pumps needed to supply areas east of Castroville along Highway 156.



SOURCE: ESA, 2008; RMC, 2008

CalAm Coastal Water Project . 205335

Figure 5-4
Expanded CSIP Distribution System

Figure 9-11. Potential CSIP Distribution System Expansion Areas
(Image from Cal-Am Coastal Water Project Draft EIR, 2005)

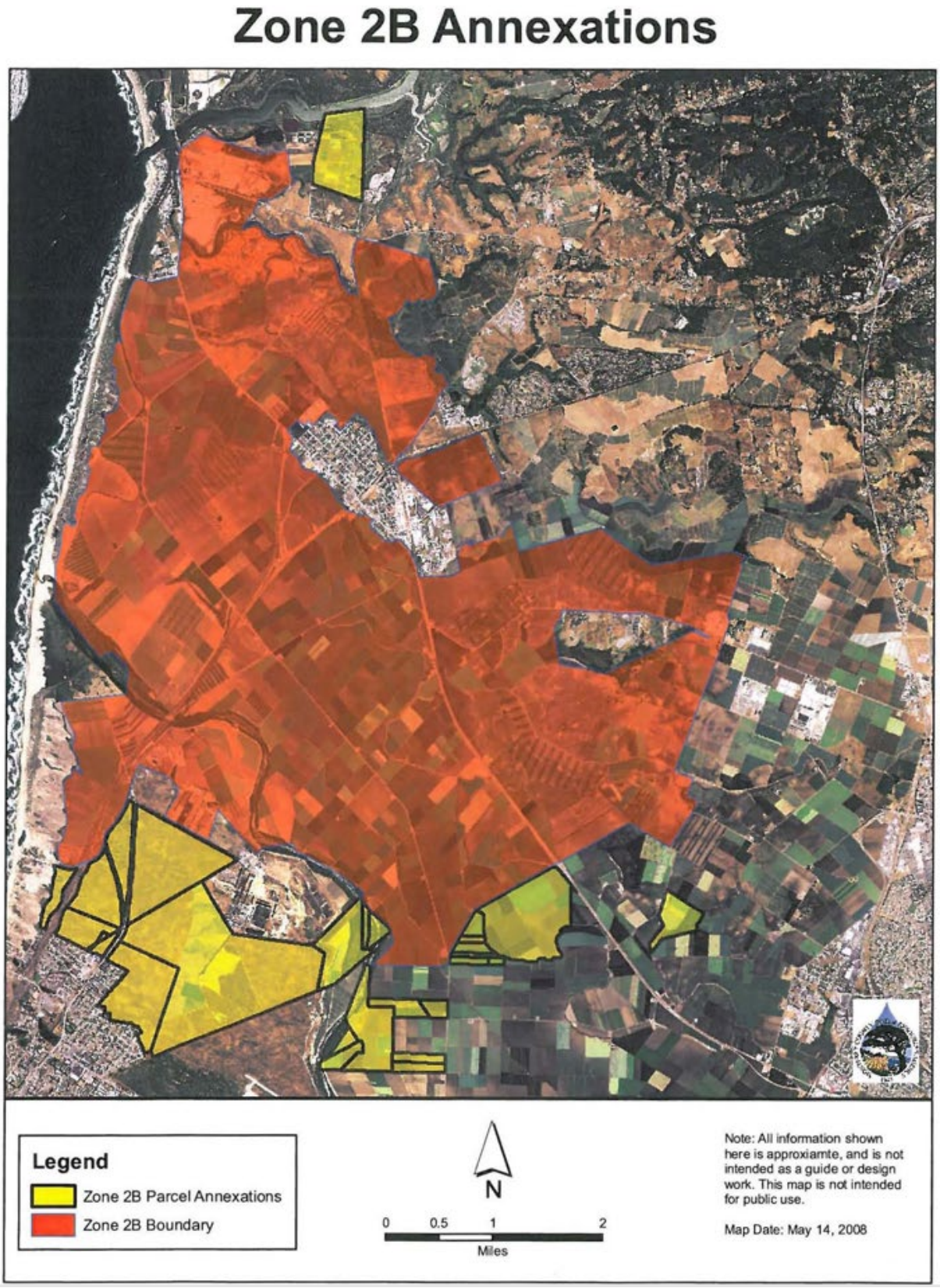


Figure 9-12. Zone 2B Requests for Annexation from 2011
(Courtesy of MCWRA)

9.4.3.5.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include

- Groundwater elevation measurable objective
- Groundwater storage measurable objective
- Seawater intrusion measurable objectives
- Land subsidence measurable objectives

9.4.3.5.2 Expected Benefits and Evaluation of Benefits

The primary benefits from CSIP expansion include the increase in demand for recycled water and river diversion water supplies, thus reducing groundwater pumping in the Subbasin. This increased demand could be supplied to the new service area during the winter, spring and fall when excess supply is available to the CSIP system. If additional water supplies are available in the summer, the new service area could also be supplied in the summer. The expanded service area would lessen groundwater pumping by an amount equal to the quantity delivered: approximately 9,900 AF/yr. This project will benefit other subbasins, such as the Monterey and Eastside subbasins by reducing pumping that impacts the neighboring subbasins.

Figure 9-13 shows the expected groundwater elevation benefit in the 180-Foot Aquifer from the CSIP expansion project. Figure 9-14 shows the expected groundwater elevation benefit in the 400-Foot Aquifer from the CSIP expansion project. Model results suggest that this project reduces seawater intrusion by approximately 2,800 AF/yr. on average.

Reductions in groundwater pumping will be measured directly and recorded in the water charges framework database. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between CSIP expansion and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

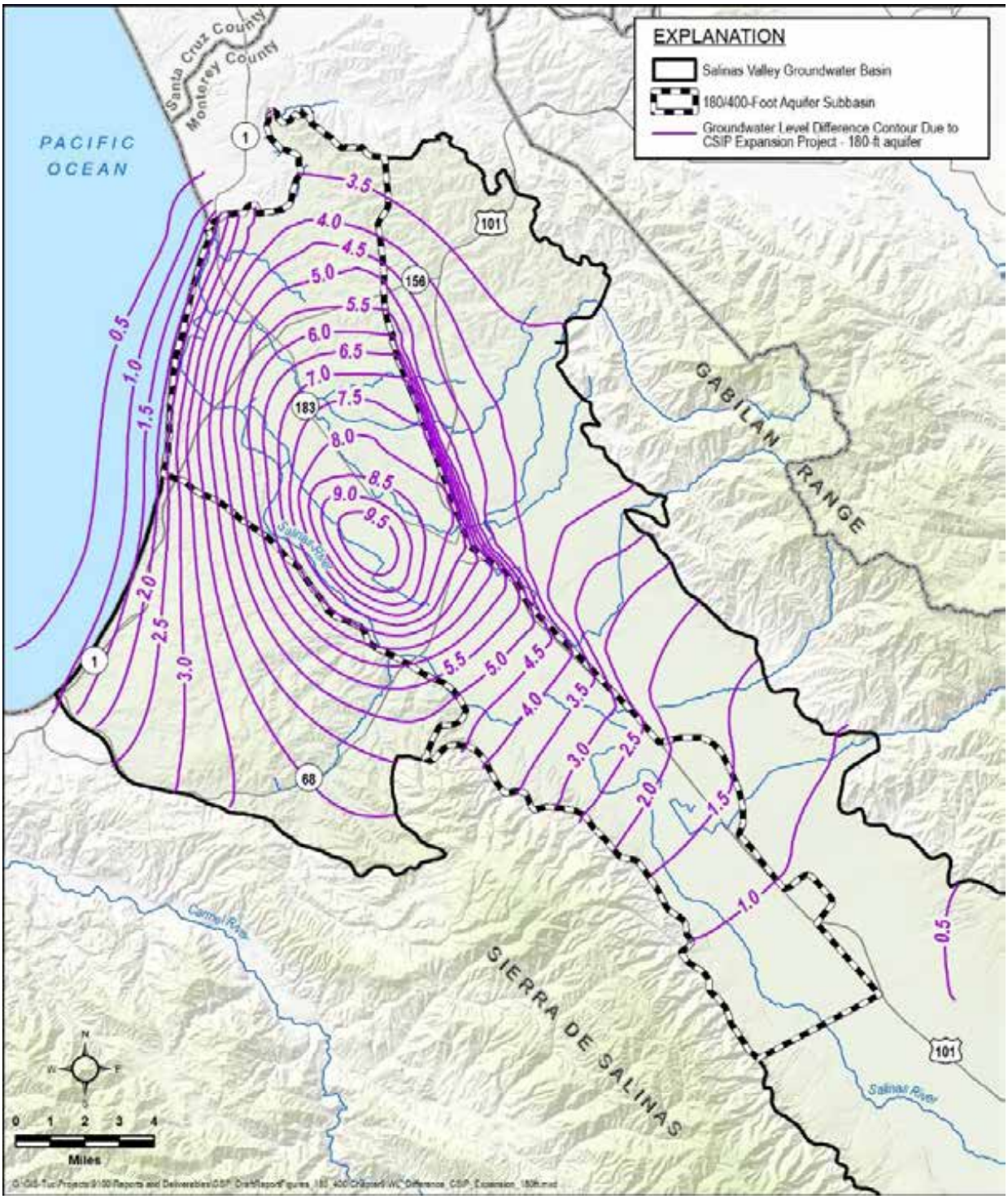


Figure 9-13: Estimated Groundwater Elevation Benefit in the 180-Foot Aquifer from the CSIP Expansion Project

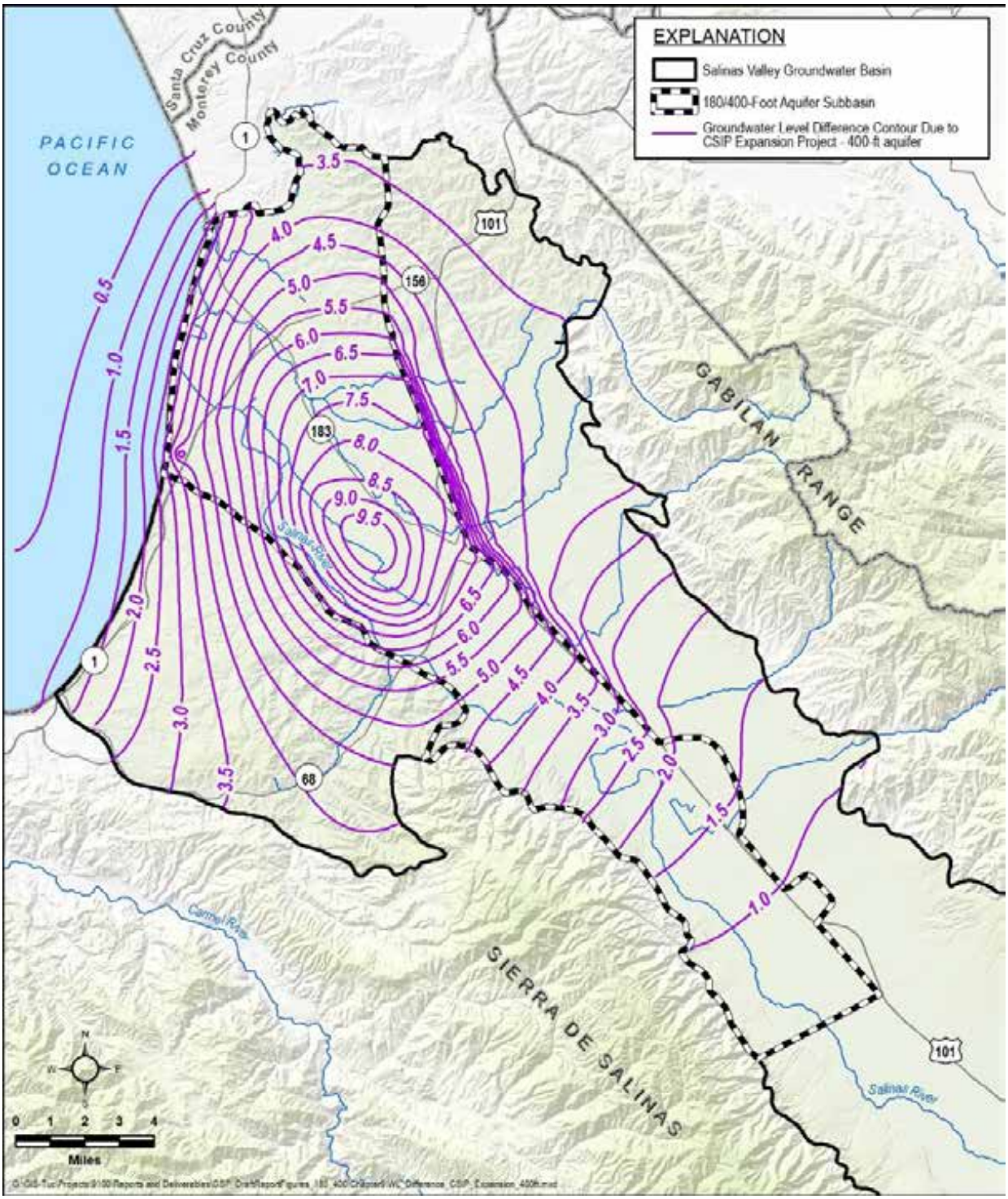


Figure 9-14. Estimated Groundwater Elevation Benefit in the 400-Foot Aquifer from the CSIP Expansion Project

9.4.3.5.3 Circumstances for Implementation

The CSIP expansion project will be implemented after completion of the CSIP optimization project.

9.4.3.5.4 Legal Authority

MCWRA, who owns and operates the CSIP system, is a member of the SVBGSA. Therefore, expanding the CSIP system is a benefit to one of the SVBGSA members. The SVBGSA will work in cooperation with MCWRA to design and construct the CSIP expansion.

9.4.3.5.5 Implementation Schedule

The implementation schedule is presented on Figure 9-15. It is anticipated to take five years to implement. Year one for this project would not start until the CSIP Optimization Project has been implemented.

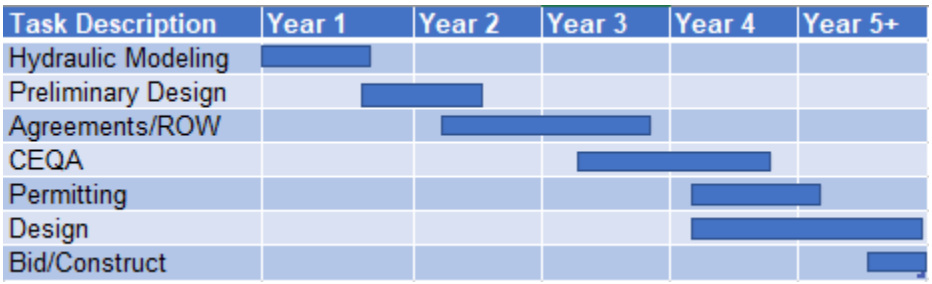


Figure 9-15. Implementation Schedule for CSIP Distribution System Expansion

9.4.3.5.6 Estimated Cost

Capital cost for the CSIP expansion project is estimated at $73,366,000. Annual O&M costs are approximately $480,000. The estimated projected yield for the project is 9,900 AF/yr. The amortized cost of water for this project is estimated at $630/AF.

9.4.3.6 Preferred Project 5: Maximize Existing SRDF Diversion

MCWRA owns and operates the SRDF. The SRDF operates normally at 36 cfs and has a maximum capacity of 48 cfs if necessary. The facility operates between April 1st and October 31st and can deliver annually up to approximately 15,000 AF/yr. to the CSIP system. The original Engineer's Report for the SRDF proposed a facility that could instantaneously deliver 85 cfs with a total annual diversion between 9,700 and 12,800 AF/yr. The instantaneous delivery was scaled back during design to reduce costs for the project.

The existing SRDF can theoretically divert up to 15,000 AF/yr. to the CSIP system, although since its startup in 2010 it has provided an average of 3,400 AF/yr. between the months of April and October, with a maximum delivery in WY 18-19 of 6,500 AF/yr. This deficit between the

facility's capacity and its actual deliveries is largely attributable to a misalignment between the timing of supply and demand for the water. Currently, the CSIP's agricultural demand is primarily during the day. Recycled water is used as the first priority in supplying the CSIP, so the need for SRDF water during the day is limited. This results in the farmers and MCWRA turning on their wells to supplement the water supplies on average of 5,500 AF/yr. (see Priority Project 2).

Between 2002 and 2018, the average April through October demand in the CSIP system was 17,538 AF/yr. The SVRP supplied approximately 11,482 AF/yr. of that annual average demand. Under these operational parameters, in order to eliminate pumping from CSIP supplementary wells, the SRDF would need to provide an average annual diversion of approximately 6,506 AF/yr. Since operation of the SRDF began in 2010 there has been a minimum of 8,500 AF/yr. available for diversions to CSIP, with an average annual diversion capacity of up to 11,600 AF/yr.

Therefore, after the CSIP system is optimized, the SVBGSA could increase the production from the SRDF with no added capital expenditures. In addition, there would be additional capacity available to offset a portion of the demand from the expanded CSIP area (Priority Project 4), up to an additional 4,300AF/yr. CSIP Optimization (Priority Project 2) must be completed to be able to maximize the SRDF deliveries.

9.4.3.6.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Groundwater elevation measurable objective
- Groundwater storage measurable objective
- Seawater intrusion measurable objectives
- Land subsidence measurable objectives

9.4.3.6.2 Expected benefits and Evaluation of Benefits

The primary benefits from maximizing the existing SRDF facilities includes additional water supply to the CSIP system, allowing for its expansion into new service areas as well as providing a potential source of water for aquifer recharge through injection wells (See Priority Project 10 Winter Flow Injection). Maximizing the existing SRDF has the potential to yield up to 11,600 AF/yr. when operated April through October.

Figure 9-5 shows the expected groundwater elevation benefit in the 180-Foot Aquifer from projects 2, 3, and 5, combined. Figure 9-9 shows the expected groundwater elevation benefit in the 400-Foot Aquifer from projects 2, 3, and 5, combined. These projects were combined into a

single simulation because of how closely they are intertied. Model results suggest that these projects reduce seawater intrusion by approximately 2,200 AF/yr. on average.

Reductions in groundwater pumping will be measured directly and recorded in the water charges framework database. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between SRDF improvements and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.4.3.6.3 Circumstances for Implementation

Maximizing the existing SRDF improvement project will be implemented following the completion of Priority Project 2, CSIP Optimization and Priority Project 3, Expand Area Served by CSIP Area.

9.4.3.6.4 Legal Authority

No additional legal authority is needed to maximize the use of the existing SRDF.

9.4.3.6.5 Implementation Schedule

This project is to be implemented following the completion of Priority Project 2 and 3.

9.4.3.6.6 Estimated Cost

There is no capital cost required for this project because the facilities are already sized to deliver 15,000 AF/yr. The project requires additional $2,500,000 annual O&M including higher energy and treatment costs to supply the water. The estimated projected yield for the project is 11,600 AF/yr. The yield for this project will facilitate achieving the yield that is identified in Priority Project 2 and a portion of the yield identified in Priority Project 4. The amortized cost of water for this project is estimated at $220/AF.

9.4.3.7 Preferred Project 6: Seawater Intrusion Pumping Barrier

Seawater intrusion will be halted using a pumping barrier along the coast. The barrier will be approximately 8.5 miles in length between Castroville and Marina. The intrusion barrier comprises 18 extraction wells; although this number may change as the project is refined. Nine wells will be located in the 180-Foot Aquifer and 9 wells will be located in the 400-Foot Aquifer. Supplemental water to replace the extracted water would come from one or a number of other sources. For costing purposes, the initial barrier alignment is assumed to largely parallel

Highway 1, diverging to the northeast on the northern side of Castroville. This alignment will be refined as land access agreements are developed and cost estimates are refined. Wells will be installed spaced approximately every 2,000 feet. The deepest wells would be installed to the depth of the base of the 400-Foot Aquifer, approximately 750 feet below ground surface.

The 9 wells in the 180-Foot Aquifer are assumed to produce 700 gpm each, for a total extraction rate of 6,300 gpm or 14 cfs. The 9 wells in the 400-Foot Aquifer are assumed to produce 1,400 gpm each, for a total extraction of 12,600 gpm or 28 cfs. The 18 wells would withdraw up to 30,000 AF/yr. Of this 30,00 AF/yr., 22,000 AF/yr. would be extracted from the 180/400-Foot Subbasin, the remainder would be extracted from neighboring subbasins. Half of this 22,000 AF/yr. comes from the inland side of the barrier. This number is conservatively high and will be refined as the project design is refined. Extracted groundwater would be conveyed in a new pipeline for ultimate discharge back into the Pacific Ocean. Alternatively, the extracted water or a portion thereof could be conveyed to a new or existing desalination facility where it can be treated for potable and/or agricultural use. The water extracted from these wells will be brackish due to historical seawater intrusion, therefore, the extraction will serve to remove the brackish water and allow replacement for fresh water from other sources, most likely a combination of desalinated water, excess surface water from the Salinas River, and/or purified recycled water.

An optional barrier using injection instead of extraction was also considered. This option would use the same 9 wells in the 180-Foot Aquifer and 9 wells in the 400-Foot Aquifer but would use these wells to develop an injection mound rather than a drawdown barrier. The mound developed by injection would need to be high enough to compensate for the density of seawater at the coast. Assuming the 180-Foot Aquifer has an average depth of 270 feet and using the Ghyben-Herzberg relationship for saltwater intrusion, the injection mound in the 180-Foot Aquifer at the coastline would need to be 6.75 feet above sea level to fully stop seawater intrusion. Assuming the 400-Foot Aquifer has an average depth of 550 feet, and using the same relationships, the injection mound in the 400-Foot Aquifer at the coastline would need to be 13.75 feet above sea level to fully stop seawater intrusion.

Mounding calculations presented in Appendix 9D suggest that approximately 46,000 AF/yr. of water would need to be injected to create the required mounding. Of this 46,000 AF/yr., 34,500 AF/yr. would be injected into the 180/400-Foot Aquifer Subbasin. Water that could be injected in accordance with existing regulations and ordinances includes treated Salinas River water, desalinated ocean water, and advanced purified recycled water. Treated Salinas River water and desalinated ocean water would be preferentially delivered to growers and municipalities rather than injected. The only likely source of water for injection is therefore advanced purified recycled water. Because it is unlikely that a reliable year-round supply of advanced purified recycled water will be available for a reasonable cost, the injection option was temporarily tabled.

9.4.3.7.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Seawater intrusion measurable objectives

9.4.3.7.2 Expected Benefits and Evaluation of Benefits

The project will stop and reverse seawater intrusion, helping to remediate and restore the 180/400-Foot Aquifer Subbasin.

9.4.3.7.3 Circumstances for Implementation

The seawater intrusion barrier project is a preferred project and will be implemented as soon as financially and legally possible. A number of land and access agreements will be needed before the project can be implemented.

9.4.3.7.4 Legal Authority

Section 10726.2(a) of the California Water Code gives the SVBGSA the right to acquire the land necessary for the required infrastructure (CWC, 2014).

9.4.3.7.5 Implementation Schedule

The implementation schedule is presented on Figure 9-16. It is anticipated to take 5 years to implement.

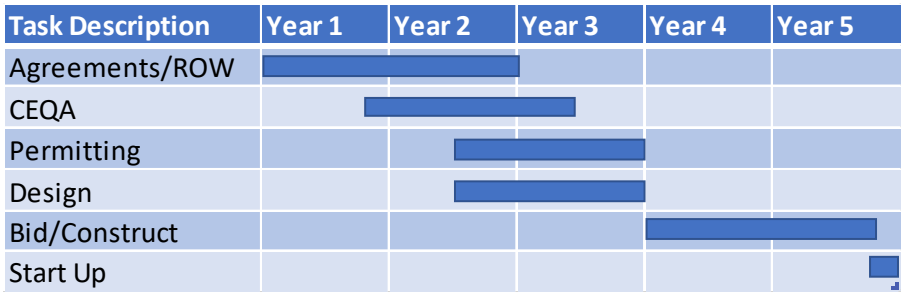


Figure 9-16. Implementation Schedule for Seawater Intrusion Extraction Barrier

9.4.3.7.6 Estimated Cost

Capital cost for the Seawater Intrusion Pumping Barrier project is estimated at $102,389,000. This includes 44,000 LF of 8-inch to 36-inch pipe and rehabilitation of the existing M1W outfall. Annual O&M costs are anticipated to be approximately $9,800,000. To make the project cost comparable to other projects, the total projected yield of 30,000 AF/yr. is used to estimate a cost per acre-foot. This project does not benefit the Subbasin in the same way as those that mitigate overdraft, and thus the yield is not directly comparable; the yield is only used to calculate the

cost comparison. The amortized cost of water for this project is estimated at $590/AF. This project assumes the water will be discharged through the existing M1W outfall. If Alternative Project 1 is pursued, the upgrade to the outfall will not be required.

9.4.3.8 Preferred Project 7: 11043 Diversion Facilities Phase I: Chualar

MCWRA holds Permit 11043 (Permit), which is a wet weather diversion right on the Salinas River. The diversion can only occur in two identified locations: near Soledad and Chualar. The Permit has an annual maximum diversion limit of 135,000 AF. Permit Condition 13 only allows water to be diverted when there are natural flows in the river that exceed minimum specified flows. In addition, under Condition 13, the maximum allowed diversion is 400 cfs. Based on the conditions of the permit, a conservative estimate is that approximately 63,000 AF of water can be diverted during average years from either diversion point between the months of December through March. Diverting an average of 63,000 AF/yr., however, would require very large diversion structures. SVBGSA reviewed how much water could be reliably diverted using smaller diversions structures. Figure 9-17 illustrates the volume of water that can be diverted, based on historical flows and the size of the diversion structure.

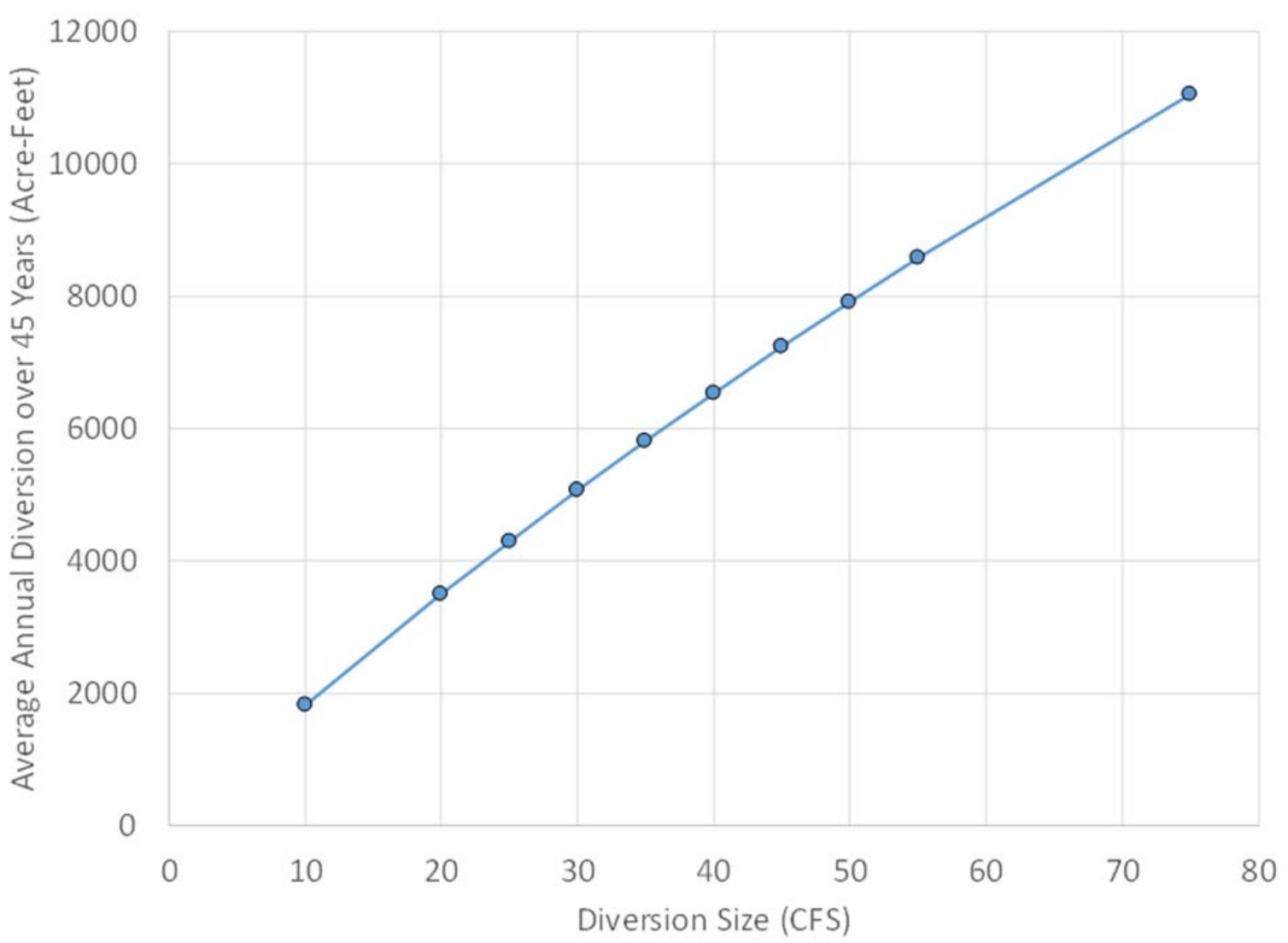


Figure 9-17: Water Right 11043 Average Annual Historical Diversions Volume for Various Sized Diversion Structures

Preferred Project 7 proposes to construct extraction facilities at the Chualar location and pump the water to the Eastside Subbasin where the water can then be infiltrated or injected into the groundwater basin at known pumping depressions. The first phase includes a diversion facility at the Chualar diversion site that would be sized to provide approximately 6,000 to 10,000 AF/yr. of water to the southeast edge of the City of Salinas. To obtain this volume of water, a diversion structure that can pump between 35 and 65 cfs is required. The diversion structure could be sized to extract more than 10,000 AF/yr.; however, it may not be economical to construct a larger facility. This issue can be further evaluated during the preliminary design stages of the project. The project would require the following facilities:

- A radial collector diversion facility with pump house capable of pumping between 35 and 65 cfs, equivalent to a rate of between 15,700 and 29,000 gpm.
- An infiltration basin that could be farmed in the summer and fallowed during the winter. It is estimated between 100 and 200 acres (estimating 0.25 in/hr. infiltration rate) would be required for the infiltration basin.
- An alternative to the infiltration basin is to construct a filtration and chlorination treatment facility and injection wells near the pumping depression. This alternative is more expensive but potentially more effective than the infiltration basins.

A radial collector well consists of a vertical, large diameter caisson which is sunk to a level below the water table; caisson diameters typically range between 8 to 20 feet. Extending from the central caisson is one or more lateral perforated screens which are typically 125 to 250 feet in length. The horizontal laterals collect water from the subsurface and convey it to the central caisson which also serves as a pump station. From the caisson, the water is pumped to its destination. Water collected in this manner offers the advantage of having undergone riverbank filtration, generally offering improved and more consistent water quality than that of water collected directly from a surface water. The radial collector wells also have a lower ground surface footprint than the equivalent number of vertical wells that would be needed to extract the same amount of water. Radial collector wells such as the Ranney Well™, have capacities ranging from 0.1 to 50 mgd. The radial collector for the 11043 Chualar Diversion would be sized for a capacity of 19 to 42 mgd.

For conceptual project evaluation purposes, the system is assumed to include:

- One 16’ diameter caisson to 100’ depth
- Six 12” diameter laterals, 150’ in length
- Elevated pump house and control room for four 350-HP, 7,500 gpm pumps.
- A 48” diameter, 23,750 linear foot transmission pipe to convey water from the diversion facility to the injection well sites.

An alternative to the Diversion Facility at Chualar would be to modify the 11043 permit to allow diversions closer to the City of Salinas. The City of Salinas owns infrastructure, land, and permanent pipeline easements that were previously part of the abandoned wastewater treatment plant. This plant discharged treated wastewater into the Salinas River. The City also owns and operates the Industrial Wastewater Treatment Facility, a 200-acre facility north of the Salinas River and west of Davis Road with pumping facilities, aeration basin, three large percolation/evaporation ponds, and smaller drying beds. The Industrial Wastewater Treatment Facility site contains a solar array which generates enough power to offset over half the current consumption at the facility. The modified project would still incorporate the radial collectors as described above but would use the City's existing infrastructure for treatment and distribution.

9.4.3.8.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Groundwater elevation measurable objective
- Groundwater storage measurable objective
- Land subsidence measurable objectives

9.4.3.8.2 Expected Benefits and Evaluation of Benefits

There is no direct benefit from this project on the 180/400-Foot Aquifer Subbasin. This project is included here as part of the complete Valley-wide groundwater management program. The primary expected benefit of Preferred Project 7 is to provide an alternative water supply source to recharge the Eastside groundwater basin near the cone of depression, thereby either raising groundwater elevations or lowering the rate of groundwater elevation decline.

Figure 9-18 shows the expected groundwater elevation benefit in the 180-Foot Aquifer from this project. Figure 9-19 shows the expected groundwater elevation benefit in the 400-Foot Aquifer from this project. Model results suggest that this project reduces seawater intrusion by approximately 660 AF/yr. on average.

Reductions in groundwater pumping will be measured directly and recorded in the water charges framework database. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between the 11043 diversion and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

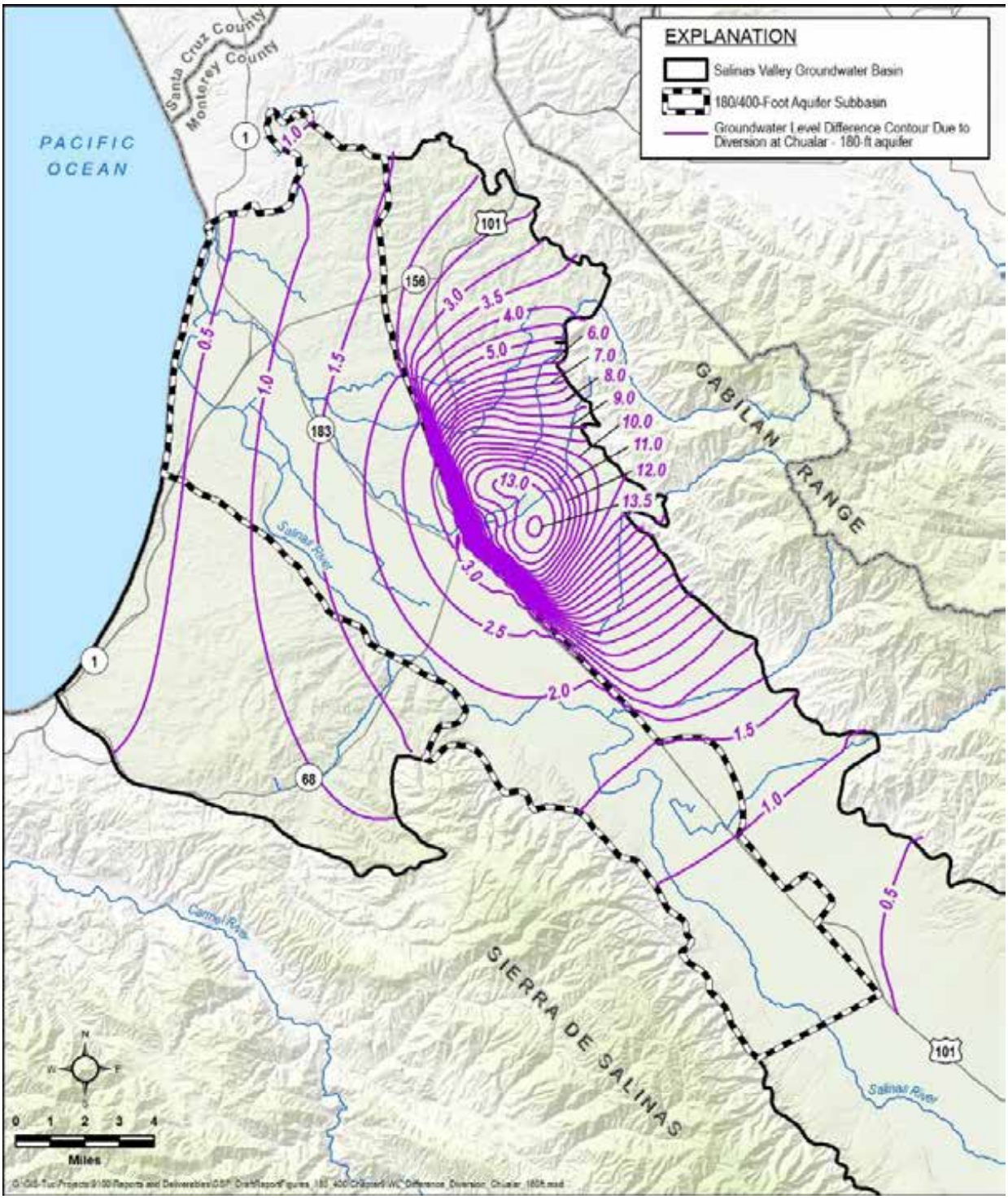


Figure 9-18: Estimated Groundwater Elevation Benefit in the 180-Foot Aquifer from the 11043 Diversion at Chualar

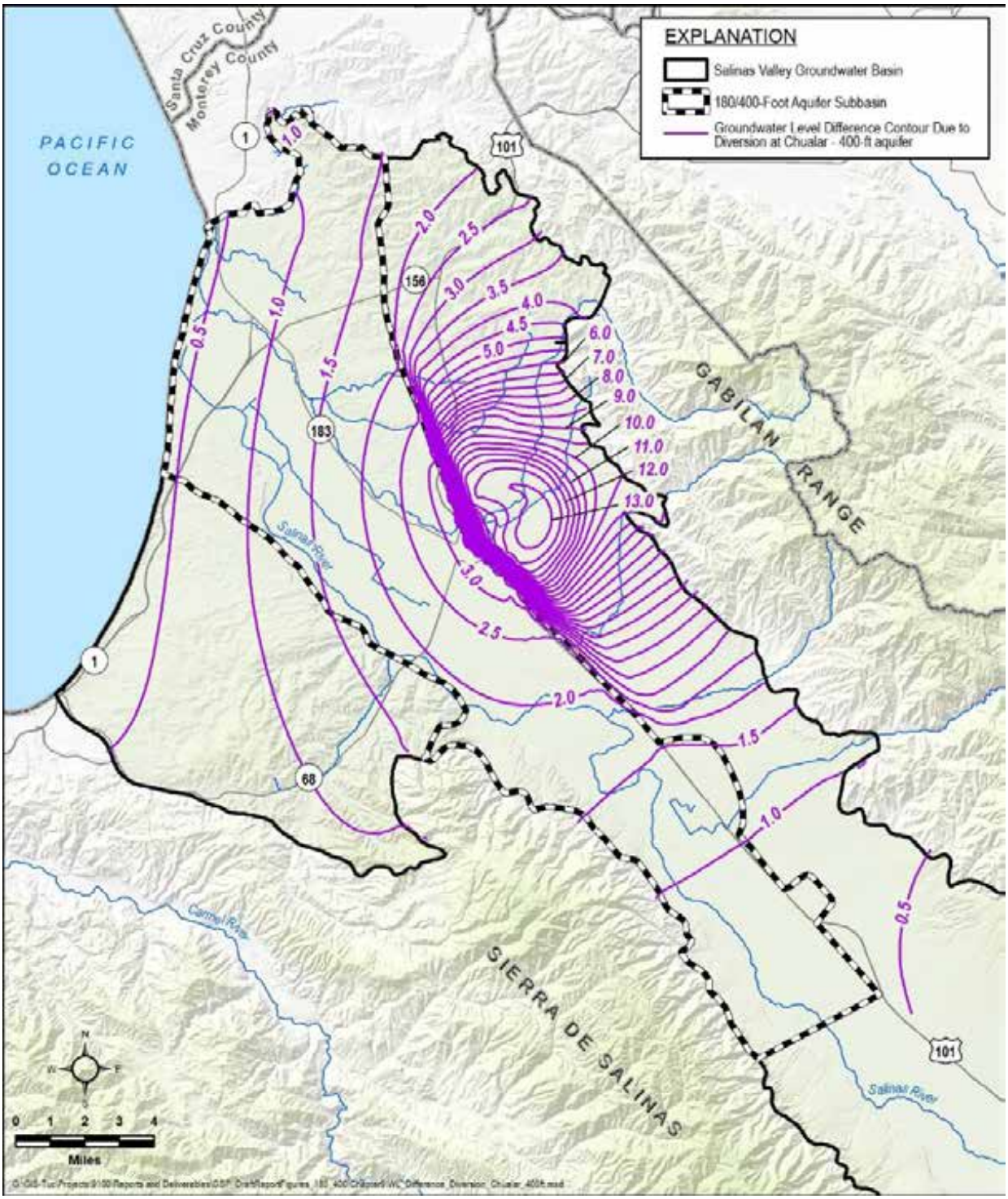


Figure 9-19: Estimated Groundwater Elevation Benefit in the 400-Foot Aquifer from the 11043 Diversion at Chualar

9.4.3.8.3 Circumstances for Implementation

The 11043 Diversion Project; Phase I Chualar is a preferred project and will be implemented as soon are financially and legally possible. A number of land and access agreements will be needed before the project can be implemented.

9.4.3.8.4 Legal Authority

MCWRA, who holds the 11043 permit, is a member of the SVBGSA. Either MCWRA will use the permit as a member of the SVBGSA, or MCWRA will transfer the permit to SVBGSA.

The SVBGSA has the right to divert and store water once it has access to the 11043 Permit. Section 10726.2 (b) of the California Water Code provides GSAs the authority to, "Appropriate and acquire surface water or groundwater and surface water or groundwater rights, import surface water or groundwater into the agency, and conserve and store within or outside the agency" (CWC, 2014).

9.4.3.8.5 Implementation Schedule

The implementation schedule is presented on Figure 9-20. It is anticipated to take 9 years to implement.

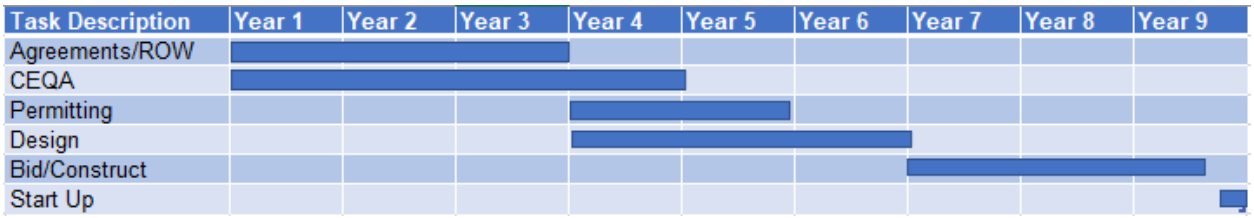


Figure 9-20. Implementation Schedule for 11043 Diversion at Chualar

9.4.3.8.6 Estimated Cost

The capital cost for the 11043 Diversion Facilities: Phase I, Chualar is estimated at $47,654,000. Annual O&M costs for the 8,000 AF project are anticipated to be approximately $2,296,000. The amortized cost of water for this project is estimated at $750/AF.

9.4.3.9 Preferred Project 8: 11043 Diversion Facilities Phase II: Soledad

As noted in Preferred Project 7, MCWRA holds Permit 11043 (Permit), which is a diversion right on the Salinas River. The diversion can only occur in two identified locations: Near Soledad and Chualar. The Permit has an annual maximum diversion limit of 135,000 AF. Permit Condition 13 only allows water to be diverted when there are natural flows in the river. In addition, under Condition 13, the maximum allowed diversion is 400 cfs. Based on the conditions of the permit, a conservative estimate is that approximately 63,000 AF of water can

be diverted during average years from either diversion point between the months of December through March.

Preferred Project 8 proposes to construct extraction facilities similar to Preferred Project 7, at the Soledad location and pump the water to the Eastside Subbasin where the water can then be infiltrated into the groundwater basin at known pumping depressions or areas of poor water quality. The diversion facility would be sized to provide approximately 6,000 to 10,000 AF of water to the farmland between Soledad and Gonzales along the foothills of the Gabilan Range. The diversion structure may be sized to extract more than 10,000 AF/yr.; however, it may not be economical to construct a larger facility. This issue can be further evaluated during the preliminary design stages of the project. The SVBGSA will coordinate and consult with MCWRA on planning, construction, and operation of this project. The project would require the following facilities:

- A radial collector diversion facility with pump house capable of pumping between 35 and 65 cfs, equivalent to a rate of between 15,700 and 29,000 gpm.
- A 48” diameter, 23,750 linear foot (4.5 miles) transmission pipe to convey water to an infiltration basin or injection wells.
- An infiltration basin that could be farmed in the summer and fallowed during the winter. It is estimated between 100 and 200 acres (estimating 0.25 in/hr. infiltration rate) would be required for the infiltration basin.
- An alternative to the infiltration basin is to construct a filtration and chlorination treatment facility and injection wells near the pumping depression.

9.4.3.9.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Groundwater elevation measurable objective
- Groundwater storage measurable objective
- Land subsidence measurable objectives

9.4.3.9.2 Expected Benefits and Evaluation of Benefits

There is no direct benefit from this project on the 180/400-Foot Aquifer Subbasin. This project is included here as part of the complete Valley-wide groundwater management program. The primary expected benefit of Preferred Project 8 is to provide an alternative water supply source to recharge the Eastside Subbasin, thereby either raising groundwater elevations or lowering the rate of groundwater elevation decline.

Figure 9-21 shows the expected groundwater elevation benefit in the 180-Foot Aquifer from this project. Figure 9-22 shows the expected groundwater elevation benefit in the 400-Foot Aquifer from this project. Model results suggest that this project will produce an indirect effect of reducing seawater intrusion by approximately 100 AF/yr. on average.

Reductions in groundwater pumping will be measured directly and recorded in the water charges framework database. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between the 11043 diversion and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

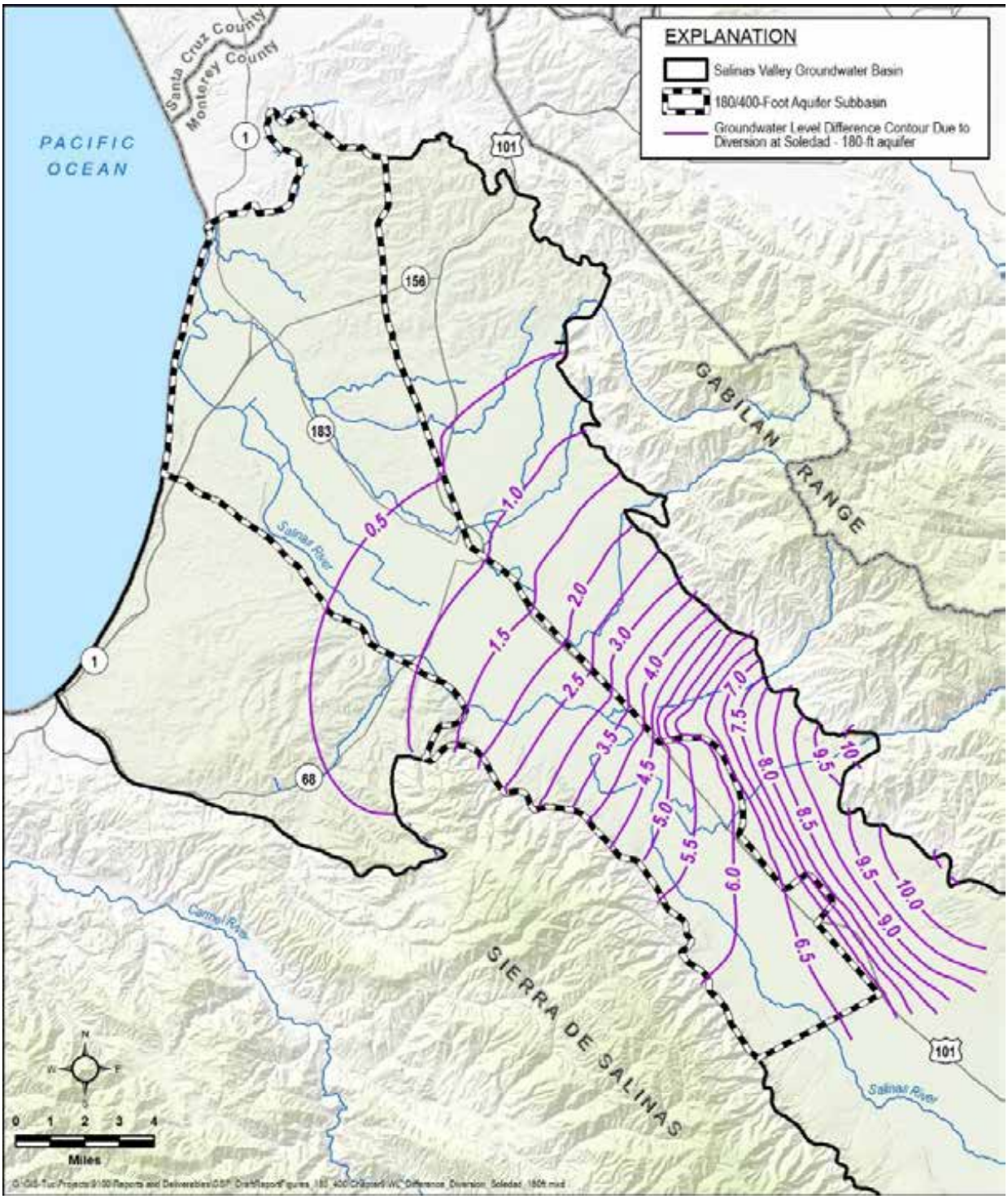


Figure 9-21: Estimated Groundwater Elevation Benefit in the 180-Foot Aquifer from the 11043 Diversion at Soledad

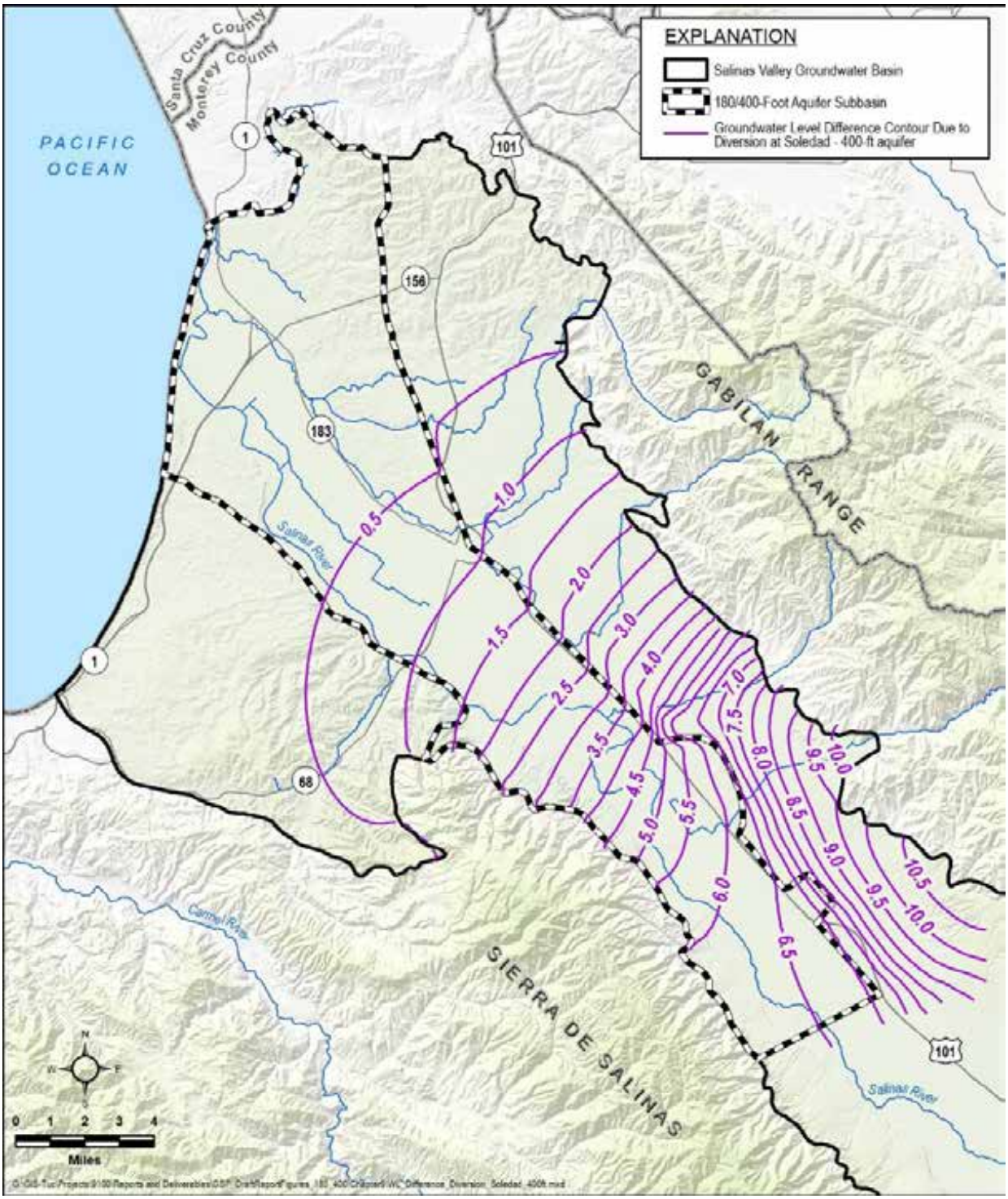


Figure 9-22: Estimated Groundwater Elevation Benefit in the 400-Foot Aquifer from the 11043 Diversion at Soledad

9.4.3.9.3 Circumstances for Implementation

The 11043 diversion project is a preferred project and will be implemented as soon are financially and legally possible. A number of land and access agreements will be needed before the project can be implemented.

9.4.3.9.4 Legal Authority

MCWRA, who holds the 11043 permit, is a member of the SVBGSA. Either MCWRA will use the permit as a member of the SVBGSA, or MCWRA will transfer the permit to SVBGSA.

The SVBGSA has the right to divert and store water once it has access to the 11043 Permit. Section 10726.2 (b) of the California Water Code provides GSAs the authority to, "Appropriate and acquire surface water or groundwater and surface water or groundwater rights, import surface water or groundwater into the agency, and conserve and store within or outside the agency" (CWC, 2014).

9.4.3.9.5 Implementation Schedule

The implementation schedule is presented on Figure 9-23. It is anticipated to take 9 years to implement.

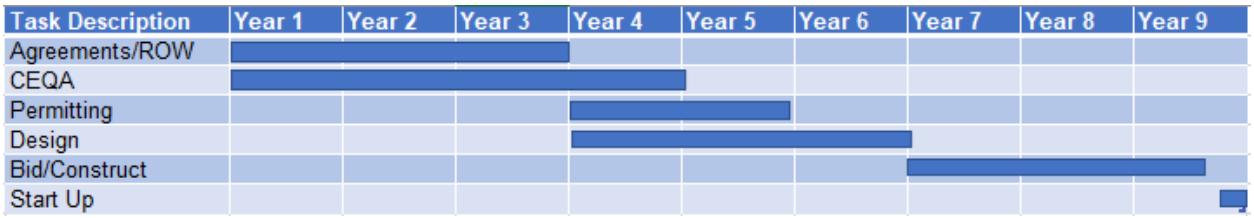


Figure 9-23. Implementation Schedule for 11043 Diversion at Soledad

9.4.3.9.6 Estimated Cost

The capital cost for the 11043 Diversion Facilities is estimated at $60,578,000. Annual O&M costs for the 8,000 AF project are anticipated to be approximately $5,050,000. The amortized cost of water for this project is estimated at $880/AF.

9.4.3.10 Preferred Project 9: SRDF Winter Flow Injection

Preferred Project 9 would divert winter flows from the Salinas River using the existing SRDF facilities and inject the water into the 180/400-Foot Aquifer Subbasin to maintain groundwater elevations, improve water quality, and prevent further seawater intrusion. An alternative to groundwater injection could be to treat the diverted water at the City of Salinas' Industrial Wastewater Treatment Facility. This treated water could be used for beneficial reuse that would reduce groundwater pumping. This project could benefit other subbasins, such as the Monterey

and Eastside subbasins by providing potable water to these subbasins for direct recharge and/or municipal potable use.

One potential constraint on this project is clarifying water rights and establishing reservoir operation rules that can take advantage of the water rights. The operation of the SRDF is subject to the environmental flow prescriptions outlined in the Biological Opinion issued by NOAA's National Marine Fisheries Service (NMFS) in 2007 and incorporated into MCWRA's water diversion permit 21089 (NMFS, 2007);

For diversions to occur, there must be adequate flow in the Salinas River and flows for fish migration must be satisfied. At the SRDF fish ladder bypass, flows are maintained at 45 cfs for migration when the lagoon sandbar is open to the ocean, and 15 cfs for migration when the lagoon sandbar is closed, and flow is routed to the Old Salinas River channel. A minimum flow of 2 cfs is maintained to the lagoon when SRDF irrigation diversions are occurring or aquifer conservation releases from Nacimiento and/or San Antonio reservoirs are being made to the Salinas River.

Under this alternative project, water would be diverted from the Salinas River at a maximum flow rate of 36 cfs. Water would then be pumped to an expanded surface water treatment plant where it would be chlorinated, filtered, and conveyed to new injection wells in the 180/400-foot Aquifer Subbasin. Likely increased volumes of sediment in the river water during the winter will possibly require additional filtration or higher levels of maintenance on the existing filtration system. If river levels are low (less than 5 feet), the existing inflatable dam would be needed to operate the diversion. If river levels are higher than 5 feet, the inflatable dam would not be required.

Winter extractions are assumed to yield flows of 36 cfs, or 16,000 gpm. New injection wells will include wells completed in both the 180- and 400- Foot Aquifers, back-flush facilities including back wash pumps and percolation basin for water disposal into the vadose zone, electrical and power distribution and motor control facilities. The existing CSIP supplementary wells will be evaluated and considered as injection wells, which could result in a cost savings for this project.

Based on an injection rate of 1,000 gpm per injection well, 16 new injection wells would be installed. The wells would be located to the east toward the City of Salinas where they would inject water into the 180/400-Foot Aquifer Subbasin.

9.4.3.10.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Groundwater elevation
- Groundwater storage

- Seawater intrusion
- Land subsidence

9.4.3.10.2 Expected Benefits and Evaluation of Benefits

The expected benefits were estimated assuming approximately 12,900 AF of water is available for winter recharge. Additional water could be available for recharge if water rights permit it. These estimates will be refined during preparation of the HCP.

Figure 9-24 shows the expected groundwater elevation benefit in the 180-Foot Aquifer from this project. Figure 9-25 shows the expected groundwater elevation benefit in the 400-Foot Aquifer from this project. Model results suggest that this project reduces seawater intrusion by approximately 1,600 AF/yr. on average.

Changes in groundwater elevation will be measured with the groundwater elevation monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between injecting winter streamflow in the Subbasin and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

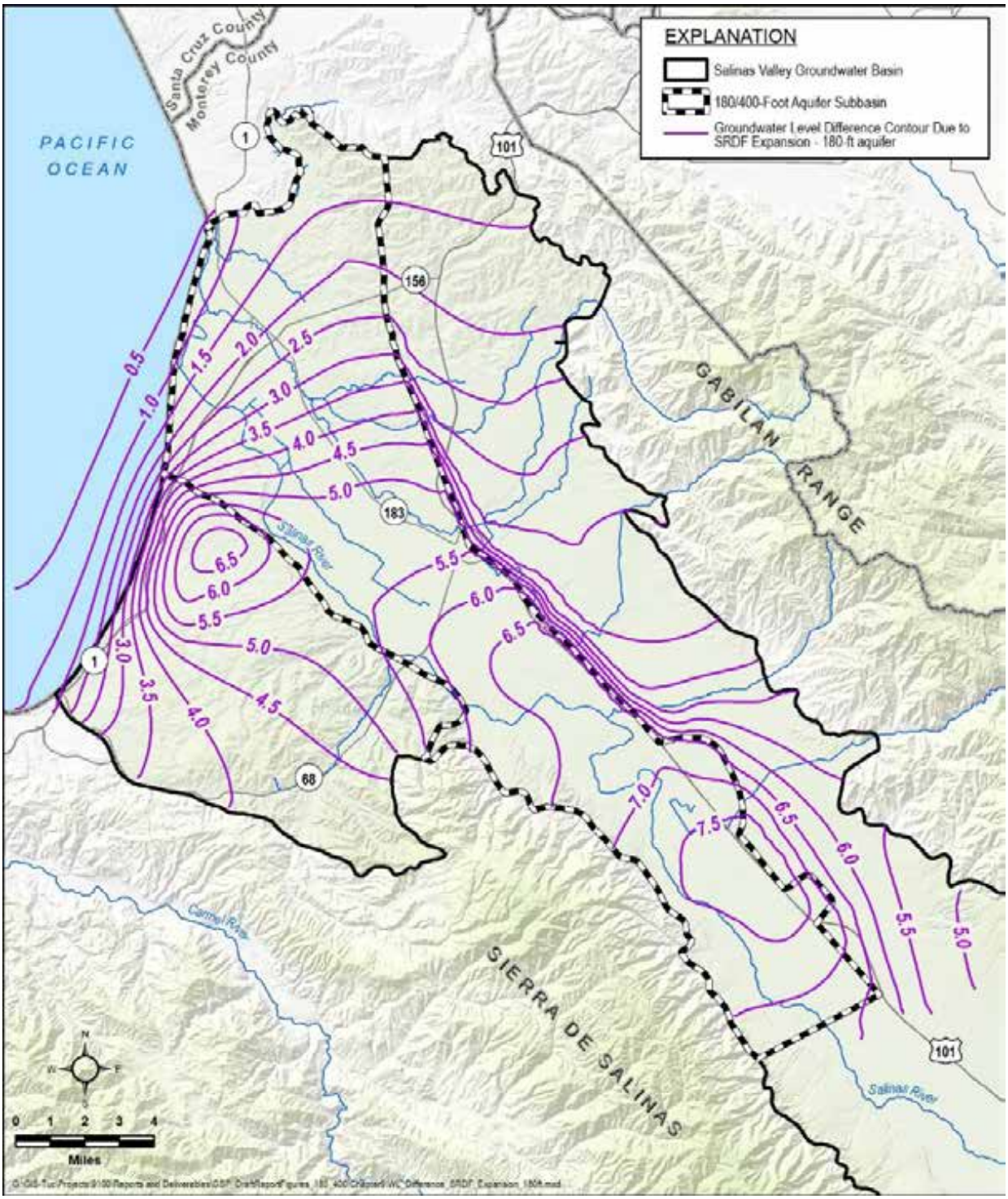


Figure 9-24: Estimated Groundwater Elevation Benefit in the 180-Foot Aquifer from the 11043 Diversion at Soledad

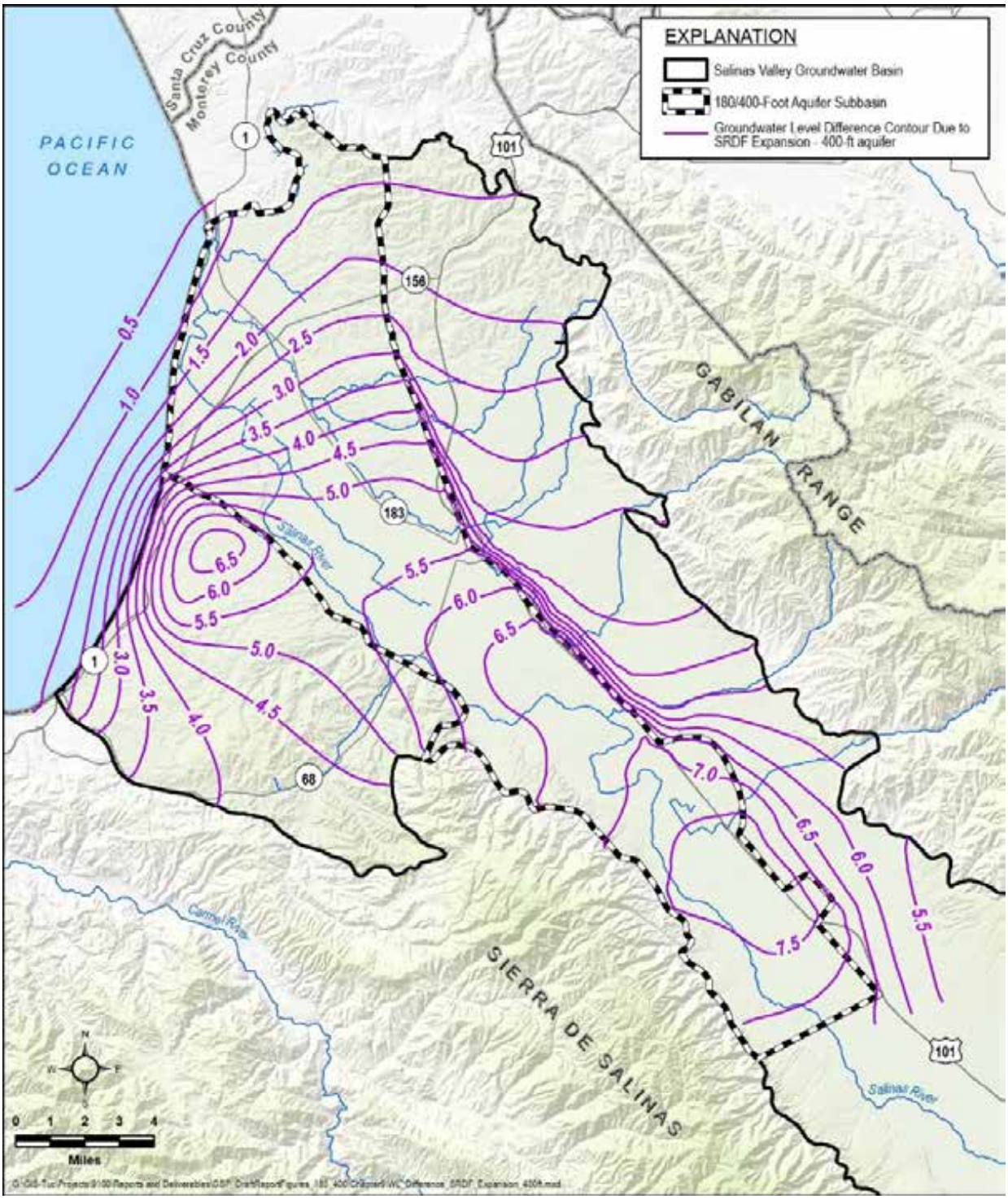


Figure 9-25: Estimated Groundwater Elevation Benefit in the 400-Foot Aquifer from the 11043 Diversion at Soledad

9.4.3.10.3 Circumstances for Implementation

Winter recharge will be implemented only if the existing water right permit is modified to allow for diversions between November and March. At this time, SVBGSA is not proposing to modify the volume of water being diverted.

This project will likely be subject to new flow restrictions and reservoir operations resulting from the planned HCP. This project will not proceed until the water rights and flow prescriptions from the HCP have been determined.

9.4.3.10.4 Legal Authority

The SVBGSA can acquire water for recharge under California Water Code section 10726.2 (b) which give the SVBGSA authority to "Appropriate and acquire surface water or groundwater …" as well as "the spreading, storing, retaining, or percolating into the soil of the waters for subsequent use" (CWC, 2014).

9.4.3.10.5 Implementation Schedule

The implementation schedule is presented on Figure 9-26. It is anticipated to take four years to implement which excludes any improvements performed under Preferred Project 5.

Figure 9-26. Implementation Schedule for Radial Collector Water Injection

9.4.3.10.6 Estimated Cost

Costs for the injection of winter flows from the expanded SRDF were estimated based upon using the existing SRDF facilities. The majority of the costs are for the construction of the injection wells. Capital costs are assumed to be $51,191,000 for construction of an injection well field consisting of 16 wells as well as construction of a 4-mile conveyance pipeline between the SRDF site and the injection well system. The cost of an expanded surface water treatment system for the SRDF expansion is not included in this estimate.

Annual O&M costs are estimated at $3,624,000 for the operation of the injection well field. Total annualized cost is $7,629,000. Based on a project yield of 12,900 AF/yr., the unit cost of water is $590/AF/yr.

9.4.4 Alternative Projects

The priority projects listed above, coupled with the management actions described in Section 9.3, might not lead to full sustainability in the 180/400-Foot Aquifer Subbasin. Four alternative projects are included in this GSP. These alternative projects supply additional water to the 180/400-Foot Aquifer Subbasin. Not all projects will necessarily be implemented by the SVBGSA. Projects will be implemented only if they are deemed cost effective or necessary to achieve sustainability.

One or more of these projects may be implemented based on future need and cost. The alternative projects are summarized in Table 9-3 and described below.

Table 9-3. Alternative Projects

Alternative Project #	Project Name	Water Supply	Project Type
1	Desalinate Water from the Seawater Barrier Extraction Wells	Brackish Groundwater	In Lieu Recharge
2	Recharge Local Runoff from Eastside Range	Stormwater	Direct Recharge
3	Winter Potable Reuse Water Injection	Recycled Water	Direct Recharge
4	Seasonal Water Storage in 180/400 Aquifer	Salinas River	In Lieu Recharge

9.4.4.1 Alternative Project 1: Desalinate Water from the Seawater Barrier Extraction Wells

This project would treat water extracted from the seawater intrusion barrier under Priority Project 6, and allow for local reuse. Local reuse could include providing municipal supply, providing agricultural supply, or reinjection in the 180-Foot Aquifer and 400-Foot Aquifer. The project relies upon the desalination of brackish water extracted from the 180/400-foot aquifer Subbasin to feed a treatment facility and discharge the treated water in injection wells east of the intrusion barrier.

The desalination treatment could be provided as a standalone plant or supply one of three proposed desalination plants in the region. The final decision on whether to implement this alternative project, and whether to desalinate the source water with a standalone plan or one of the three planned plants will depend on which of these alternatives is the most cost effective. The following plants are in various planning and design stages in the Monterey Bay Area:

- Monterey Peninsula Water Supply Project desalination plant, 6.4 mgd (7,100 AF/yr.)
- Deep Water Desalination Plant, 22 mgd (25,000 AF/yr.)
- People’s Water Supply Project desalination plant, 12 mgd (13,400 AF/yr.)

Two of the desalination plants are being considered at Moss Landing: DeepWater Desal Project and the People's Desalination Project. These two plants are currently envisioned to be able to receive influent source water flows of 49 mgd (55,000 AF/yr.) in the case of DeepWater Desal and 30 mgd (33,600 AF/yr.) for the People's Desalination Project. Construction of the Cal-Am MPWSP desalination plant adjacent to M1W's RTP is anticipated to commence in 2020.

Depending on the desalination plant selected, the source water pipeline would consist of approximately 11 miles of source water pipeline to convey up to 22,000 gpm (32 mgd or 35,500 AF/yr.) of flow to the plant. The pipeline would range from 18" to 36" in diameter.

Assuming a 42% recovery efficiency, 12,700 gpm of brine would need to be sent to an ocean outfall. For costing purposes, SVBGSA assumed the 9,200 gpm of treated water would be sent for injection east of the seawater intrusion barrier. An additional 9 miles of 24" pipeline would be needed to convey this desalinated water to an injection well field or recharge basin.

9.4.4.1.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Groundwater elevation measurable objective
- Groundwater storage measurable objective
- Seawater intrusion measurable objectives
- Land subsidence measurable objectives

9.4.4.1.2 Expected Benefits and Evaluation of Benefits

The desalination plants may provide up to approximately 15,000 AF of water for both in-lieu and direct recharge to the Subbasin. This project could benefit other subbasins, such as the Monterey and Eastside subbasins by providing potable water to these subbasins for both in-lieu and direct recharge.

Reductions in groundwater pumping will be measured directly and recorded in the water charges framework database. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between providing desalinated water to the Subbasin and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.4.4.1.3 Circumstances for Implementation

The desalination alternative project is one of four alternative projects that may provide additional water to the Subbasin. The project will only be implemented after all four alternative projects have been refined. The most cost-effective project of the four will be selected to supply additional water to the Subbasin.

Using an existing or planned plant for desalination requires the plant be permitted and fully designed. The desalination alternatives using existing plants will not proceed until one or more of the plants have been fully permitted for construction.

9.4.4.1.4 Legal Authority

Water used for desalination would be pumped from the seawater intrusion barrier wells and can be used by SVBGSA as long as the water is not exported out of the basin.

9.4.4.1.5 Implementation Schedule

The implementation schedule is presented on Figure 9-27. It is anticipated to take eight years to implement. The schedule is highly contingent upon whether a completely new desalination plant is conceived or if an existing plant already in the planning stages is elected.

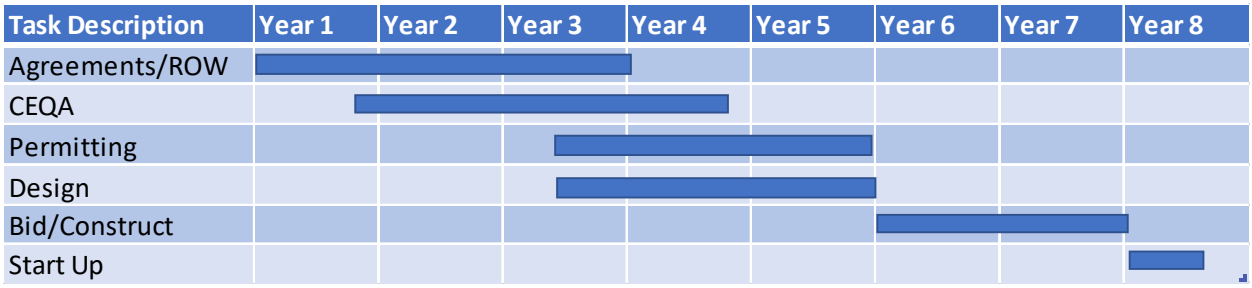


Figure 9-27. Implementation Schedule for Desalination of Extraction Barrier Seawater

9.4.4.1.6 Estimated Cost

Estimated costs for desalination depend on the facility used to desalinate the extracted water. For comparison purposes, a high-level estimate was developed for a 13 mgd facility. Capital costs are assumed to be $182,000,000 based on a construction unit cost of $14 million/mgd for desalination plants and associated intake/outfall facilities, a unit cost consistent with other desalination plant projects evaluated by WaterReuse (Kennedy-Jenks, 2014). As a point of comparison, the 6.4-mgd Cal-Am MPWSP project has an estimated capital construction cost of $226,900 equivalent to approximately $35 million/mgd. The total capital costs with the markups and the addition of the source water pipelines from the extraction barrier well field and desalinated water pump station and pipelines to a groundwater recharge site to the east, would be $341,472,000.

Annual O&M costs are estimated at $9,890,000 for the desalination plant and distribution of desalinated water. Based on a project yield of 15,000 AF/yr. of desalinated water, the unit cost of water is $2,440/AF/yr. This is a very rough estimate and will be refined in the first three years on GSP implementation.

9.4.4.2 Alternate Project 2: Recharge Local Runoff from Eastside Range

This project recharges local runoff from the Gabilan Range and diverts it to groundwater recharge basins before it reaches the Salinas River. This project will require additional legal and engineering analysis to evaluate water rights and actual available water supply from each of the watersheds. The project assumes that the stormwater is not being diverted upstream, however, many of the mountain ranges have diversion operations already occurring upstream in the watershed. Rain gauges and studies will be required to determine the true estimate of water available from each watershed.

This project can be implemented in two forms: on-farm recharge and stream diversion recharge. On farm recharge would be similar to the program initiated in Pajaro Valley that compensates landowners for retaining and recharging stormwater before it reaches any identified waterway. This program likely leads to less benefit but is also less expensive to develop.

The diversion recharge alternative diverts water from the major tributaries in the Eastside Subbasin to groundwater recharge basins. Figure 9-28 shows the watersheds in the Gabilan Range adjacent to the Eastside Subbasin. Figure 9-28 also provides an approximate volume of water, in AF, available during a 2-, 5-, 10-, and 25-year storm event for each of the watersheds. A series of recharge basins and piping network will be required. The system will operate by gravity. For costing purposes, it is estimated that approximately 10,000 feet of pipeline would be required in addition to what is constructed in Preferred Projects 7 and 8. In addition, 6 to 8 recharge basins at approximately 50 to 100 acres each will be required to infiltrate stormwater.

9.4.4.2.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Groundwater elevation measurable objective
- Groundwater storage measurable objective
- Land subsidence measurable objectives
- Groundwater quality measurable objective

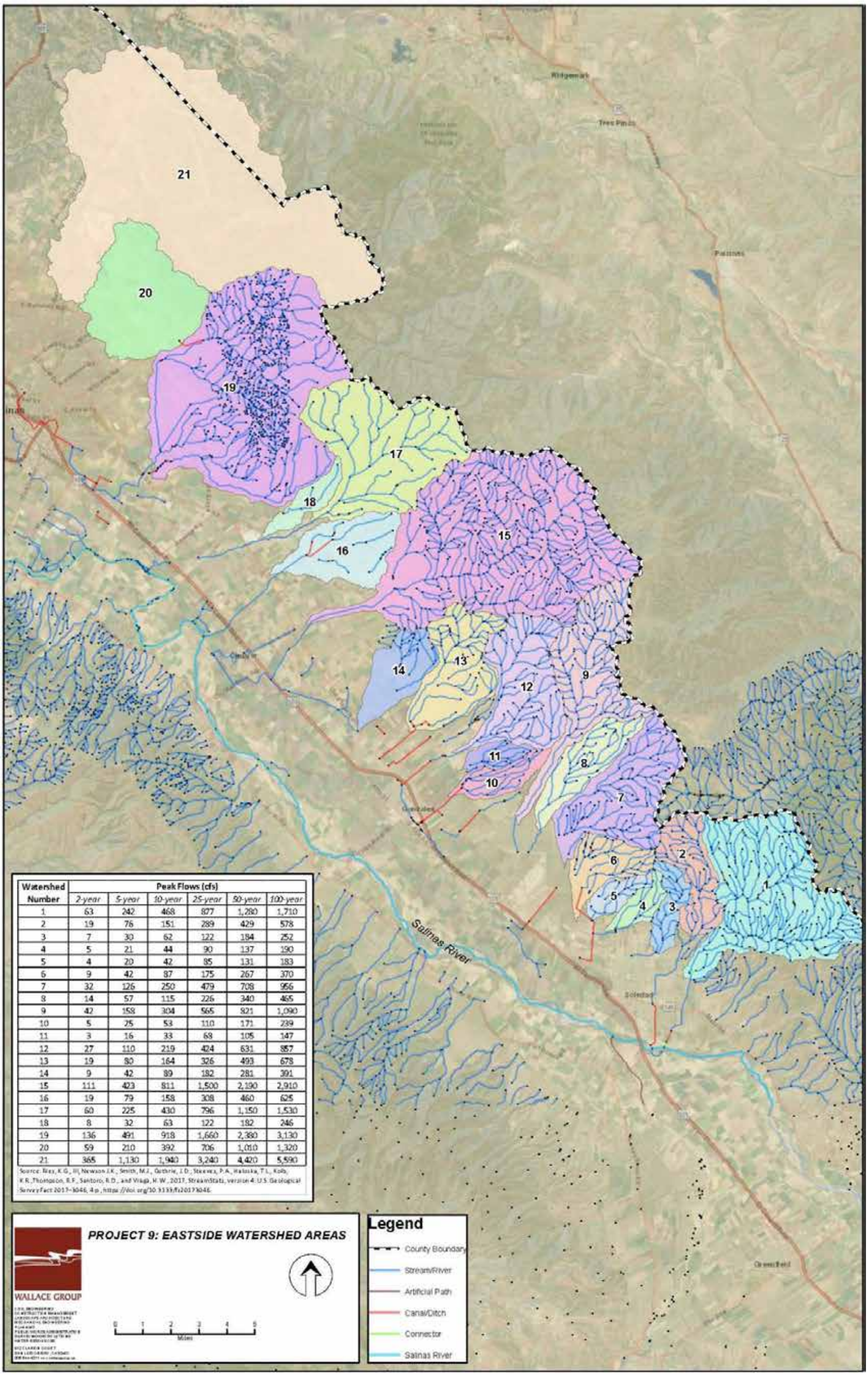
9.4.4.2.2 Expected Benefits and Evaluation of Benefits

There is no direct benefit from this project on the 180/400-Foot Aquifer Subbasin. This project is included here as part of the complete Valley-wide groundwater management program. The primary expected benefit of Alternative Project 2 is to provide an alternative water supply source to recharge the Eastside Subbasin and improve water quality in the Eastside Subbasin.

Reductions in groundwater pumping will be measured directly and recorded in the water charges framework database. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between the recharging local runoff and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.4.4.2.3 Circumstances for Implementation

The local recharge project is an alternative project and will be implemented only if additional water is required to reach sustainability. A number of agreements and rights must be secured before the project is implemented. Primarily, a more formal cost/benefit analysis must be completed to determine if the on-farm recharge or stream diversion recharge options are preferable. If on-farm recharge is preferable, an incentive program must be developed that works with the proposed water charges framework. If the stream diversion option is preferable, water diversion rights must be secured, which may take a significant number of years.



Watershed Number	Peak Flows (cfs)					
	2-year	5-year	10-year	25-year	50-year	100-year
1	63	242	468	877	1,280	1,710
2	19	76	151	289	429	578
3	7	30	62	122	184	252
4	5	21	44	90	137	190
5	4	20	42	85	131	183
6	9	42	87	175	267	370
7	32	126	250	479	708	966
8	14	57	115	226	340	465
9	42	158	304	565	821	1,090
10	5	25	53	110	171	239
11	3	16	33	68	105	147
12	27	110	219	424	631	857
13	19	80	164	326	493	678
14	9	42	89	182	281	391
15	111	423	811	1,500	2,190	2,910
16	19	79	158	308	460	625
17	60	225	430	796	1,150	1,530
18	8	32	63	122	182	246
19	136	491	918	1,660	2,380	3,130
20	59	210	392	706	1,010	1,320
21	365	1,130	1,940	3,240	4,420	5,590

Source: Ries, K.G., III, Newson J.K., Smith, M.J., Guthrie, J.D., Steeves, P.A., Haluska, T.L., Kolb, K.R., Thompson, R.F., Santoro, R.D., and Weaga, H.W., 2017, StreamStats, version 4: U.S. Geological Survey Fact 2017-3046, 4 p., https://doi.org/10.3133/fs20173046.

Figure 9-28. Eastside Watersheds

Table 9-4. Estimated Eastside Watershed Runoff

Storm	Runoff (AF)	Storm	Runoff (AF)	Storm	Runoff (AF)
Watershed 1, 9600 Acres		Watershed 8, 2368 Acres		Watershed 15, 17536 Acres	
2-Year Storm	136	2-Year Storm	33.5	2-Year Storm	449.9
5-Year Storm	294.3	5-Year Storm	72.6	5-Year Storm	1,026.60
10-Year Storm	463.9	10-Year Storm	114.4	10-Year Storm	1,591.80
25-Year Storm	752.7	25-Year Storm	185.7	25-Year Storm	2,445.90
Watershed 2, 2816 Acres		Watershed 9, 5376 Acres		Watershed 16, 3264 Acres	
2-Year Storm	39.9	2-Year Storm	76.2	2-Year Storm	83.7
5-Year Storm	86.3	5-Year Storm	164.8	5-Year Storm	191.3
10-Year Storm	136.1	10-Year Storm	259.8	10-Year Storm	296.3
25-Year Storm	220.8	25-Year Storm	421.5	25-Year Storm	455.3
Watershed 3, 1152 Acres		Watershed 10, 1280 Acres		Watershed 17, 8000 Acres	
2-Year Storm	16.3	2-Year Storm	17.9	2-Year Storm	204.1
5-Year Storm	35.3	5-Year Storm	39.2	5-Year Storm	468.8
10-Year Storm	55.7	10-Year Storm	61.9	10-Year Storm	726.2
25-Year Storm	90.3	25-Year Storm	100.4	25-Year Storm	1,115.80
Watershed 4, 896 Acres		Watershed 11, 704 Acres		Watershed 18, 1024 Acres	
2-Year Storm	12.7	2-Year Storm	9.9	2-Year Storm	26.1
5-Year Storm	27.5	5-Year Storm	21.6	5-Year Storm	60
10-Year Storm	43.3	10-Year Storm	34	10-Year Storm	93
25-Year Storm	70.3	25-Year Storm	55.2	25-Year Storm	142.8
Watershed 5, 896 Acres		Watershed 12, 4672 Acres		Watershed 19, 17344 Acres	
2-Year Storm	12.7	2-Year Storm	66.2	2-Year Storm	443.2
5-Year Storm	27.5	5-Year Storm	143.2	5-Year Storm	1,016.40
10-Year Storm	43.3	10-Year Storm	225.8	10-Year Storm	1,574.40
25-Year Storm	70.3	25-Year Storm	366.3	25-Year Storm	2,419.10
Watershed 6, 1984 Acres		Watershed 13, 3904 Acres		Watershed 20, 6016 Acres	
2-Year Storm	12.7	2-Year Storm	55.1	2-Year Storm	199.1
5-Year Storm	60.8	5-Year Storm	119.7	5-Year Storm	386.3
10-Year Storm	95.9	10-Year Storm	188.7	10-Year Storm	565.2
25-Year Storm	155.6	25-Year Storm	306.1	25-Year Storm	828.5
Watershed 7, 5120 Acres		Watershed 14, 2240 Acres		Watershed 21, 25664 Acres	
2-Year Storm	72.5	2-Year Storm	31.3	2-Year Storm	854
5-Year Storm	156.9	5-Year Storm	68.7	5-Year Storm	1,647.80
10-Year Storm	247.4	10-Year Storm	108.2	10-Year Storm	2,411.00
25-Year Storm	401.4	25-Year Storm	175.6	25-Year Storm	3,534.20

9.4.4.2.4 Legal Authority

The SVBGSA has the right to divert and store water once it has access to the appropriate water rights. Water rights are not needed to infiltrate on-farm runoff. Section 10726.2 (b) of the California Water Code provides GSAs the authority to, “Appropriate and acquire surface water or groundwater and surface water or groundwater rights, import surface water or groundwater into the agency, and conserve and store within or outside the agency” (CWC, 2014).

9.4.4.2.5 Implementation Schedule

The implementation schedule for the stream diversion option is presented on Figure 9-29. It is anticipated to take 11 years to implement. The on-farm recharge project may take less time to implement.

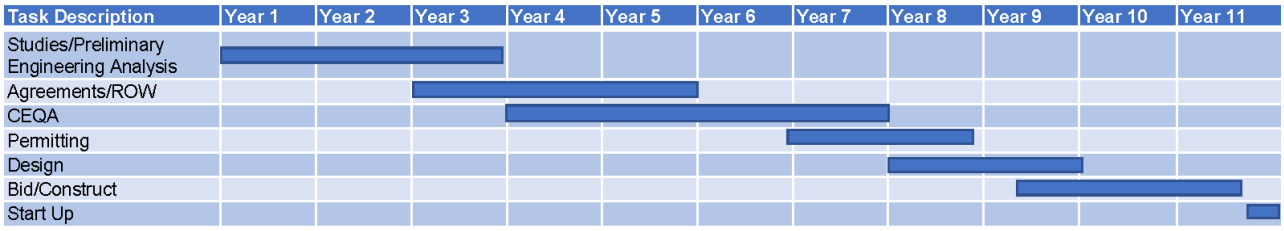


Figure 9-29. Implementation Schedule for Local Runoff with Stream Diversion Project

9.4.4.2.6 Estimated Cost

Estimated capital cost for the Stream Diversion option of the Recharge Local Runoff from Eastside project is estimated at $60,340,800. Annual O&M costs are anticipated to be approximately $1,261,000. The amortized cost of water for this project is estimated at $1,709/AF. The estimated cost for the on-farm recharge option is likely less but must still be developed.

9.4.4.3 Alternative Project 3: Winter Potable Reuse Water Injection

This project would treat additional secondary wastewater effluent through an expanded Advanced Water Purification Facility (AWPF) at M1W’s RTP and inject it into the 180/400-foot aquifer Subbasin for maintenance of groundwater elevations, improvement of water quality, and prevention of further seawater intrusion. This alternative project assumes the extra AWPF capacity planned under the Expanded Pure Water Monterey (PWM) project is built, but that Cal-Am does not require the additional purified recycled water. Instead, the water could be provided to MCWRA for groundwater recharge in the Salinas Valley Groundwater Basin.

Pure Water Monterey Groundwater Replenishment Project is under construction and a Supplemental EIR for an expanded PWM Project is being developed. This supplemental EIR covers an expansion which would raise the maximum production rate at the AWPF to 7.6 mgd.

Under this expansion, the project would provide up to 5,750 AF/yr. for groundwater recharge in the Seaside Basin, 200 AF/yr. for drought reserve, and 600 AF/yr. for MCWD irrigation, for a total production of 6,550 AF/yr.

The proposed Expanded PWM project also includes associated conveyance, injection and extraction facilities. Because the project depends on M1W's use of secondary wastewater effluent as a source of feed water to the AWPF, there will be a reduction in discharge of secondary effluent to Monterey Bay

If Cal-Am does not take the AWPF water, it could be available for injection into the 180/ 400-Foot Aquifer Subbasin, or other subbasins in the Salinas Valley Groundwater Basin. In particular, MCWD is currently conducting a feasibility study on injecting purified recycled water into the Monterey Subbasin. The project proposes using purified recycled water available to MCWD from the AWPF, some of which is available year-round per the district's agreement with M1W, for indirect potable reuse and prevention of further seawater intrusion. This project is consistent with, and can readily be implemented in conjunction with, the winter potable reuse project.

This project would involve the treatment of an additional 2.6 mgd at the AWPF. The project assumes that M1W installs the additional facilities needed at the AWPF, including additional treatment and pumping equipment, chemical storage, pipelines, and appurtenances within the existing 3.5-acre existing building area, that are needed to achieve a peak production rate of 7.6 mgd.

Assuming production of the purified recycled water during winter months only (November through March), the 2,250 AF/yr. would be delivered to the 180/400-Foot Aquifer Sub-Basin through a 16" diameter, 6-mile long pipeline. Water would be injected through four new injection wells west of the City of Salinas; two back-up injection wells would also be installed. Associated injection well facilities would include backwash well pumps, backwash percolation basins, electrical power supply, and motor controls.

9.4.4.3.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Groundwater elevation measurable objective
- Groundwater storage measurable objective
- Seawater intrusion measurable objectives
- Land subsidence measurable objectives

9.4.4.3.2 Expected Benefits and Evaluation of Benefits

The AWPF may provide up to approximately 2,200 AF of water for direct recharge to the Subbasin. This project could benefit other subbasins, such as the Monterey and Eastside subbasins by potentially providing water to these subbasins for direct recharge.

Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between providing winter advanced treated water to the Subbasin and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.4.4.3.3 Circumstances for Implementation

The recharge of winter AWPF water project is one of four alternative projects that may provide additional water to the Subbasin. The project will only be implemented after all four alternative projects have been refined. If needed, the most cost-effective project of the four will be selected to supply additional water to the Subbasin.

This project can only be implemented after the AWPF is expanded, and only if Cal-Am is not injecting the water into the Seaside Basin. This project will not proceed until all of these circumstances have been met.

9.4.4.3.4 Legal Authority

The SVBGSA can acquire water for recharge under California Water Code section 10726.2 (b) which give the SVBGSA authority to "Appropriate and acquire surface water or groundwater …" as well as "the spreading, storing, retaining, or percolating into the soil of the waters for subsequent use" (CWC, 2014). All AWPF recharge will be done in accordance with the Division of Drinking Water's recycled water regulations.

9.4.4.3.5 Implementation Schedule

The implementation schedule is presented on Figure 9-30. It is anticipated to take between three and four years to implement.

Figure 9-30. Implementation Schedule for Winter Potable Reuse Water Injection

9.4.4.3.6 Estimated Cost

Costs for the injection of winter flows from the expanded AWPF were estimated based upon an anticipated 2,250 AF/yr. available for injection during the wet weather season (November through March). Capital costs are assumed to be $35,300,000 for construction of an injection well field consisting of six wells as well as construction of a 6-mile conveyance pipeline between the AWPF site and the injection well field.

Annual O&M costs are estimated at $500,000 for the operation of the injection well field. Based on a project yield of 2,250 AF/yr., the unit cost of water is $1,450/AF. The cost of water treatment will likely increase significantly if AWPF upgrades are included.

9.4.4.4 Alternative Project 4: Use the Southern Portion of the 180/400-Foot Aquifer Subbasin for Seasonal Storage

Under Alternative Project 4, conventional groundwater extraction well facilities would be constructed in the southern portion of the 180/400-Foot Aquifer Subbasin to extract seasonally stored groundwater during peak irrigation season for supply and environmental needs. Due to the laterally extensive presence of the Salinas Valley Aquitard within much of the 180/400-Foot Aquifer Subbasin, the ability of the Salinas River to effectively recharge the most productive aquifer zones for cyclic storage and extraction is limited. However, the Salinas Valley Aquitard is less prominent farther south, eventually pinching out near Chualar. This project relies on the ability to place extraction wells in an area of the southern 180/400-Foot Aquifer Subbasin where the Salinas Valley Aquitard is thin to missing, thereby allowing the Salinas River to recharge at least some of the more productive aquifer zones in the winter, and extracting that water for delivery in the summer.

This project could be most beneficial for supplementing flows to the existing Salinas River Diversion Facility (SRDF) at times when instream flows are insufficient to meet SRDF diversion and/or environmental flow requirements. This project could also be combined with various conveyance schemes to deliver the produced water to groundwater deficit areas in other parts of the 180/400-foot aquifer and/or Eastside subbasins to offset coastal pumping and seawater intrusion.

The project entails construction of traditional vertical production wells to extract water. The water would either be discharged to the Salinas River via a short pipeline, or to a centrally located sump, from which the water would be discharged to a coastal distribution network.

The extraction wells will only screen the 180-Foot Aquifer; accordingly, total well depths would likely not exceed 350 feet below ground surface (bgs). Three extraction wells would be installed, two as primary wells and one as a back-up well. Ideally, the wellfield would be located in close proximity to the Salinas River in order to minimize costs associated with water conveyance back to the river channel during peak irrigation periods.

For costing purposes, the extraction wells are capable of production rates up to 2,000 gpm. With two primary wells extracting water during a typical six-month irrigation season, approximately 3,000 AF would be available as supplemental water. This water, once extracted, would create a similar volume of available storage space within the aquifer system. Well spacing could be such that the seasonal drawdown would be spread over about one mile along the river.

On average, this aquifer storage volume would be recharged by percolating Salinas River flows during a typical winter high flow season. Assuming a five-month recharge period, this would equate to an average aquifer recharge rate of about 10 cfs over the 1-mile drawdown zone.

9.4.4.4.1 Relevant Measurable Objectives

Relevant measurable objectives benefiting from this project include:

- Groundwater elevation measurable objective
- Groundwater storage measurable objective
- Seawater intrusion measurable objectives
- Land subsidence measurable objectives

9.4.4.4.2 Expected Benefits and Evaluation of Benefits

The primary anticipated benefit is up to 3,000 AF of water available to the Subbasin for direct delivery and in-lieu recharge. This water could both offset coastal pumping and reduce seawater intrusion.

Reductions in groundwater pumping will be measured directly and recorded in the water charges framework database. Changes in groundwater elevation will be measured with the groundwater level monitoring program detailed in Chapter 7. Subsidence will be measured using the DWR provided subsidence maps detailed in Chapter 7. Seawater intrusion will be measured using MCWRA's existing seawater intrusion mapping approach. A direct correlation between seasonal storage of water in the upper reaches of the Subbasin and changes in groundwater elevations,

subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.

9.4.4.4.3 Circumstances for Implementation

Seasonal storage of Salinas River flows is one of four alternative projects that may provide additional water to the Subbasin. The project will only be implemented after all four alternative projects have been refined. If needed, the most cost-effective project of the four will be selected to supply additional water to the Subbasin.

Significant hydrogeologic studies are necessary to substantiate the Salinas River recharge rates in the area south of Chualar to make sure that any groundwater extracted during the summer will be recharged by winter flows. Additionally, agreements will be necessary with individual landowners to put extraction wells on their property and operate the extraction wells for the benefit of the Valley.

9.4.4.4.4 Legal Authority

The SVBGSA can acquire water for recharge under California Water Code section 10726.2 (b) which give the SVBGSA authority to "Appropriate and acquire surface water or groundwater …" as well as "the spreading, storing, retaining, or percolating into the soil of the waters for subsequent use" (CWC, 2014).

9.4.4.4.5 Implementation Schedule

The implementation schedule is presented on Figure 9-31. It is anticipated to take approximately 5 years to implement.

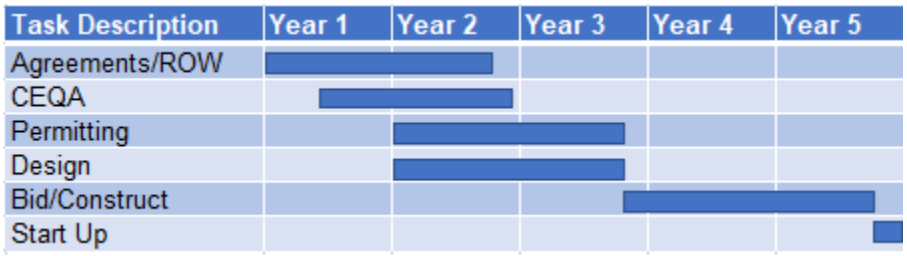


Figure 9-31. Implementation Schedule for Seasonal Storage in the Upper 180/400-Foot Aquifer Subbasin

9.4.4.4.6 Estimated Cost

Estimated capital costs include well construction, well pumps and motors, wellhead piping infrastructure, and land access. Estimated capital costs do not include conveyance infrastructure for direct discharge to the river channel or to a coastal distribution network, contingency or administrative costs. Estimated capital costs are $7,845,000. Estimated annual O&M costs are

$723,000. These costs do not include water treatment. Based on a project yield of 3,000 AF/yr. of extracted water, the amortized cost of water is $370/AF.

9.4.5 General Project Provisions

Many of the priority and alternative projects listed above are subject to similar requirements. The general provisions that are applicable to many or all projects include certain permitting and regulatory requirements, the methodology for public notice, and the legal authority to initiate and complete the projects.

9.4.5.1 Summary of permitting and regulatory processes

Projects of a magnitude capable of having a demonstrable impact on the environment will require a CEQA environmental review process. Projects will require either an Environmental Impact Report, Negative Declaration, or a Mitigated Negative Declaration. Additionally, any project that coordinates with federal facilities or agencies may require NEPA documentation.

There will be a number of local, county and state permits, right of ways, and easements required depending on pipeline alignments, stream crossings, and project type. Projects with wells will require a well construction permit.

9.4.5.2 Public Noticing

Before any project initiates construction, it will go through a public notice process to ensure that all groundwater users and other stakeholders have ample opportunity to comment on projects before they are built. The general steps in the public notice process will include the following:

- SVBGSA staff will bring an assessment of the need for the project to the SVBGSA Board in a publicly noticed meeting. This assessment will include:
    - A description of the undesirable result(s) that may occur if action is not taken
    - A description of the proposed project
    - An estimated cost and schedule for the proposed project
    - Any alternatives to the proposed project
- The SVBGSA Board will notice stakeholders in the area of the proposed project and allow at least 30 days for public response.
- After the 30-day public response period, the SVBGSA Board will vote whether or not to approve design and construction of the project.

In addition to the public noticing detailed above, all projects will follow the public noticing requirements required by CEQA.

9.5 Other Groundwater Management Activities

Although not specifically funded or managed by this GSP, a number of associated groundwater management activities will be promoted and encouraged by the SVBGSA as part of general good groundwater management practices.

9.5.1 Continue Urban and Rural Residential Conservation

Existing water conservation measures should be continued, and new water conservation measures promoted for residential users. Conservation measures may include the use of low flow toilet fixtures, or laundry-to-landscape greywater reuse systems. Conservation projects can reduce demand for groundwater pumping, thereby acting as in-lieu recharge.

9.5.2 Promote Stormwater Capture

Stormwater and dry weather runoff capture projects, including Low Impact Development (LID) standards for new or retrofitted construction, should be prioritized and implemented. The Monterey Stormwater Resource Plan (SWRP) outlines an implementation strategy to ensure valuable, high-priority projects with multiple benefits (Hunt, et al., 2019). While not easily quantified and therefore not included as projects in this document, stormwater capture projects may be worthwhile and benefit the basin.

9.5.3 Support Well Destruction Policies

Properly destroying unused wells in accordance with local and state regulations prevents the migration of poor-quality groundwater between aquifers. While well destruction does not directly address the sustainable management criteria included in this GSP, controlling the migration of poor-quality groundwater allows more efficient use of existing resources.

9.5.4 Watershed Protection and Management

Watershed restoration and management can improve stormwater recharge into the groundwater basin. While not easily quantified and therefore not included as projects in this document, watershed management activities may be worthwhile and benefit the basin.

9.6 Mitigation of Overdraft

The water charges framework is specifically designed to promote pumping reductions. Should adequate pumping reductions not be achieved to mitigate all overdraft, funds collected through

the water charges framework will support recharge of imported water, either through direct recharge or in-lieu means. Therefore, the water charges framework in association with the projects and management actions listed in this chapter will mitigate overdraft through a combination of pumping reduction and enhanced recharge.

The historical Subbasin overdraft estimated in Chapter 6 is 10,900 AF/yr.; the projected 2030 overdraft is 8,100 AF/yr.; and the projected 2070 overdraft is 8,600 AF/yr. This GSP aims to mitigate 8,600 AF/yr. as the long-term future overdraft. Overdraft can be mitigated by either reducing pumping or recharging the basin, either through direct or in-lieu means, with additional water supplies. The priority projects include more than ample supplies to mitigate existing overdraft, as presented in Table 9-5.

Table 9-5. Total Potential Water Available for Mitigating Overdraft

Project	Potential Yield (AF/yr.)
Invasive Species Eradication	6,000
Optimize CSIP	5,500
Modify Monterey One Water Plant	1,100
Expand CSIP Area	9,900
Maximize Existing SRDF (facilitates achieving yields identified in other projects)	0
SRDF Winter Flow Injection	17,700
Total	40,200

As noted in Chapter 6, mitigation of overdraft is not sufficient to reach sustainability because balancing the water budget will not prevent future seawater intrusion. The amount of water needed to mitigate seawater intrusion depends on the approach taken.

10 GROUNDWATER SUSTAINABILITY PLAN IMPLEMENTATION

This chapter describes how the GSP for the 180/400-Foot Aquifer Subbasin will be implemented. The chapter serves as a roadmap for addressing all of the activities needed for GSP implementation between 2020 and 2040 but focuses on the activities between 2020 and 2025.

Implementing this GSP will require the following formative activities, each of which is detailed in a subsequent subsection:

- Monitoring and reporting groundwater data
- Refining and implementing the groundwater charges framework
- Addressing identified data gaps
- Expanding and improving the existing monitoring networks
- Updating the data management system
- Reviewing and implementing the SVIHM
- Refining and implementing projects and management actions

The implementation plan in this chapter is based on our current understanding of Subbasin conditions and our current assessment of the projects and management actions described in Chapter 9. Our understanding of the Subbasin's conditions and the details of the projects and actions will evolve over time based on future data collection, model development, and input from Subbasin stakeholders.

10.1 Implementation Activity 1: Monitoring, Reporting, and Outreach

Primary functions of this GSP's implementation during the first few years include the monitoring, evaluating, and reporting of sustainability conditions. The SVBGSA will hire consultants, negotiate agreements with agencies, and/or hire staff to implement the monitoring and reporting functions.

10.1.1 Monitoring

Monitoring of the six sustainability criteria will be initiated immediately upon adoption of the GSP. Most monitoring relies on existing monitoring programs, and therefore there is no need to immediately initiate new monitoring programs. The SVBGSA will direct the monitoring programs outlined in Chapter 7 to track Subbasin conditions related to the six applicable sustainability indicators. Data from the monitoring programs will be routinely evaluated to ensure progress is being made toward sustainability, or to identify whether undesirable results are occurring. Data will be maintained in the Data Management System. Data from the monitoring program will be used by the SVBGSA to guide decisions on projects and management actions and to prepare annual reports to Subbasin stakeholders and DWR.

10.1.1.1 Groundwater Elevation Monitoring

Groundwater elevation monitoring data are being collected by MCWRA under the statewide CASGEM program. This program will be expanded, as detailed in Section 10.4.1. The CASGEM system will be replaced by the SGMA groundwater elevation monitoring program after GSP submission. Groundwater monitoring will continue to be conducted by MCWRA, and SVBGSA will conduct mid-year tracking of the data collection and annually download the data, prepare summary tables and figures, and compare the data to sustainability goals.

10.1.1.2 Groundwater Storage Monitoring

Groundwater pumping data are currently collected by MCWRA. This program will likely be expanded, as detailed in Section 10.4.2. SVBGSA will annually download MCWRA's groundwater pumping data, prepare summary tables and figures, and compare the data to sustainability goals.

10.1.1.3 Seawater Intrusion Monitoring

Seawater intrusion data are currently collected by MCWRA. This program will likely be expanded, as detailed in Section 10.4.3. SVBGSA will annually download MCWRA's seawater intrusion data and maps and compare the data and maps to sustainability goals.

10.1.1.4 Groundwater Quality Monitoring

Groundwater quality monitoring data collection will be tracked and reviewed mid-year, and will be compiled annually, analyzed, managed, and presented in the following ways:

- Download from public databases
- Check and verify data then upload data to the Data Management System
- Prepare data summary tables and figures
- Compare data to Sustainable Management Criteria at RMS
- Analyze impacts of projects and actions

Monitoring results will be included in the annual reports to DWR, as well as summarized for trends in the 5-year GSP Update report.

10.1.1.5 Land Subsidence Monitoring

SVBGSA will use InSAR data provided by DWR to assess land subsidence. InSAR data will be managed in the following way:

- InSAR data will be downloaded from the DWR website annually

- InSAR data will checked and verified for completeness and reasonableness
- Data will be used to develop annual subsidence maps, similar to maps shown in Chapter 5
- The annual subsidence maps will be compared to sustainable management criteria

10.1.1.6 Interconnected Surface Water Monitoring

Adequate monitoring sites for interconnected surface water monitoring is identified as a data gap in Chapter 7. The monitoring network for interconnected surface water monitoring will be enhanced, as described in Section 10.4.6. The enhanced monitoring network will be incorporated into MCWRA's existing monitoring system, which will replace the CASGEM system after GSP submission. After the enhanced monitoring network is established, SVBGSA will annually download the interconnected surface water data from the CASGEM system, prepare summary tables and figures, and compare the data to sustainability goals.

10.1.2 Reporting

SGMA regulations require that the reports comply with DWR submittal requirements that will be published by DWR, and that all transmittals are signed by an authorized party. Data will be organized and made available to the public to document Subbasin conditions relative to the SMC in Chapter 8. At a minimum, the following reports will be prepared.

- **Annual Reports.** In accordance with SGMA Regulation §356.2, annual reports will be submitted to DWR starting on April 1, 2020. The purpose of the report is to provide monitoring and total groundwater use data to DWR, compare monitoring data to the sustainable management criteria, and adaptively manage actions and projects implemented to achieve sustainability. Annual reports will be available to Subbasin stakeholders.
- **Five-Year GSP Assessment Reports.** Five-year GSP assessment reports will be provided to DWR starting in 2025. The SVBGSA shall evaluate the GSP at least every 5 years to assess whether it is achieving the sustainability goal in the Subbasin. The assessment will include a description of significant new information that has been made available since GSP adoption or amendment and whether the new information or understanding warrants changes to any aspect of the plan.
- **GSP Periodic Evaluations and Amendment.** Although not required by SGMA regulations, the SVBGSA anticipates that an amendment to this GSP will be prepared within the first 5 years. Updates may include incorporating additional monitoring data, updating the SMC, documenting any projects or management actions that are being implemented, and identifying adaptive management activities. In addition, when the new

SVIHM is publicly available from the USGS, the water budgets will be updated in Chapter 6. Along with GSP amendments, the DMS will be routinely updated to include new information gathered from monitoring networks and included in annual and 5-year update reports.

10.1.3 Communication and Outreach

The SVBGSA will routinely provide information to the public about GSP implementation and progress towards sustainability and the need to use groundwater efficiently. The SVBGSA website will be maintained as a communication tool for posting data, reports, and meeting information. This website features a link to an interactive mapping function for viewing Salinas Valley Groundwater Basin-wide data that were used during GSP development.

10.2 Implementation Activity 2: Refine and Implement Water Charges Framework

The water charges framework outlined in Chapter 9 is one funding mechanism for long-term GSP implementation. Many details of the water charges framework will be developed during the first three years of implementation. Depending on the outcome of the negotiations, long-term GSP implementation may be funded by the water charges framework, another financing method as permitted by SGMA and other state law, or a combination thereof. The SVBGSA previously implemented a Groundwater Sustainability Fee as a regulatory fee pursuant to Water Code section 10730. In addition to the water charges framework, which implements an extraction charge pursuant to Water Code section 10730.2, the SVBGSA could use benefit assessments and special taxes, or any combination, subject to the requirements of state law.

The structure of the water charges framework, or other financing method, will be implemented in each of the six SVBGSA Subbasins, although the details will be unique to each subbasin. Details of the water charges framework for all six subbasins will be developed during the first three years of this GSP's implementation through a facilitated, Valley-wide process. This process will be similar to the successful facilitated process that resulted in the SVBGSA serving as the GSA for some or all parts of all six subbasins. The result of this facilitated process will be an agreement on the financing method approved by the SVBGSA. The facilitation will be complete by January 31, 2023, and the financing method will be implemented in all six subbasins immediately following.

To bridge the gap between GSP submission and initiation of the GSP implementation financing framework, an interim base fee may be charged as an extension to the current regulatory fee. This fee may be adjusted periodically to cover the cost of initial GSP implementation.

10.3 Implementation Activity 3: Address Identified Data Gaps

Chapter 4 identified a few key data gaps related to the hydrogeologic conceptual model characterization, including data gaps related to:

- **Aquifer properties**. The values and distribution of aquifer properties in the Subbasin have not been well characterized and documented. There are very few measured aquifer parameters in the overall Salinas Valley Groundwater Basin.

- **Hydrostratigraphy of the Deep Aquifers**. Vertical and horizontal extents, and potential recharge areas of the Deep Aquifers are poorly known. Hydrographs are not available for wells completed in the Deep Aquifers.

- **Areas of Salinas River recharge and discharge**. Specific river recharge and discharge areas have not been mapped.

These key data gaps will be addressed early during implementation through the following programs.

- **Aquifer properties assessment**. To develop better estimates of aquifer properties, the SVBGSA will identify up to three wells in the 180-Foot Aquifer and up to three wells in the 400-Foot aquifer for aquifer testing. Each well test will last a minimum of 8 hours and will be followed by a 4-hour monitored recovery period. Wells for testing will be identified using the following criteria.
    - Wells are owned by willing well owners
    - Wells have known well completion information
    - Wellheads are completed such that water elevations in wells can be monitored with data loggers
    - Wells are equipped with accurate flow meters
    - Wells have area for discharge of test water
    - Preferred wells will have nearby wells that can be monitored during the test
- **Deep Aquifers investigation**. To address the hydrostratigraphy of the Deep Aquifers, on April 24, 2018, the Monterey Board of Supervisors directed MCWRA to conduct a comprehensive investigation of the Deep Aquifers of the Salinas Valley Groundwater Basin. The SVBGSA will adopt the findings of this investigation into its updated hydrologic conceptual model.

- **Mapping areas of Salinas River recharge and discharge**. The SVIHM will be used, when it becomes available, to develop estimates of Salinas River recharge and discharge reaches.

Results of the aquifer properties assessment, Deep Aquifers investigation, and Salinas River recharge and discharge mapping will be incorporated into the required GSP 5-year update.

10.4 Implementation Activity 4: Expand Existing Monitoring Networks

As noted in Chapter 7, the monitoring networks leverage existing monitoring programs. This section identifies the plan for expanding and enhancing each monitoring network.

10.4.1 Groundwater Level Monitoring Network

Currently, the groundwater elevation monitoring network comprises the CASGEM wells monitored by MCWRA. Specific gaps in the groundwater level monitoring network were identified in Chapter 7, including insufficient coverage of wells along the boundaries of the Subbasin and near the Salinas River, and a lack of monitoring data from wells in the Deep Aquifers.

The general plan for adding monitoring to the monitoring network will be to first incorporate existing wells if possible. The SVBGSA will use MCWRA's existing well database to identify potential candidate wells in each data gap area. Well owners will be contacted to assess if they are willing to incorporate their wells into the groundwater elevation monitoring network. All candidate existing wells for incorporation into the monitoring network will be inspected to ensure they are adequate for monitoring and to determine depth, perforated intervals, and aquifer designation. Access agreements will be secured with well owners to ensure that data can be reported from the wells.

If an existing well cannot be identified, or permission to use data from an existing well cannot be secured to fill a data gap, then a new monitoring well will be drilled and added to the monitoring network. The SVBGSA will obtain required permits and access agreements before drilling new wells. The SVBGSA will retain the services of licensed geologists or engineers and qualified drilling companies for drilling new wells. The SVBGSA will evaluate the availability of grant funds and technical assistance support services through DWR or other entities for new wells. Once drilled, the new wells will be tested as necessary and equipped with dedicated data loggers for monitoring.

10.4.2 Groundwater Storage Monitoring Network

The SVBGSA will work with MCWRA to expand the existing well metering system to collect additional groundwater pumping information. The groundwater pumping information will be

used to report on the groundwater storage SMC, as described in Chapter 8. General improvements to the existing MCWRA groundwater extraction reporting system may include some subset of the following:

- Develop a comprehensive database of extraction wells
- Expanding reporting requirements to all areas of the Salinas Valley Groundwater Basin
- Including all wells with a 2-inch discharge or greater
- Requiring automatically reporting flow meters
- Comparing flow meter data to remote sensing data to identify potential errors and irrigation inefficiencies

10.4.3 Seawater Intrusion Monitoring Network

MCWRA monitors seawater intrusion in coastal wells by measuring chloride concentrations and developing chloride isocontour maps that define the extent of seawater intrusion. MCWRA publishes estimates of the extent of seawater intrusion every 2 years. However, those maps are based in part on confidential information obtained from private wells. The seawater intrusion monitoring network will include only wells where the data can be made publicly available.

As discussed in Chapter 7, the network of wells with publicly available data for monitoring chloride concentrations includes an adequate number and distribution of wells in the 180-Foot and the 400-Foot Aquifers. However, the distribution of wells in the Deep Aquifers is inadequate and considered a data gap. As described in Section 7.4.2, some of the data gaps in the Deep Aquifers will likely be filled in response to Monterey County Urgency Ordinance 5302. This ordinance, adopted in 2018, requires that all new wells in the Deep Aquifers meter groundwater extractions, monitor groundwater elevations and quality, and submit all data to MCWRA and SVBGSA.

10.4.4 Water Quality Monitoring Network

Groundwater quality monitoring will be performed using existing monitoring networks and programs. As described in Chapters 7 and 8, three water quality networks are included for the GSP monitoring program:

- Municipal public water supply wells reported to DDW.
- Small public water systems wells reported to the County of Monterey.
- Agricultural and domestic supply wells monitored under the Irrigated Land Regulatory Program (ILRP).

There is currently adequate spatial coverage to assess impacts to beneficial uses and users.

As part of the GSP implementation, the SVBGSA will track and review the ILRP monitoring network for Ag Order 4.0 and also identify any new small public system water supply monitoring network wells to add to the current network. During implementation, the SVBGSA will obtain any missing well information, select wells to include in monitoring network, and finalize the water quality network.

10.4.5 Land Subsidence Monitoring Network

Land subsidence monitoring will be conducted by DWR using InSAR technology, and the data will be made available on the DWR SGMA Data Viewer, as described in Chapter 7. The SVBGSA will download the data from the SGMA Data Viewer and the data will be evaluated to verify they are adequate for determining whether subsidence is occurring and for inclusion in the monitoring network. No data gaps related to the land subsidence monitoring network were identified in Chapter 7.

10.4.6 Interconnected Surface Water Monitoring Network

As described in Chapter 5, the initial analysis identifying locations of interconnected surface water is based on best available data but contains significant uncertainty. Additional data are needed to reduce uncertainty and refine the map of interconnected surface waters. The main source of these data will be the SVIHM when it becomes available.

The level of interconnection between the Salinas River and the shallow sediments is unclear and therefore this is considered a data gap that needs to be resolved. The SVBGSA will either identify existing shallow wells adjacent to the Salinas River or install up to two new shallow wells along the Salinas River in the 180/400-Foot Aquifer Subbasin to establish the level of interconnection. If existing shallow wells are identified and deemed adequate based on an inspection, an agreement will be secured with the well owner to incorporate the well into the investigation and report data from the well. If existing wells cannot be identified or accessed, then SVBGSA may consider drilling new monitoring wells.

10.5 Implementation Activity 5: Update Data Management System

As described in Chapter 7, the SVBGSA has developed a DMS that is used to store, review, and upload data collected as part of the GSP development and implementation. A web application showing these data is available on the SVBGSA's website for stakeholders to view the data (https://svbgsa.org/gsp-web-map-and-data/). As new information is collected during monitoring and provided by local stakeholders, the DMS will be updated. The regular updates will also coincide with the review of new data and development of annual reports.

10.6 Implementation Activity 6: Implement the USGS Groundwater Model

As mentioned in various sections of this GSP, the USGS is currently working on revising and calibrating the SVIHM. The fully calibrated historical SVIHM was not available for use during this GSP development. A preliminary operational version of the model was available to use with climate change inputs to develop an initial projected water budget but was not available to assess project benefits.

The model is expected to be released within 1 year and will be fully available for developing the remaining five Salinas Valley Groundwater Subbasin GSPs. During implementation of the 180/400-Foot Aquifer Subbasin, the SVIHM will be used for the following tasks:

- Revisit the historical, current and projected water budgets.
- Update the estimated sustainable yield of the Subbasin, as needed.
- Develop numerical minimum thresholds for the depletions of interconnected surface water. As soon as the model is available, current flow depletions will be computed and set as the minimum threshold not to be exceeded during implementation of the GSP.
- Add interim milestones for groundwater elevations and seawater intrusion.
- More rigorously evaluate benefits of proposed management actions and priority projects.

Results of these modeling tasks will be included in an addendum to the GSP or the 5-year GSP update. In addition, alternative models that complement the SVIHM may be necessary to evaluate certain projects. In particular, models with enhanced capabilities for simulating seawater intrusion may be needed to assess the interim milestones for the proposed seawater intrusion barrier.

10.7 Implementation Activity 7: Refine and Implement Management Actions and Projects

The projects and management actions identified in Chapter 9 are sufficient for attaining sustainability in the 180/400-Foot Aquifer Subbasin as well as the other five subbasins in the Salinas Valley Groundwater Basin. As the SVBGSA refines the projects and management actions, it will retain sufficient projects and actions to account for the level of uncertainty in the HCM. The projects and actions will be implemented in a coordinated fashion across the entire Salinas Valley Groundwater Basin to ensure Basin-wide sustainability. Because five of the subbasins in the Basin will not complete GSPs until January 31, 2022, many of the projects and actions will be implemented only after this time. Therefore, the initial activities for project implementation will include refining the projects and actions identified in Chapter 9. Activities

during the first three years of implementation that will be undertaken before January 31, 2023 include:

- Clarifying water rights for recharge opportunities
- Applying for change of diversion or change of timing on water rights as necessary
- Refining yields of proposed projects
- Refining costs of proposed projects based on the ability to modify water rights, as discussed above, and the expected yield of the projects.
- Producing preliminary design of projects if projects are adequately defined
- Initiating environmental permitting for projects as necessary

An additional benefit of refining the projects during the first three years of implementation is that this approach complements the approach for refining the water charges framework, as outlined in Section 10.2. Refinement of the projects and actions will occur simultaneously with refinement of the funding mechanism that supports the projects and actions. By refining all of these plans simultaneously, the funding mechanism and the projects will all be in place by June 30, 2023. Projects and management actions will then be immediately implemented in a coordinated fashion across the entire Salinas Valley Groundwater Basin.

10.8 Short-Term Implementation Start-Up Budget

Table 10-1 and Table 10-2 summarize the conceptual planning-level costs for the initial five years of GSP implementation. Because this GSP is being developed in coordination with other GSPs in the Salinas Valley Groundwater Basin, the initial implementation costs are divided into costs that directly benefit the 180/400-Foot Aquifer Subbasin and costs that benefit other subbasins in the Salinas Valley Groundwater Basin. These costs do not include costs of project development or implementation. These costs are independent of fees currently collected by MCWRA; no fees will be collected by SVBGSA that duplicate fees already being collected by MCWRA.

The Subbasin specific costs, shown in Table 10-1, include public outreach; supplemental hydrogeologic investigations to address data gaps; improvements to the monitoring networks, including installation of up to six new monitor wells; and annual monitoring and reporting of sustainability conditions. The Valley-wide costs, shown in Table 10-2, include routine administrative operations, negotiating funding mechanisms, implementing the SVIHM model, and early planning efforts. The Valley-wide costs include the already implemented $1,200,000 per year administrative costs agreed to by the SVBGSA. These costs include an estimated $2,000,000 for environmental permitting should it be necessary in the first five years of implementation.

The costs in Tables 10-1 and 10-2 are categorized either as a lump sum or as an annual cost. Annual costs are directly related to work that needs to be done consistently to meet the requirements of SGMA and mitigation plans adopted by the GSA. The annual costs are multiplied by 5 to get an overall 5-year lump sum, and then added to the other lump sum costs for a total cost at the bottom of each table. This lump-sum cost is then averaged over 5 years to show an average annual cost. It is important to note that not all lump sum costs will be required at the beginning of the 5-year implementation schedule but should be anticipated within the 5-year timeframe for budgeting purposes.

Table 10-1. 180/400-Foot Aquifer Subbasin Specific Estimated Planning-Level Costs for First 5 Years of Implementation

Activity	Estimated Cost	Cost Unit	Assumptions
Management Actions			
Seawater Intrusion Working Group	$ 250,000	Lump Sum	Two years of technical studies, meetings, and agreements
Monitoring and Reporting			
Monitoring GW Elevations	$ 12,000	Annual	Data download, data checking, costs may reduce in subsequent years after a defined process in place
Monitoring GW Extractions	$ 8,000	Annual	Data download, data checking, costs may reduce in subsequent years after a defined process in place
Monitoring GW Quality	$ 16,000	Annual	Data download, data checking, costs may reduce in subsequent years after a defined process in place
Monitoring Subsidence	$ 5,000	Annual	Data download, data checking, costs may reduce in subsequent years after a defined process in place
Monitoring Seawater Intrusion	$ 5,000	Annual	Data download, data checking, costs may reduce in subsequent years after a defined process in place
Monitoring Stream Depletion	$ 8,200	Annual	Data download, data checking, costs may reduce in subsequent years after a defined process in place
Annual Reporting	$ 22,000	Annual	$30,000 for first one, subsequent ones at $20,000 each
2-Year Update Report	$ 100,000	Lump Sum	This only applies to the 180/400-Foot Subbasin GSP to refine the current version of the Plan
5-Year Update Report	$ 150,000	Lump Sum	
Technical Communication and Outreach	$ 20,000	Annual	Tasks related to ongoing communication and outreach
Address Identified Data Gaps			
Aquifer tests	$ 160,500	Lump sum	Based on assumed general aquifer testing procedures
Expand Existing Monitoring Networks			
Identify new GW Elevation wells	$ 40,000	Lump Sum	Five-week effort
Install up to two new 180-Foot monitoring wells	$ 242,000	Lump Sum	No land purchase, 1 week permitting, 2 weeks design, bids average $100,000 per well
Install up to two new 400-Foot monitoring wells	$ 282,000	Lump Sum	No land purchase, 1 week permitting, 2 weeks design, bids average $120,000 per well
Install two shallow wells near Salinas River	$ 78,000	Lump Sum	No land purchase, 1 week permitting, 1-week design, bids of $25,000 per well
Total	$ 1,783,500		
Average Annual Cost for Five Years	$ 356,700		

Table 10-2. Valley-Wide Estimated Planning-Level Costs for First 5 Years of Implementation

Activity	Estimated Cost	Cost Unit	Assumptions
Operational costs including cost of General Manager, staff, etc. (based on 2019 fee study)	$ 1,200,000	Annual	2019 Fee Study
Monitoring and Reporting			
Refine Water Charges Framework	$ 630,000	Lump Sum	Facilitator = 3 years x $150,000 per year. Technical = 3 years x $60,000 per year
Update Valley-Wide Water Quality Well Completion Data	$20,000	Lump Sum	50 wells, 2 hours per well
Expand Existing Monitoring Networks			
Negotiate expansion of MCWRA GEMS	$ 36,000	Lump Sum	Assuming MCWRA continues to implement and oversee the GEMS pumping database; assist them with developing detailed requirements for local pumpers
Implement monitoring data from Ag Order 4.0	$ 33,000	Lump Sum	Review the new Ag Order 4.0 monitoring well network and evaluate which wells to include within the GSP monitoring network
Update DMS	$ 15,200	Annual	Add newly collected data to DMS
Implement SVIHM Model	$ 327,600	Lump Sum	6 wks. model review, 4 wks. water budget extraction, 8 wks. projects modeling, 6 wks. modeling in each of 4 subsequent yrs.
Refine Projects and Management Actions	$ 460,000	Annual	$2,000,000 for CEQA
Total	$ 9,422,600		
Average Annual Cost for 5 Years	$ 1,884,520		

10.9 Implementation Schedule

The SVBGSA oversees all or part of six subbasins in the Salinas Valley Groundwater Basin. Implementing the 180/400-Foot Aquifer Subbasin GSP must be integrated with the implementation of the five other GSPs in the Salinas Valley Groundwater Basin. None of the other five subbasins in the Salinas Valley Groundwater Basin are critically overdrafted and will only submit GSPs in January 2022. The implementation schedule reflects the significant integration and coordination needed to implement all six GSPs in a unified manner.

The general implementation schedule refines details of the water charges framework, the sustainability projects, and the management actions during the first three years of implementation. These refinements will be developed as the five other GSPs in the Salinas Valley Groundwater Basin are produced. The refined water charges framework, projects, and management actions will then be implemented Valley wide approximately one year after all six GSPs are complete. This will ensure the 180/400-Foot Aquifer Subbasin GSP is implemented in coordination with the other Valley subbasins, while at the same time not waiting for the other GSPs to be complete before negotiating many of the implementation details.

A general schedule showing the major tasks and estimated timeline during the first 5 years of GSP implementation is provided on Figure 10-1. In Chapter 9, every project has its own implementation timeline; however, the timeline for the accrual of benefits will be determined after the projects are refined.

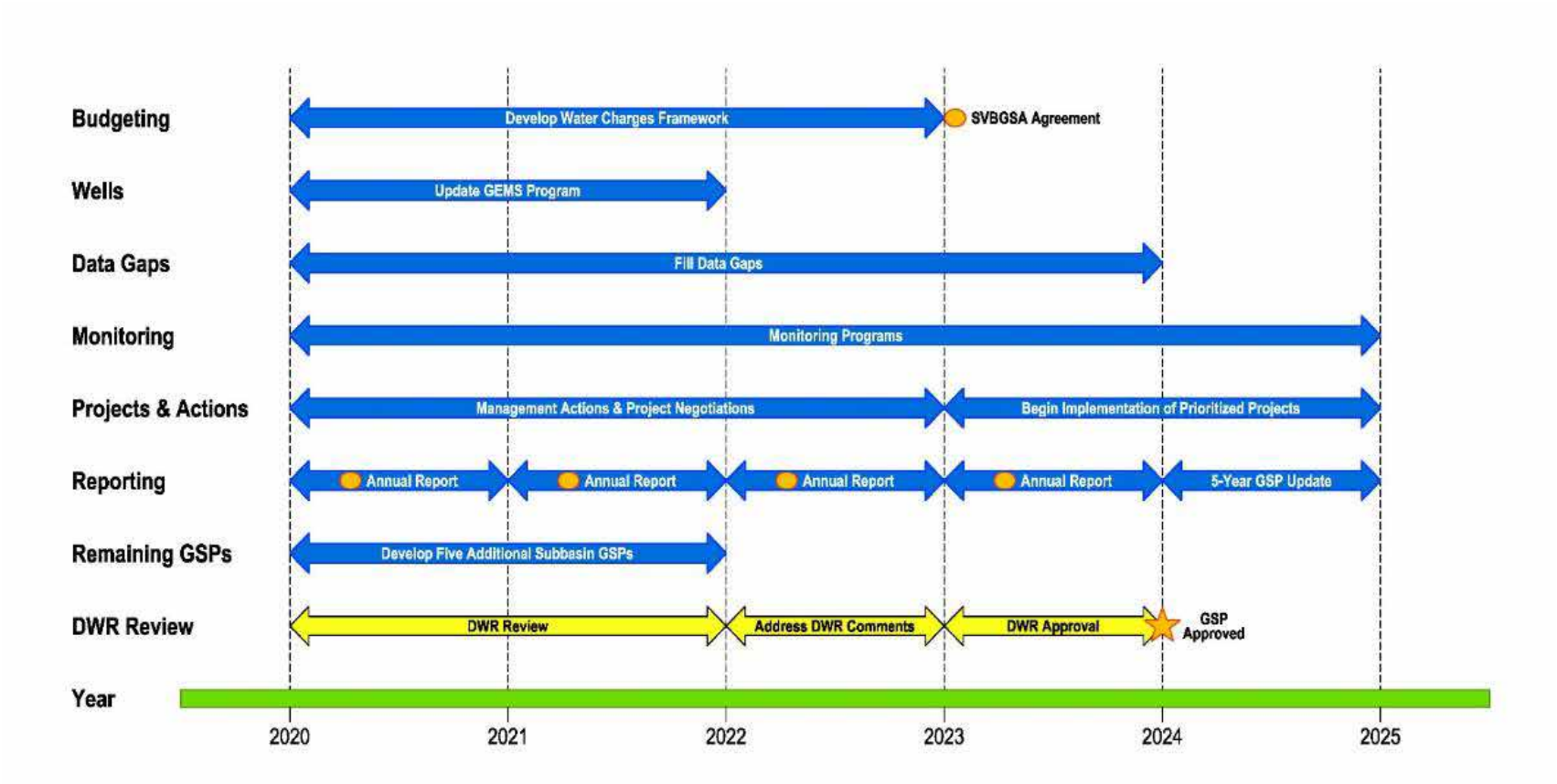


Figure 10-1: General Schedule of 5-Year Start-Up Plan

11 STAKEHOLDER ENGAGEMENT AND COMMUNICATION STRATEGY

11.1 Overview

The SVBGSA is governed by a local and diverse board of directors (Appendix 11A) and depends heavily on public involvement for decision-making. An Advisory Committee (Appendix 11B) and a Planning Committee have been formed to advise the GSA. A list of all governance meetings is included in Appendix 11C.

All phases of SGMA in the Salinas Valley Groundwater Basin have been, and will continue to be, characterized by an open collaborative process with legitimate stakeholder engagement that allows stakeholders and public participants opportunities to provide input and influence the planning and development process. Public participation is supported by the development of an interactive website that allows access to all planning and meeting materials, data sets and meeting notifications. The website can be accessed at https://svbgsa.org.

11.2 Implementation of SGMA - Phases of Work

Implementation of SGMA and associated outreach includes the following phases:

Phase 1: GSA Formation and Coordination – The formation of the SVBGSA began in 2015. Ongoing negotiations regarding coordination agreements with other GSAs is continuing. Most of this phase was concluded in 2017 for all the Salinas Valley Groundwater Basin subbasins.

Phase 2: GSP Preparation and Submission – This phase of work began in 2017 with the preparation of the 180/400-Foot Aquifer Subbasin GSP. This phase will continue through January 2022, when GSPs for all Subbasins are complete. During this phase, the SVBGSA will develop GSPs that ensure basin sustainability and comply with SGMA legislation as well as develop any necessary coordination agreements.

Phase 3: GSP Review and Evaluation – This phase will take place beginning 2020 for the 180/400-Foot Aquifer Subbasin GSP and will continue in 2022 once other subbasin GSPs are completed.

Phase 4: Implementation and Reporting – Following the submission of the GSP to the DWR, the SVBGSA will begin implementation of efforts described in the GSP to reach sustainability within the basin. This will be an ongoing phase, as the goal of SGMA is to reach sustainability in the 180/400-Foot Aquifer Subbbasin by 2040; and reach sustainability in the other five subbasins by 2042.

11.3 Phase 1. GSA Formation and Coordination

From 2015 through 2017, local agencies and stakeholders worked with the Consensus Building Institute (CBI) to facilitate the formation of the SVBGSA. CBI began by conducting a Salinas Valley Groundwater Stakeholder Issue Assessment (Appendix 11D), which included interviews and surveys, and resulted in recommendations for a transparent, inclusive process for the local implementation of SGMA and the formation of the GSA.

Findings from the interviews and surveys reflect a range of feedback on GSA formation, the process, challenges, and critical issues. In brief, stakeholders articulate:

- Groundwater supply is high stakes; everyone recognizes the importance of forming the GSA successfully.
- Interviewees cannot identify any one organization as a likely candidate to serve as the GSA. Many envision multiple organizations coming together under a Joint Power Authority to form a single GSA.
- The GSA must have the trust of all the interested parties and the technical expertise to develop the plan. The GSA should draw on existing data and studies wherever possible.
- Stakeholders strongly support inclusivity and diversity to build success in the process. Fairly representing all interests would support creating a shared framework of mutual benefit.
- Given that agriculture is the primary economic driver in the area, stakeholders recommend that agriculture have a significant voice in governance and decision-making on GSA formation, while balancing that voice with urban, cities, county, and other interests.
- Many recognize the need to act to avoid both undesirable results and state intervention.
- Interviewees readily talk about historic tensions and sources of distrust in the region that the process must manage.
- Critical issues are tied to land use and small communities losing water supply because of poor water quality.
- *"The Valley is innovative and progressive – it moves ahead to address problems."* While interviewees define and view groundwater supply quite differently, everyone concurs that a range of stakeholders must agree on the GSA.

Stakeholder Forums were also held throughout 2016 and served as another critical element for interested stakeholders and the public to learn about and provide input on GSA. The engagement process is shown graphically on Figure 11-1.

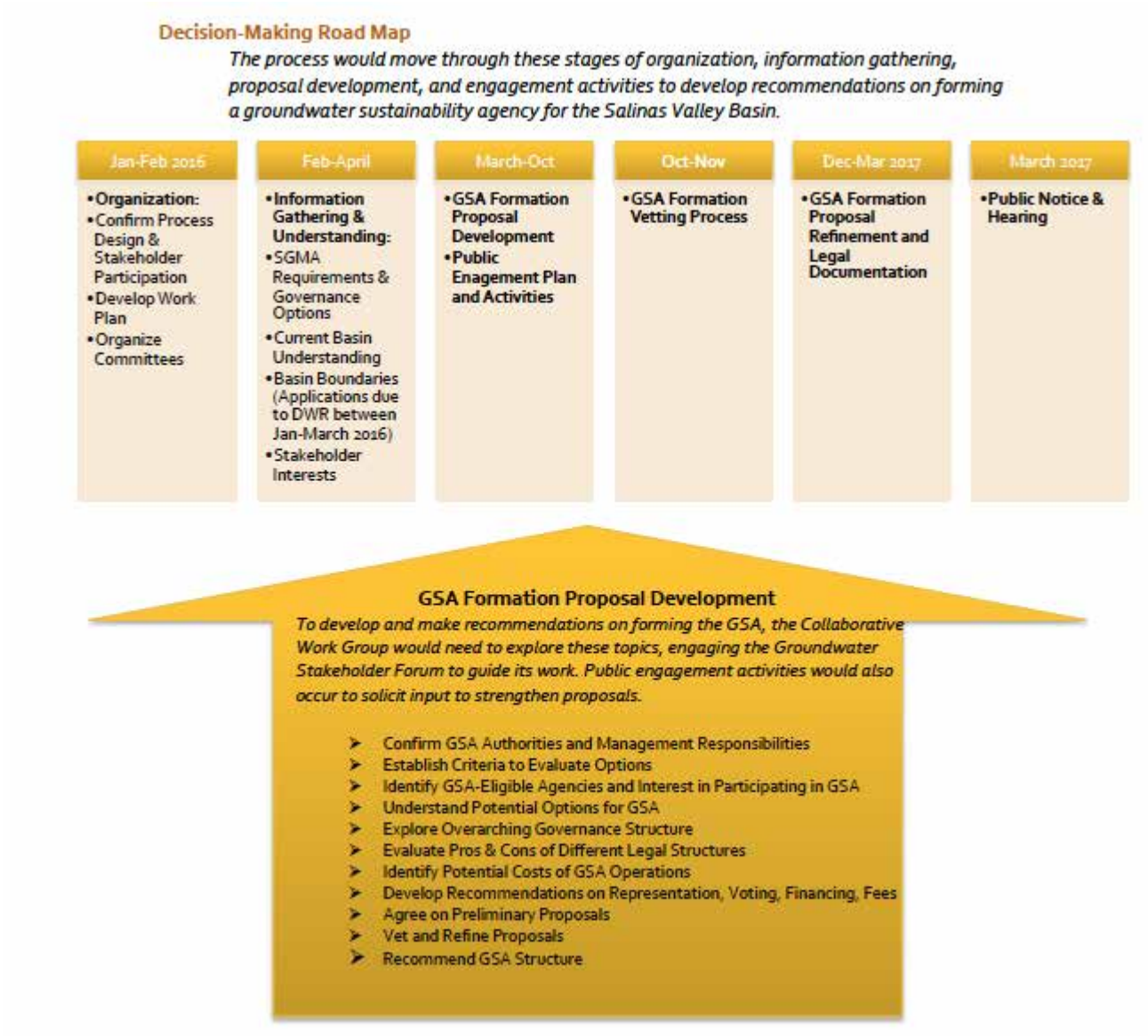


Figure 11-1: Engagement Process

Following the Issue Assessment and Stakeholder Forums, a Collaborative Work Group representing a broad range of interests used this information to develop recommendations on the governance structure, voting, and legal structure of the GSA. After two years of community engagement the Salinas Valley Basin Groundwater Sustainability Agency was formed as a Joint Powers Authority in April 2017 with a broad and diverse foundation of support (Appendix 2A). The Salinas Valley Groundwater Basin provides water for beneficial users across Monterey County. The SVBGSA stakeholders are highly diverse. Groundwater supports economic activities from small domestic scale to large industrial scale. Groundwater is an important supply for over 400,000 people living within the County. The population swells as seasonal workers come to harvest crops during certain periods of the year.

Many of the communities in the Salinas Valley are classified as Disadvantaged Communities (DACs) and Severely Disadvantaged Communities (SDACs), as well as Economically Distressed Areas (EDAs), shown on Figure 11-2. The SVBGSA program area has well documented DAC designation including seven Census Designated Places (CDPs), 60 Block Groups and 20 Tracts. Additionally, work conducted by the Greater Monterey County Integrated Regional Water Management Program (IRWMP) identified 25 small disadvantaged, severely disadvantaged, and suspected disadvantaged communities in unincorporated areas of the IRWMP region (IRWM, 2018). DACs are further described in Appendix 11E. While IRWMP objectives are consistent with SGMA, SGMA has limited authority with regards to water quality improvements related to drinking water beneficial uses. Despite these limitations SVBGSA seeks to engage more constructively with disadvantaged communities moving forward in the four subbasin planning processes.

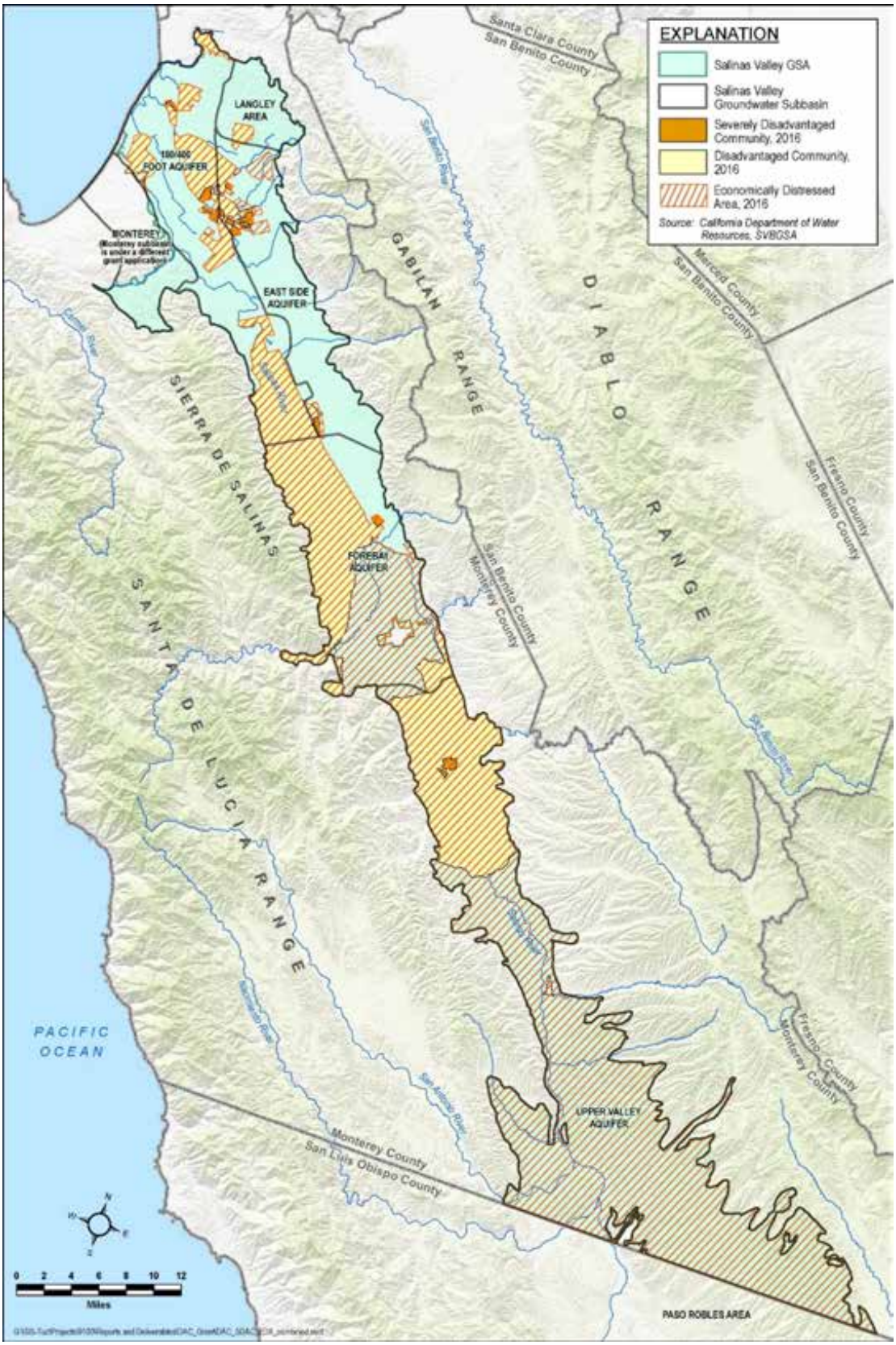


Figure 11-2. Map of DACs, SDACs, and EDAs in the Salinas Valley Groundwater Basin

The beneficial uses and users in the Salinas Valley Groundwater Basin are represented in the structure of the Board of Directors, Planning Committee and Advisory Committee. Along with DACs and SDACs, GSP beneficiaries include individuals, businesses, and government agencies, including the State of California. The Salinas Valley relies almost completely on groundwater. Major land uses in the Salinas Valley include agriculture, rangeland, forest, and urban development. Agriculture is a beneficial user of groundwater. Agriculture in this region produces a large percentage of the nation's produce: 61% of the leaf lettuce, 57% of celery, 56% of head lettuce, 48% of broccoli, and 38% of spinach. The Salinas Valley agricultural region supports a $4.25 billion dollar production value. Due in part to the agricultural productivity of the region, which is dependent on reliable water resources, sustainable management of the Basin has significance far beyond the Basin boundaries. Other beneficial users include municipal public water systems, small community and public water systems, and private domestic wells for drinking water. Environmental users include the habitats and associated species maintained by conditions related to surface water flows such as steelhead trout and groundwater dependent ecosystems including brackish and freshwater march and riparian habitats.

Stakeholders on the SVBGSA Board of Directors, Advisory Committee, and Planning Committee include representatives from agriculture, environmental organizations, disadvantaged communities, city and county government, land use nonprofits, residential well owners, and water agencies. The GSA Board of Directors includes seats for non-governmental entities including four seats for agriculture, a seat for environmental interests, disadvantaged communities, local government, and a public seat, among others. The composition of the Board of Directors is detailed in Table 11-1.

Table 11-1. Board of Directors Composition

Director	Representing	Specific Qualifications	Nominating Group Members[1]	Appointing Authority[2]
a) City of Salinas.	City of Salinas.	To be determined by the Appointing Authority.		Salinas City Council.
b) South County Cities.	Cities of Gonzales, Soledad, Greenfield, and King City.	To be determined by the Appointing Authority.		Appropriate City Council as recommended by the City Selection sub-Committee.
c) Other GSA Eligible Entity.	GSA Eligible Entities but not including the cities of Salinas, Gonzales, Soledad, Greenfield or King City.	Must be a representative of a GSA Eligible Entity but not including the cities of Salinas, Gonzales, Soledad, Greenfield or King City.	County of Monterey MCWRA Monterey Regional Water Pollution Control Agency	Monterey County Board of Supervisors.
d) Disadvantaged Community, or Public Water System, including Mutual Water Companies serving residential customers.	Unincorporated Disadvantaged Communities, or Public Water Systems, including Mutual Water Companies serving residential customers only.	Must be a resident of a Disadvantaged Community in the unincorporated area, or a representative Public Water System, including Mutual Water Companies serving residential customers only.	Castroville Community Services District Environmental Justice Coalition for Water San Jerardo Cooperative San Ardo Water District San Vicente Mutual Water Company	Castroville Community Services District.
e) CPUC Regulated Water Company.	CPUC Regulated Water Companies in the Basin.	Must be a representative of a CPUC Regulated Water Company	Alisal Water Corporation DBA Alco Water Service California Water Service Company	Salinas City Council.
f) Agriculture	Agricultural interests	Must be an individual that is 1) engaged in and derives the majority of his or her gross income or revenue from commercial agricultural production or operations, or 2) designated by an entity this is engaged in commercial agricultural production or operations, and the individual derives the majority of his or her gross income or revenue from agricultural production or operations, including as an owner, lessor, lessee, manager, officer, or substantial shareholder of a corporate entity		Monterey County Board of Supervisors

Director	Representing	Specific Qualifications	Nominating Group Members[1]	Appointing Authority[2]
g) Agriculture	Agricultural interests	Same as (f)		Monterey County Board of Supervisors
h) Agriculture	Agricultural interests	Same as (f)		Monterey County Board of Supervisors
i) Agriculture	Agricultural interests	Same as (f).		Monterey County Board of Supervisors
j) Environment	Environmental users and interests	Must be a representative of an established environmental Board of Supervisors or organization that has a presence or is otherwise active in the Basin	Sustainable Monterey County League of Women Voters of Monterey County Landwatch Monterey County Friends and Neighbors of Elkhorn Slough California Native Plant Society Monterey Chapter Trout Unlimited Surfriders The Nature Conservancy Carmel River Steelhead Association	Monterey County Board of Supervisors
k) Public Member	Interests not otherwise represented on the Board	A rural residential well owner; an industrial processor; a Local Small or State Small Water System; or other mutual water company		Monterey County Board of Supervisors

1 The Nominating Group Members make a recommendation to the corresponding Appointing Authority.
2 The Appointing Authority must be one of the signatories to the JPA.

Three other GSAs have been formed in the Salinas Valley Groundwater Basin, including the MCWD GSA, the County GSA, and the Greenfield/Arroyo Seco GSA. These filings do not overlap, and one GSP is developed for the Subbasin.

11.4 Phase 2. Preparation and Submission

The SVBGSA is required to develop a GSP for each separate subbasin. Given the critical overdraft identification of the 180/400-Foot Aquifer Subbasin, initial planning efforts have focused on the development of this GSP in order to meet the January 31, 2020 deadline for submittal.

The SVBGSA Board has also determined that another level of planning, not required by SGMA Legislation, would be completed. This plan, identified as the Integrated Sustainability Plan (ISP), identifies overarching issues that are common to all subbasins as well as identifying opportunities for all subbasin stakeholders to share resources. Several chapters of the ISP have been developed concurrently with chapters for the critically over drafted basin.

Throughout the development of the GSP, the Advisory Committee and Board reviewed each chapter. For each chapter, after the SVBGSA staff and technical consultant drafted it, the Planning Committee and the Advisory Committee reviewed it first, the SVBGSA staff and consultant incorporated revisions, and then the Board reviewed it and voted to make it public. A list of Advisory Committee and Board of Directors meetings are included in Appendix 11C.

Given the importance of the Salinas Valley Groundwater Basin and the development of the GSP to the communities, residents, landowners, farmers, ranchers, businesses, and others, it is essential that inclusive stakeholder input continue to be a primary component of the GSP process. This *SVBGSA Communication and Public Engagement Document* (Appendix 11F) has been developed to support the preparation and implementation of a well-informed GSP and ISP. The public engagement strategies are designed to be flexible and will generally align public engagement opportunities with the development of technical information throughout the GSP process.

In order to encourage ongoing stakeholder engagement, the following strategies have been developed:

- Conduct an inclusive outreach and education process that best supports the success of a well- prepared GSP that meets SGMA requirements.
- Keep the public informed by distributing accurate, objective, and timely information.
- Foster open dialogue and stakeholder engagement by hosting opportunities to participate in the planning process.

- Invite input and feedback from the public at every step in the decision-making process.
- Offer a comprehensive, transparent outreach and education process that builds understanding; and evaluate and update the engagement methods throughout the GSP process as needed.

Additionally, a rigorous review process for each Chapter in the GSP and for the final plan has been developed. This process ensures that stakeholders have multiple opportunities to review and comment on the development of the chapters. A map of the planning process is shown on Figure 11-2.

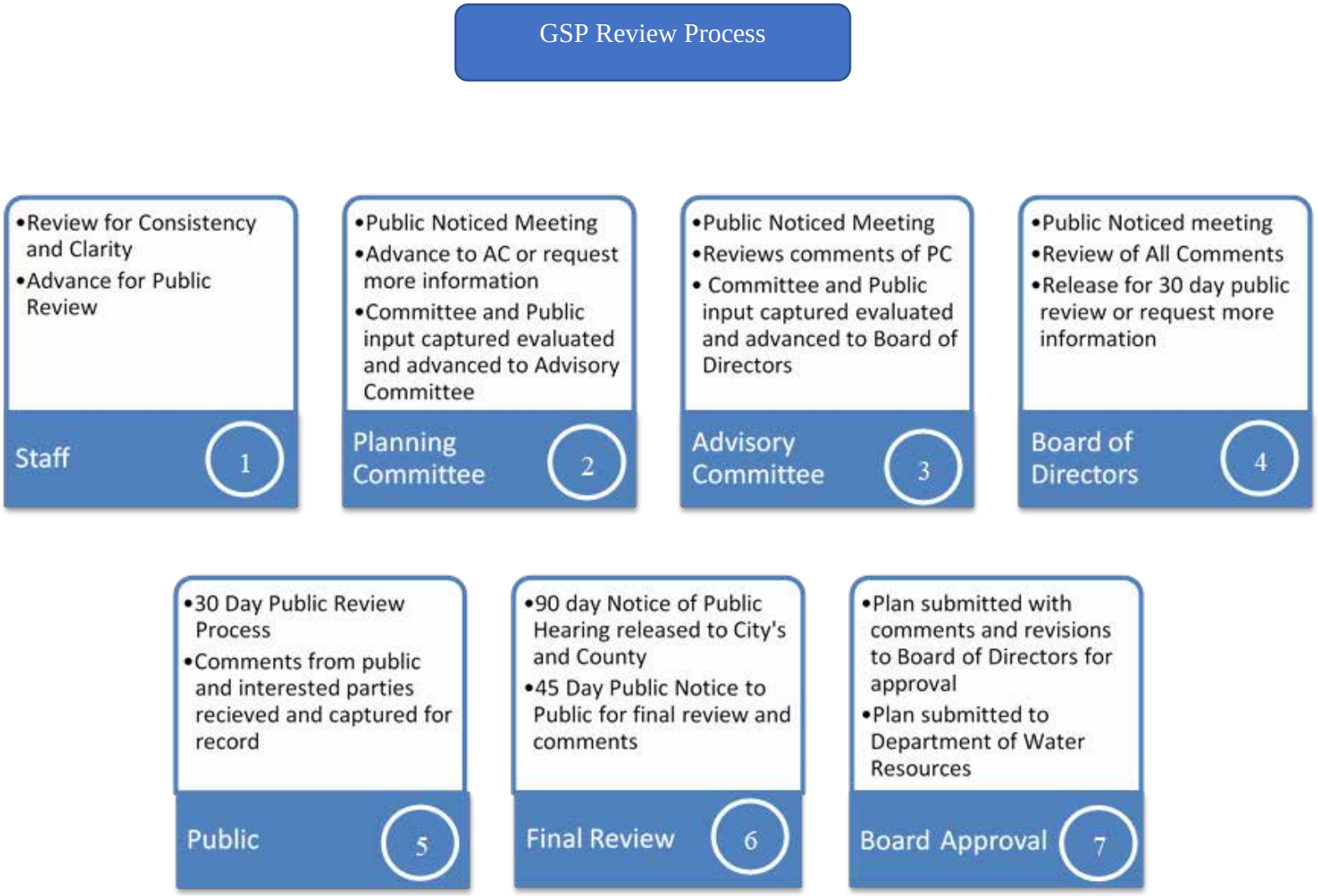


Figure 11-3: GSP Review Process

11.4.1 Data Coordination and Outreach

The GSP for the 180/400 Foot Aquifer is based on data, modeling, and evaluation of surface water and groundwater conditions, water uses, and water management options. Public outreach and engagement have been an important element of efforts to collect, review, validate, and refine the data and evaluations that will form the basis of the GSP and future management actions. Public access to data that can be shared is located at https://svbgsa.org/gsp-web-map-and-data/.

Significant outreach to other agencies and organizations that have data being used for developing this GSP has taken place. Agreements with the Monterey County Water Resources Agency, the County of Monterey, Monterey One Water and Marina Coast Water District have been developed to ensure a level of consistency in data shared between planes and staff.

11.4.2 Public Engagement, Education and Outreach

The SVBGSA continues to conduct outreach to the wider Salinas Valley municipalities, county departments, MCWRA, municipal and domestic water users, disadvantaged communities, environmental organizations, elected officials and state and federal government agencies. SVBGSA partners have also done outreach and provided additional input and data suggestions into the planning process. The SVBGSA Board of Directors meetings include public comment on every item and SVBGSA Advisory Committee meetings include public comment time and recording of all comments and these meetings are recorded and minutes taken. These efforts and records provide important feedback from the broader community and more importantly establish a comprehensive base of involved parties that SVBGSA will continue to dialog with through plan implementation and updates, in order to be as comprehensive and inclusive as possible for next phases of the plan.

Phase 2 began for this Subbasin in 2017 and will continue until the GSP is submitted to DWR by January 31, 2020. In 2018 and 2019, the development of the GSP has been undertaken by the SVBGSA Board of Directors, SVBGSA, Advisory Committee, Planning Committee, and stakeholders for feedback and input. During 2018 and 2019, the SVBGSA held a series of community workshops in the Salinas Valley Groundwater Basin to educate and inform stakeholders about SGMA and the GSP process, while also soliciting feedback and input.

Phase 2 of the GSP planning and development process has included outreach and education activities that involve stakeholders affected by water management in the Basin. The outreach and education process has informed and educated them about SGMA, groundwater management, and the GSP planning process. It has also solicited input and addressed issues and opportunities to improve groundwater management for the Salinas Valley Groundwater Basin Subbasins. The SVBGSA has undertaken following activities:

- Identified existing notification lists that could be used to reach the various social, cultural, and economic elements of the Salinas Valley Groundwater Basin population.
- Developed and provided information regarding SGMA, GSP planning, and groundwater management.
- Solicited stakeholder and public input on groundwater analysis and modeling, sustainability goals, management actions, and implementation plans.
- Provided and summarized stakeholder and public input for the Advisory Committee, the Planning Committee, and the SVBGSA Board of Directors throughout the GSP process.
- Identified and provided opportunities for public input at key project milestones.
- Developed a website that includes access to maps and data and allows stakeholders to register in order to receive meeting notifications and relevant documents.

Table 11-2 provides a list of public information meetings the SVBGSA held on the draft final 180/400-Foot Aquifer Subbasin GSP.

Table 11-2. Public Information Meetings on the Draft 180/400-Foot Aquifer Subbasin GSP

Date	Format	Location	Participation	Purpose
July 19, 2019	Advisory Committee	Schilling Place	22 Members – 9 Public	Review
July 26, 2019	Community Meeting	Castroville CSD Office	20 Public	Input
July 31, 2019	Community Meeting	Salinas City Hall	25 Public	Input
Aug 1, 2019	Community Meeting	King City Hall	10 Public	Input
Aug 2, 2019	Community Meeting	Gonzales City Hall	15 Public	Input
Aug 7, 2019	Ag Facilitated Process	Grower Shippers	14 Public	Input
Oct 16, 2019	Housing Working Group	Monterey	15	Input
Oct 21, 2019	CSUMB	Campus	20 (est)	Input
Oct 22, 2019	Salinas City Council	Salinas City Hall	35	Info
Oct 23, 2019	Community Meeting	Gonzales City Hall	1 Public	Input
Oct 28, 2019	Community Meeting	Salinas City Hall	23 Public	Input
Nov 6, 2019	Community Meeting	King City City Hall	8 Public	Input
Nov 13, 2019	Community Meeting	Castroville CSD Office	14 Public	Input

11.5 Phase 3: GSP Review and Evaluation

Phase 3 began in 2019. During this phase, the draft of the GSP has been completed along with a 45 day the public review and comment process. Four community workshops have been held to provide an overview of the GSP content, while giving stakeholders an opportunity to provide feedback and comments about the GSP. With the public review period completed, public

comments will be taken into consideration as time allows and incorporated into a final version of the GSP before submitting to DWR by January 31, 2020.

Following submittal, stakeholders will be given a 60-day comment period through the DWR's SGMA portal at http://sgma.water.ca.gov/portal/. Comments will be posted to the DWR's website prior to the state agency's evaluation, assessment, and approval.

11.6 Phase 4: Implementation and Reporting

Phase 4 will continue through the duration of the 50-year planning window to ensure that sustainability is achieved and maintained.

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APPENDICES

APPENDIX 2A

AGENCY AUTHORITY

JOINT EXERCISE OF POWERS AGREEMENT

establishing the

SALINAS VALLEY BASIN GROUNDWATER SUSTAINABILITY AGENCY

JOINT EXERCISE OF POWERS AGREEMENT

establishing the

SALINAS VALLEY BASIN GROUNDWATER SUSTAINABILITY AGENCY

THIS JOINT EXERCISE OF POWERS AGREEMENT ("Agreement') establishing the Salinas Valley Basin Groundwater Sustainability Agency ("Agency") is made and entered into as of 12/22/16 ("Effective Date"), by and among the public agencies listed on the attached Exhibit "A" (collectively "Members" and individually "Member") for the purpose of forming a Groundwater Sustainable Agency ("GSA") and achieving groundwater sustainability in the Salinas Valley Groundwater Basin.

RECITALS

WHEREAS, in the fall of 2014 the California legislature adopted, and the Governor signed into law, three bills (SB 1168, AB 1739, and SB 1319) collectively referred to as the "Sustainable Groundwater Management Act" ("SGMA"), that initially became effective on January 1, 2015, and that has been amended from time-to-time thereafter; and

WHEREAS, the stated purpose of SGMA, as set forth in California Water Code section 10720.1, is to provide for the sustainable management of groundwater basins at a local level by providing local groundwater agencies with the authority, and technical and financial assistance necessary, to sustainably manage groundwater; and

WHEREAS, SGMA requires the designation of Groundwater Sustainability Agencies ("GSAs") for the purpose of achieving groundwater sustainability through the adoption and implementation of Groundwater Sustainability Plans ("GSPs") or an alternative plan for all medium and high priority basins as designated by the California Department of Water Resources; and

WHEREAS, SGMA requires that the Basin have a designated GSA by no later than June 30, 2017, and an adopted GSP by no later than January 31, 2020, if a high or medium priority basin in critical overdraft, and no later than January 31, 2022, if a high or medium priority basin; and

WHEREAS, SGMA authorizes a combination of local agencies to form a GSA by entering into a joint powers agreement as authorized by the Joint Exercise of Powers Act (Chapter 5 of Division 7 of Title 1 of the California Government Code) ("Act"); and

WHEREAS, each Member is a local agency, as defined by SGMA, within that portion of the Salinas Valley Groundwater Basin ("Basin" and as more fully described below) within Monterey County, which is designated basin number 3-004 in Department of Water Resources Bulletin No. 118 (update 2016), and consisting of seven sub-basins plus that portion of the Paso Robles sub-basin within Monterey County (but not including the adjudicated portion of the

Seaside sub-basin), each of which is designated as either a high or medium priority basin, and one of which (the 180/400 ft. aquifer) is designated in critical overdraft; and

WHEREAS, the Members are therefore authorized to create the Agency for the purpose of jointly exercising those powers granted by the Act, SGMA, and any additional powers which are common among them; and

WHEREAS, the Members, individually and collectively, have the goal of cost effective sustainable groundwater management that considers the interests and concerns of all beneficial uses and users of groundwater within and adjacent to the Basin; and

WHEREAS, the Members hereby enter into this Agreement to establish the Agency to serve as a GSA for the Basin and undertake the management of groundwater resources pursuant to SGMA; and

WHEREAS, the Members intend to cooperate with adjacent GSAs such as any GSA formed over a portion of the Paso Robles sub-basin (3-04.06) within San Luis Obispo County, and the Pajaro Valley Water Management Agency; and

WHEREAS, the Members intend to study the potential for state legislation to, among other amendments, amend the WRA Act to modify the governance structure of the WRA in a form similar to the governance of the Agency established herein and to establish that agency as the statutorily designated GSA for the Basin, or establish a new entity to be so designated;

NOW THEREFORE,

In consideration of the matters recited and the mutual promises, covenants, and conditions set forth in this Agreement, the Members hereby agree as follows:

Article I: Definitions

Section 1.1 – Definitions.

As used in this Agreement, unless the context requires otherwise, the meaning of the terms hereinafter set forth shall be as follows:

(a) "Act" means the Joint Exercise of Powers Act, set forth in Chapter 5 of Division 7 of Title 1 of the California Government Code, sections 6500, *et seq*., as may be amended from time-to-time.

(b) "Agreement" means this Joint Exercise of Powers Agreement establishing the Salinas Valley Basin Groundwater Sustainability Agency.

(c) "Agency" means the Salinas Valley Basin Groundwater Sustainability Agency, which is a separate entity created by this Agreement pursuant to the provisions of the Act and SGMA.

(d) "Agricultural Directors" means the four Directors representing agricultural interests, as more fully set forth in rows (f) – (i) of Exhibit B of this Agreement.

(e) "Agricultural Association" means the Salinas Basin Agricultural Water Association.

(f) "Alternate Director" means an Alternate Director appointed pursuant to Section 6.6 of this Agreement.

(g) "Appointing Authority" means the entity authorized to appoint Primary and Alternate Directors pursuant to Sections 6.2, 6.3 and 6.6 of this Agreement and as identified in Exhibit B to this Agreement.

(h) "Basin" means that portion of the Salinas Valley Groundwater Basin, newly designated no. 3-004 in the Department of Water Resources' Bulletin No. 118 (update 2016), within the County of Monterey and that includes the following sub-basins: 1) 180/400 Foot Aquifer (No. 3-004.01); 2) East Side Aquifer (3-004.02); 3) Forebay Aquifer (3-004.04); 4) Upper Valley Aquifer (3-004.05); 5) Langley Area (3-004.09); 7) the newly designated Monterey sub-basin (3-004.10); and, 8) the portion of the Paso Robles Area (3-004.06) in Monterey County; but not including that portion of the Seaside Area that has been adjudicated, all as their boundaries may be modified from time to time through the procedures described in California Water Code section 10722.2 or by the Department of Water Resources under its separate authority, and not including any other area for which a GSA has been established pursuant to SGMA.

(i) "Board of Directors" or "Board" means the governing body of the Agency as established by Section 6.1 of this Agreement.

(j) "Brown Act" means the California Open Meeting Law, Government Code section 54950 *et seq.*

(k) "Bylaws" means the bylaws adopted by the Board of Directors pursuant to Section 6.8 of this Agreement to govern the day-to-day operations of the Agency.

(l) "Cause" means a conviction of a crime i) of moral turpitude, or ii) involving fraud, misrepresentation, or financial mismanagement, or iii) a finding by an administrative body or agency, or a court of law, that the person has violated any conflict of interest provision of federal, state or local law.

(m) "City Selection sub-Committee" means a subcommittee of the Monterey County City Selection Committee, established by Government Code section 50270 et seq, and consisting of the mayors of the following cities: Gonzales, Soledad, Greenfield, and King City.

(n) "County" means the County of Monterey.

(o) "CPUC" means the California Public Utilities Commission.

(p) "CPUC Regulated Water Company" means an investor owned water company operating in the Basin that has been granted a certificate of public convenience and necessity by the CPUC and is regulated by the CPUC.

(q) "Determination Date" means the date on which the Agency votes to notify the State of its intent to become a GSA as provided in Water Code sections 10723 (a) and (b).

(r) "Director" or "Directors" means Primary and Alternate Directors as set forth in Section 6.6 of this Agreement.

(s) "Director Position(s)" means those eleven Board positions, singularly or plural, established pursuant to Section 6.1 of this Agreement.

(t) "Disadvantaged Community" means a disadvantaged community or economically distressed area as those terms are defined in Water Code section 79702 (as may be amended from time-to-time) within the Basin.

(u) "Effective Date" means the date by which two Members have executed this Agreement which date shall be set forth in the introductory paragraph of this Agreement.

(v) "Fiscal Year" means that period of 12 months beginning July 1 and ending June 30 of each calendar year.

(w) "Groundwater Sustainability Agency" or "GSA" has the meaning set forth in California Water Code section 10721(j).

(x) "Groundwater Sustainability Plan" or "GSP" has the meaning set forth in California Water Code section 10721(k).

(y) "GSA Eligible Entity or Entities" means those entities eligible to become a GSA pursuant to SGMA.

(z) "Initial Board" means the initial Board of Directors established pursuant to Section 6.2, below.

(aa) "Initial Contribution" means the required contribution of Members as set forth in Section 10.4 of this Agreement.

(bb) "Local Agency" or "Local Agencies" has the meaning set forth in California Water Code Section 10721(n).

(cc) "Local small water system" means a system for the provision of piped water for human consumption that serves at least two, but not more than four, service connections, including any collection, treatment, storage, and distribution facilities under control of the operator of such system which are used primarily in connection with such system, and any collection or pretreatment storage facilities not under the control of the operator which are used primarily in connection with such system; it does not include two or more service connections,

which supply dwelling units occupied by members of the same family, on one parcel, all as set forth in Monterey County Code section 15.04.020 (g).

(dd) "Majority Vote" means the affirmative vote of six Directors then present and voting at a meeting of the Board.

(ee) "Member" or "Members" means the GSA Eligible Entities listed in the attached Exhibit "A" that have executed this Agreement, including any new Members that may subsequently join this Agency with the authorization of the Board, pursuant to Section 5.2 of this Agreement.

(ff) "Mutual Water Company" has the meaning set forth in Corporations Code section 14300.

(gg) "Permanent Board" means the permanent Board of Directors established pursuant to Section 6.3 of this Agreement.

(hh) "Permanent Director" means a Director appointed to the Permanent Board.

(ii) "Permanent Director Position" means a Director Position on the Permanent Board.

(jj) "Primary Director" means a Primary Director appointed pursuant to Sections 6.4 of this Agreement.

(kk) "Public Water System" means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year. A public water system includes the following: (1) Any collection, treatment, storage, and distribution facilities under control of the operator of the system that are used primarily in connection with the system, (2) Any collection or pretreatment storage facilities not under the control of the operator that are used primarily in connection with the system, or (3) Any water system that treats water on behalf of one or more public water systems for the purpose of rendering it safe for human consumption, all as set forth in Health and Safety Code section 116275 (h).

(ll) "South County Cities" means the cities of Gonzales, Soledad, Greenfield and King City.

(mm) "State" means the State of California.

(nn) "State Small Water System" means a system for the provision of piped water to the public for human consumption that serves at least five, but not more than 14, service connections and does not regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of the year, as set forth in California Health and Safety Code section 116275 (n).

(oo) "Super Majority Vote" means the affirmative vote of eight Directors then present and voting at a meeting of the Board.

(pp) "Super Majority Plus Vote" means the affirmative vote of eight Directors then present and voting at a meeting of the Board but including the affirmative vote of three of the Agricultural Directors.

(qq) "Sustainable Groundwater Management Act" or "SGMA" means the comprehensive groundwater legislation collectively enacted and referred to as the "Sustainable Groundwater Management Act" as codified in California Water Code Sections 10720 *et seq.* and as may be amended from time-to-time.

(rr) "WRA" means the Water Resources Agency of the County of Monterey.

Unless otherwise indicated, all statutory references are to the statutory codes of the State.

Article II: The Agency

Section 2.1 – Agency Established.

There is hereby established a joint powers agency known as the Salinas Valley Basin Groundwater Sustainability Agency. The Agency shall be, to the extent provided by law, a public entity separate from the Members of this Agreement.

Section 2.2 – Purpose Of The Agency.

The purpose of Agency is to cooperatively carry out the requirements of SGMA including, but not limited to, serving as the GSA for the Basin and developing, adopting and implementing a GSP that achieves groundwater sustainability in the Basin, all through the exercise of powers granted to a GSA by SGMA and those powers common to the members as provided in the Act.

Article III: Term

Section 3.1 – Term.

This Agreement shall become operative on the Effective Date. Subject to the terms of Sections 11.6, 11.7 and 11.8, below, this Agreement shall remain in effect unless terminated pursuant to Section 11.10, below.

Article IV: Powers

Section 4.1 – Powers.

The Agency shall possess the ability to exercise those powers specifically granted by the Act, SGMA, and the common powers of its Members related to the purposes of the Agency, including, but not limited to, the following:

a) To designate itself the GSA for the Basin pursuant to SGMA.

b) To adopt rules, regulations, policies, bylaws and procedures governing the operation of the Agency and the adoption and implementation of the GSP.

c) To develop, adopt and implement a GSP for the Basin pursuant to SGMA.

d) To retain or employ consultants, advisors, independent contractors, agents and employees.

e) To obtain legal, financial, accounting, technical, engineering, and other services needed to carry out the purposes of this Agreement.

f) To conduct studies, collect and monitor all data related and beneficial to the development, adoption and implementation of the GSP for the Basin.

g) To perform periodic reviews of the GSP including submittal of annual reports.

h) To register and monitor wells.

i) To issue revenue bonds or other appropriate public or private debt and incur debts, liabilities or obligations.

j) To levy taxes, assessments, charges and fees as provided in SGMA or as otherwise provided by law.

k) To regulate and monitor groundwater extractions as permitted by SGMA, provided that this provision does not extend to a Member's operation of its system to distribute water once extracted or otherwise obtained, unless and to the extent required by other laws now in existence or as may otherwise be adopted.

l) To establish and administer projects and programs for the benefit of the Basin.

m) To cooperate, act in conjunction, and contract with the United States, the State, or any agency thereof, counties, municipalities, special districts, groundwater sustainability agencies, public and private corporations of any kind (including without limitation, investor-owned utilities), and individuals, or any of them, for any and all purposes necessary or convenient for the full exercise of the powers of the Agency.

n) To accumulate operating and reserve funds and invest the same as allowed by law for the purposes of the Agency.

o) To apply for and accept grants, contributions, donations and loans under any federal, state or local programs for assistance in developing or implementing any of its projects or programs in connection with any project untaken in the Agency's name for the purposes of the Agency.

p) To acquire by negotiation, lease, purchase, construct, hold, manage, maintain, operate and dispose of any buildings, property, water rights, works or improvements within and without the respective jurisdictional boundaries of the Members necessary to accomplish the purposes describe herein.

q) To sue or be sued in its own name.

r) To invest funds as allowed by law.

s) Any additional powers conferred under SGMA or the Act, or under applicable law, insofar as such powers are needed to accomplish the purposes of SGMA, including all powers granted to the Agency under Article 4 of the Act which are in addition to the common powers of the Members, including the power to issue bonds or otherwise incur debts, liabilities or obligations to the extent authorized by the Act or any other applicable provision of law and to pledge any property or revenues of the rights thereto as security for such bonds and other indebtedness.

t) Any power necessary or incidental to the foregoing powers in the manner and according to the procedures provided for under the law applicable to the Members to this Agreement and to perform all other acts necessary or proper to fully carry out the purposes of this Agreement.

Section 4.2 – Exercise Of Powers.

In accordance with Section 6509 of the Act, the foregoing powers shall be subject to the restrictions upon the manner of exercising such powers pertaining to the County.

Section 4.3 – Water Rights And Consideration Of All Beneficial Uses And Users Of Groundwater In The Basin.

As set forth in Water Code section 10723.2 the GSA shall consider the interests of all beneficial uses and users of groundwater in the Basin, as well as those responsible for implementing the GSP. Additionally, as set forth in Water Code section 10720.5(a) any GSP adopted pursuant to this Agreement shall be consistent with Section 2 of Article X of the California Constitution and nothing in this Agreement modifies the rights or priorities to use or store groundwater consistent with Section 2 of Article X of the California Constitution, with the exception that no extraction of groundwater between January 1, 2015 and the date the GSP is adopted may be used as evidence of, or to establish or defend against, any claim of prescription. Likewise, as set forth in Water Code section 10720.5(b) nothing in this Agreement or any GSP

adopted pursuant to this Agreement determines or alters surface water rights or groundwater rights under common law or any provision of law that determines or grants surface water rights.

Section 4.4 – Preservation Of Police Powers.

Nothing set forth in this Agreement shall be deemed to modify or otherwise limit a Member's police powers in any way, or any authority to regulate groundwater under existing law or any amendment thereto.

Article V: Membership

Section 5.1 – Members.

The Members of the Agency shall be the entities listed on the attached Exhibit A so long as their membership has not been withdrawn or terminated pursuant to the provisions of Article XI of this Agreement. GSA Eligible Entities shall have until the Determination Date to execute this Agreement and pay their Initial Contribution, and become Members. Any GSA Eligible Entity that has not executed this Agreement and paid their Initial Contribution by the Determination Date shall be subject to the process described in Section 5.2, below, to become a Member.

Section 5.2 – New Members.

New Members may be added to the Agency by the unanimous vote of all other Members so long as: 1) the new Member is a GSA Eligible Entity; and, 2) the new Member agrees to or has met any other conditions that the existing Members may establish from time-to-time.

Once an application is approved unanimously by the existing Members the attached Exhibit A shall be amended to reflect the new Member.

Article VI: Directors And Officers

Section 6.1 – Board Of Directors.

The Agency shall be governed and administered by an eleven (11) member Board of Directors which is hereby established. All voting power of the Agency shall reside in the Board.

Section 6.2 – Initial Board of Directors.

An Initial Board shall be composed of the Director Positions with the qualifications and Appointing Authority as described in Exhibit B. The nominating groups identified in Section 6.5, below, may, but are not required to, provide nominations to the relevant Appointing Authority for the Initial Board; however, any such nomination must be received by the respective Appointing Authority no later than January 31, 2017. If such nominations are received no later than the time specified the Appointing Authorities shall follow the respective procedures for

appointment to the Permanent Board set forth in Section 6.5, below. If such nominations are not received by the time specified, the Appointing Authority may make appointments to the Initial Board as it determines in its sole discretion.

The Initial Board shall serve only until September 30, 2017, at which time a Permanent Board shall be appointed as described below.

Section 6.3 – Permanent Board.

Subject to the Appointment and Nominating procedures set forth in Section 6.5, below, beginning on October 1, 2017, a Permanent Board shall be established consisting of the Director Positions with the qualifications and Appointing Authority as described in Exhibit B. With the exception of the CPUC Regulated Water Company Director Position, each Permanent Director Position shall have a term consisting of three (3) years and shall hold office until their successor is appointed by their Appointing Authority and the Agency has been notified of the succession. The terms of Permanent Director Positions shall be staggered, with Director Positions identified in rows (a), (c), (f), (h) and (j) of exhibit C serving three (3) year terms from initial appointment, and those identified in rows (b), (d), (g), (i), and (k) serving two (2) year terms from initial appointment, and thereafter serving three (3) year terms. The CPUC Regulated Water Company Director Position shall serve a term of two (2) years, and a Director shall hold office until their successor is appointed and the Agency has been notified of the succession. Notwithstanding the actual date of their initial appointment, for purposes of establishing the terms of Permanent Directors such initial appointment shall be deemed to have commenced on the July 1 preceding such initial appointment, and the terms of Directors shall thereafter commence on July 1 of the respective appointing year. Each Director Position shall require an affirmative appointment by the Appointing Authority for every term.

Section 6.4 – General Qualifications.

a) Each Director, whether on the Initial Board or Permanent Board, must have the following general qualifications:

i. General education and/or knowledge, interest in and experience relating to the control, storage, and beneficial use of groundwater.

ii. General understanding and knowledge of the Basin and all its beneficial users.

iii. Working knowledge and understanding of how to develop strategic plans, policies, programs, and financing/funding mechanisms.

iv. Genuine commitment to collaboratively work together to (i) achieve groundwater sustainability through the adoption and implementation of a GSP for the Basin, and all its beneficial uses; and (ii) provide for the ongoing sustainable management of the Basin.

v. General knowledge and understanding of one or more of the different facets

(administration, financial, legal, organizational, personnel, etc.) needed for a successful and productive organization.

vi. Ability to commit the time necessary, estimated at a minimum 15-20 hours per month, to responsibly fulfill their commitment to the organization. This includes, but is not limited to: (i) Board meetings, (ii) Board training, (iii) analyzing financial statements and technical reports, (iv) reviewing Board documents before Board meetings, (v) attending Board meetings, and (vi) serving on committees to which they are assigned.

vii. A permanent resident within the Basin, or a representative of an agency with jurisdiction, or a business or organization with a presence, within the Basin.

b) Nominating groups and Appointing Authorities, as described in Section 6.5, should endeavor to avoid nominating or appointing a person to a Director Position that, because of his or her employment or other financial interest, is likely to be disqualified from a substantial number of decisions to be made by the Board on the basis of conflict-of-interest requirements.

Section 6.5 – Appointments and Nominations for Director Positions on the Permanent Board.

The appointment and nominating process for each Primary and Alternate Director Positions on the Permanent Board shall be as follows:

a) City of Salinas Director Position.

The City of Salinas shall appoint the Director Position listed in Row (a) of Exhibit B, the specific qualifications of such Director Position to be at the discretion of the City of Salinas.

b) South County Cities Director Position.

The Director Position listed in Row (b) of Exhibit B shall be filled by a representative from one of the four cities listed therein. The City Selection sub-Committee shall determine which city shall be the Appointing Authority for each term of the Director Position. The specific qualifications of such Director Position shall be at the discretion of that city designated the Appointing Authority. If the City Selection sub-Committee cannot reach agreement on a city to be the Appointing Authority for this Director Position, the County Board of Supervisors shall decide which city shall be the Appointing Authority.

c) Other GSA Eligible Entity Director Position.

i. Representative of the entities listed on Exhibit C shall be eligible to participate in the nominating process for the Other GSA Eligible Entity Director Position listed in Row (c) of Exhibit B.

ii. The representatives collectively by agreement among themselves shall make nominations to the Appointing Authority for the persons to fill both the Primary and Alternate Director Positions when the term of such position are expiring or are vacant.

iii. The representatives shall nominate one or more persons to fill both the Primary and Alternate Director Positions. If more than one person is nominated the representatives shall indicate the preferred nominee.

iv The Appointing Authority shall appoint the nominee (if only one) or appoint from among the nominees; the Appointing Authority may reject a nominee only for Cause. If the representatives cannot or do not forward any nominations the Appointing Authority shall make the appointment based upon its own determination.

v. The representatives may also advise the Appointing Authority regarding the removal of their nominee from the Director Positions for Cause. If the Appointing Authority determines that Cause exists such Director shall be removed and a new Director appointed to fill out the remaining term of the removed Director. The representatives may also request that their nominee in the Director Position be removed for any reason or no reason. If such request is made the Appointing Authority shall remove the Director and a new Director appointed to fill out the remaining term of the removed Director.

vi. From time-to-time entities may ask to be removed from Exhibit C. If such request is made the Appointing Authority shall notify the other Members and the Board, and Exhibit C shall be modified accordingly.

vii. From time-to-time other entities may request to be included on Exhibit C. The then-existing representatives shall inform the Appointing Authority if such requests are acceptable. If accepted by the representatives the Appointing Authority shall notify the other Members and the Board, and Exhibit C shall be modified accordingly.

d) Disadvantaged Community, or Public Water System Systems, including Mutual Water Companies serving residential customers, Director Position.

i. Representative of the entities listed on Exhibit D shall be eligible to participate in the nominating process for the Disadvantaged Community, or Public Water System Systems, including Mutual Water Companies serving residential customers, Director Position listed in Row (d) of Exhibit B.

ii. The representatives by agreement among themselves shall collectively make nominations to the Appointing Authority for the persons to fill both the Primary and Alternate Director Positions when the term of such positions are expiring or are vacant.

iii. The representatives shall nominate one or more persons to fill both the Primary and Alternate Director Positions. If more than one person is nominated the representatives shall indicate the preferred nominee.

iv. The Appointing Authority shall appoint the nominee (if only one) or appoint from among the nominees; the Appointing Authority may reject a nominee only for Cause. If the representatives cannot or do not forward any nominations the Appointing Authority shall make the appointment based upon its own determination.

v. The representatives may also advise the Appointing Authority regarding the removal of their nominee from the Director Positions for Cause. If the Appointing Authority determines that Cause exists such Director shall be removed and a new Director appointed to fill out the remaining term of the removed Director. The representatives may also request that their nominee in the Director Position may be removed for any reason or no reason. If such request is made the Appointing Authority shall remove the Director and a new Director appointed to fill out the remaining term of the removed Director.

vi. From time-to-time entities may ask to be removed from Exhibit D. If such request is made the Appointing Authority shall notify the other Members and the Board, and Exhibit D shall be modified accordingly.

vii. From time-to-time other entities may request to be included on Exhibit D. The then-existing representatives shall inform the Appointing Authority if such requests are acceptable. If accepted by the representatives the Appointing Authority shall notify the other Members and the Board, and Exhibit D shall be modified accordingly.

e) CPUC Regulated Water Company Director Position.

i. Representative of the entities listed on Exhibit E must meet the requirements of Section 1.1 (o) and shall be eligible to participate in the nominating process for the CPUC Regulated Water Company Director Position listed in Row (e) of Exhibit B.

ii. The representatives by agreement among themselves shall collectively make nominations to the Appointing Authority for the persons to fill both the Primary and Alternate Director Positions when the term of such position are expiring or are vacant.

iii. The representatives shall nominate one or more persons to fill both the Primary and Alternate Director Positions. If more than one person is nominated the representatives shall indicate the preferred nominee.

iv The Appointing Authority shall appoint the nominee (if only one) or appoint from among the nominees; the Appointing Authority may reject a nominee only for Cause. If the representatives cannot or do not forward any nominations the Appointing Authority shall make the appointment of an employee or agent of a CPUC Regulated Water Company listed on Exhibit E based upon its own determination.

v. The representatives may also advise the Appointing Authority regarding the removal of their nominee from the Director Position for Cause, although such authority to remove shall rest solely with the Appointing Authority.

vi. From time-to-time entities may ask to be removed from Exhibit E. If such request is made the Appointing Authority shall notify the other Members and the Board, and Exhibit E shall be modified accordingly.

vii. From time-to-time other entities may request to be included on Exhibit E. The then-existing representatives shall inform the Appointing Authority if such requests are acceptable. If accepted by the representatives the Appointing Authority shall notify the other Members and the Board, and Exhibit E shall be modified accordingly.

f) Agriculture Director Positions.

i. The Agricultural Association shall be eligible to participate in the nominating process for the Agriculture Director Positions listed in Rows (f) – (i) of Exhibit B. The Agricultural Association shall be solely responsible for its membership.

ii. The Agricultural Association shall make nominations to the Appointing Authority for the persons to fill each Primary and Alternate Director Position when the terms of such positions are expiring or are vacant.

iii. The Agricultural Association shall nominate at least two persons to fill each Director Position; the Agricultural Association shall indicate the preferred nominee for each Director Position.

iv The Appointing Authority shall appoint from among the nominees for each Director Position; the Appointing Authority may reject a nominee only for Cause. If the Agricultural Association cannot or does not forward any nominations the Appointing Authority shall make the appointment based upon its own determination.

v. The Agricultural Association may also advise the Appointing Authority regarding the removal of a nominee from a Director Position for Cause. If the Appointing Authority determines that Cause exists such Director shall be removed and a new Director appointed to fill out the remaining term of the removed Director. The Agricultural Association may also request that

their nominee in a Director Position may be removed for any reason or no reason. If such request is made the Appointing Authority shall remove the Director and a new Director appointed to fill out the remaining term of the removed Director.

g) Environment Director Position.

i. Representative of the entities listed on Exhibit F shall be eligible to participate in the nominating process for the Environment Director Position listed in Row (j) of Exhibit B.

ii. The representatives by agreement among themselves shall collectively make nominations to the Appointing Authority for the persons to fill both the Primary and Alternate Director Positions when the term of such positions are expiring or are vacant.

iii. The representatives shall nominate at least two persons to fill both the Primary and Alternate Director Positions and the representatives shall indicate the preferred nominee.

iv The Appointing Authority shall appoint from among the nominees; the Appointing Authority may reject a nominee only for Cause. If the representatives cannot or do not forward any nominations the Board shall solicit applications from interested persons. At an open public meeting, the Board shall select qualified applicants whose names shall be forwarded to the Appointing Authority. The Board may indicate a preferred nominee. The Appointing Authority shall make the appointment from the list of candidates in its sole discretion. If the Board cannot, or does not, forward a list of candidates, the Appointing Authority shall make the appointment based upon its own determination.

v. The representatives may also advise the Appointing Authority regarding the removal of their nominee from the Director Position for Cause. If the Appointing Authority determines that Cause exists such Director shall be removed and a new Director appointed to fill out the remaining term of the removed Director. The representatives may also request that their nominee in the Director Position may be removed for any reason or no reason. If such request is made the Appointing Authority shall remove the Director and a new Director appointed to fill out the remaining term of the removed Director.

vi. From time-to-time entities may ask to be removed from Exhibit F. If such request is made the Appointing Authority shall notify the other Members and the Board, and Exhibit F shall be modified accordingly.

vii. From time-to-time other entities may request to be included on Exhibit F. The then-existing representatives shall inform the Appointing Authority if such requests are acceptable. If accepted by the representatives the

Appointing Authority shall notify the other Members and the Board, and Exhibit F shall be modified accordingly.

h) Public Member Director Position.

i. The Public Member Primary and Alternate Director Positions listed in Row (k) of Exhibit B shall be filled by application to the Board when the term of such position is expiring or is vacant.

ii. Board staff shall process the applications to an open and public meeting of the Board.

iii. At the public hearing, the Board shall select the qualified applicants whose names shall be forwarded to the Appointing Authority. The Board may indicate a preferred nominee.

iv The Appointing Authority shall appoint from among the nominees in its sole discretion. If the Board cannot or does not forward any nominations the Appointing Authority shall make the appointment based upon its own determination.

v. The Board may also advise the Appointing Authority regarding the removal of the Public Member Director for Cause, although such authority to remove shall rest solely with the Appointing Authority.

Section 6.6 – Primary Directors And Alternates.

Subject to the Appointing and Nominating procedures set forth in Section 6.5, above, each Appointing Authority shall appoint one Primary Director and one Alternate Director for each Director Position. With the exception of the Chairperson and Vice-Chairperson duties as more fully described in Section 6.7, below, the Alternate Director shall serve and assume the rights and duties of the Primary Director when the Primary Director is unable to attend or participate in a Board meeting. Unless appearing as a substitute for a Primary Director, Alternate Directors shall have no vote, and shall not participate in any discussions or deliberations of the Board, but may appear at Board meetings as members of the public. The Primary and Alternate Directors may be removed by their Appointing Authority only for Cause only upon the recommendation of or consultation with the nominating body for that Director Position, or upon the request of the nominating body for that Director Position. In the event that a Primary or Alternate Director is removed from their position, that Director Position shall become vacant and the Appointing Authority for that Director Position shall appoint a new Primary or Alternate Director pursuant to the provisions of Section 6.5 who shall fill the remaining term of that Director Position. In the event that a Director resigns from a Director Position, the Board shall notify the nominating body for that Director Position and the Appointing Authority for that Director Position shall appoint a new Primary or Alternate Director pursuant to the provisions of Section 6.5 who shall fill the remaining term of that Director Position.

Section 6.7 – Officers Of The Board.

a) Designation.

Officers of the Board shall consist of a Chairperson and Vice-Chairperson who shall be selected from the Primary Directors. The Chairperson shall preside at all meetings of the Board. Notwithstanding the appointment of an Alternate Director for the Chairperson, the Vice-Chairperson shall perform the duties of the Chairperson in the absence or disability of the Chairperson; however, the Alternate Director may otherwise attend and participate in the meeting as a substitute for the absent Primary Director. The Chairperson and Vice-Chairperson shall exercise and perform such other powers and duties as may be assigned by the Board. In the absence of both the Chairperson and Vice-Chairperson, and notwithstanding the appointment of an Alternate Director for the Director Position serving as Vice-Chairperson, the Board shall elect a Chairperson Pro-Tem from the Primary Directors to preside at a meeting; however, the Alternate Director for the Vice-Chairperson may otherwise attend and participate in the meeting as a substitute for the absent Primary Director.

b) Election.

The Board shall elect officers at the initial meeting of the Board, described in Section 7.1, below. The Primary Director appointed by the City of Salinas shall be designated as the Chairperson Pro Tem to convene and preside at the initial meeting of the Board, described in Section 7.1, until a Chairperson is elected by the Board. The Chairperson so elected shall serve in such capacity until June 30 of the succeeding calendar year. Thereafter, the Board shall annually elect the officers of the Board from the Primary Directors. Officers of the Board shall hold office for a term of one year commencing on July 1 of each calendar year and they may serve for multiple consecutive terms. Officers of the Board may be removed and replaced at any time, with or without cause, by a Majority Vote. In the event that an officer loses their position as a Primary Director, that officer position shall become vacant and the Board shall elect a new officer from existing Primary Directors to serve the remaining officer term.

Section 6.8 – Bylaws.

The Board shall adopt Bylaws governing the conduct of meetings and the day-to-day operations of the Agency on or before the first anniversary of the Effective Date.

Section 6.9 – Official Seal And Letterhead.

The Board may adopt, and/or amend, an official seal and letterhead for the Agency.

Section 6.10 – Conflict of Interest.

Directors shall be subject to the provisions of the California Political Reform Act, California Government Code section 81000 et seq, and all other laws governing conflicts of interests. Directors shall file the statements required by Government Code section 87200, et seq.

Article VII: Board Meetings And Actions

Section 7.1 – Initial Meeting.

The initial meeting of the Board shall be held at either the County Board of Supervisors chambers, located at 168 W. Alisal Street in Salinas, or at the Salinas City Council chambers, located at 200 Lincoln Avenue in Salinas within thirty days (30) days of the Effective Date of this Agreement. The date and time of the meeting shall be prominently publicized and noticed in addition to any requirements of the Brown Act in an effort to maximize public participation.

Section 7.2 – Regular Meeting Schedule.

At its initial meeting, and annually before July 1 of each calendar year thereafter, the Board shall establish a schedule of regular meetings, including time and place, at a location overlying the Basin. The Board may vote to change the regular meeting location, time and place, and may call special or emergency meetings, provided that the new, special or emergency meeting location remains at a place overlying the Basin, unless otherwise authorized by the Brown Act.

Section 7.3 – Principal Office.

At its initial meeting the Board shall establish a principal office for the Agency, which shall be located at a place overlying the Basin. The Board may change the principal office from time to time as the Board sees fit so long as that principal office remains at a location overlying the Basin.

Section 7.4 – Conduct Of Board Meetings.

Meetings of the Board of Directors shall be noticed, held, and conducted in accordance with the provisions of the Brown Act and such By-laws as the Board may adopt that are consistent with the Brown Act.

Section 7.5 – Quorum.

A quorum of the Board shall consist of a majority of the Director Positions.

Section 7.6 – Voting.

Each Director Position shall have one vote. In all cases, when a quorum is present, a Majority Vote shall be required to conduct business, unless a Super Majority Vote or a Super Majority Plus Vote is required.

Section 7.7 – Super Majority Vote Requirement.

Items that require a Super Majority Vote include the following unless otherwise required by law:

a) Approval of a GSP;

b) Amendment of budget and transfer of appropriations;

c) Withdrawal of Members pursuant to Section 11.6 (d); and,

d) Termination of Members pursuant to Section 11.7 (c).

Section 7.8 – Super Majority Plus Vote Requirement.

Items that require a Super Majority Plus Vote include the following unless otherwise required by law:

a) Decisions to impose fees not requiring a vote of the electorate or property owners;

b) Proposals to submit to the electorate or property owners (as required by law) decisions to impose fees or taxes; and

c) Limitations on well extractions (pumping limits).

Section 7.9 – Conflict Of Interest Code.

At the initial meeting of Board, the Board shall begin the process for adoption and filing of a Conflict of Interest Code pursuant to the provisions of the Political Reform Act of 1974 (Government Code section 81000 et seq.).

Article VIII: Board Committees

Section 8.1 – Committees Of The Board.

a) Board Committees.

The Board may from time-to-time establish one or more standing or ad hoc committees consisting of Directors to assist in carrying out the purposes and objects of the Agency, including but not limited to a Budget and Finance Committee, Planning Committee, and an Executive Committee. The Board shall determine the purpose and need for such committees. Meetings of standing committees shall be subject to the requirements of the Brown Act.

b) Advisory Committee.

The Board shall establish an advisory committee consisting of Directors and non-Directors. The advisory committee shall be designed to ensure participation by and input to the Board of those constituencies set forth in Water Code section 10723.2 whose interests are not directly represented on the Board. The Board shall determine the number and qualifications of committee members.

Article IX: Operations And Management

Section 9.1 – Initial Administrative And Legal Services.

One or more of the Members shall provide initial administrative, legal and other support services to the Agency at no charge until the appointment of the Permanent Board as provided in Section 6.3, above. The Members shall collectively determine which of the Members shall provide such services.

Section 9.2 – Contracting Administrative And Legal Services.

The Agency may engage one or more Members to provide administrative or legal services following the conclusion of the initial administrative and legal services described in Section 9.1 of this Agreement, on terms and conditions acceptable to the Board. Any Member so engaged shall have such responsibilities as are set forth in the contract for such Member's services.

Section 9.3 – Executive Director.

The Agency may appoint an Executive Director from time-to-time under terms and conditions to be determined by the Board. The Executive Director shall report to and serve at the pleasure of the Board. The Executive Director shall be responsible for the general administration of the Agency, the preparation and implementation of a GSP, and such other duties as may be determined by the Board. If the Board has contracted for administrative services as described in Section 9.2, above, and appoints an Executive Director, the Executive Director shall be responsible for the oversight and control of such contracted administrative services pursuant to the policies and directives established by the Board.

Section 9.4 – Legal Counsel And Other Officers.

a) General Counsel

The Agency may appoint a General Counsel from time-to-time under terms and conditions to be determined by the Board. The General Counsel shall report to and serve at the pleasure of the Board. The General Counsel shall be responsible for the general oversight of the Agency's legal affairs, including litigation. The Board may contract with other counsel for specialized legal services under the supervision of the General Counsel.

b) Treasurer and Auditor

The City of Salinas shall serve as the initial Treasurer and Auditor for the Agency upon its formation, and shall discharge the duties set forth in Sections 6505 and 6505.5 of the Act. Subsequent to formation of the Agency, the Board may appoint a separate Treasurer or separate Auditor pursuant to Section 6505.6 of the Act, and those officers shall discharge the duties set forth in Sections 6505 and 6505.5 of the Act, respectively. The Board may change such Auditor or Treasurer from time-to-time provided such chance is consistent with the Act.

c) Custodian of Property

The Public Works Director of the City of Salinas ("PW Director") shall serve as the initial Custodian of the Agency's Property as set forth in Section 6505.1 of the Act upon the Agency's formation. The PW Director shall file an official bond as described in Government Code section 1450 et seq. in the amount of $50,000, the premium of which shall be paid by the Agency. Subsequent to the formation of the Agency, the Board may designate a different Custodian provided such Custodian files an official bond in an amount required by the Board.

b) Other Officers

Subject to the limits of the Agency's approved budget, the Board may establish other officer positions and appoint and contract for the services of such other officers as it may deem necessary or convenient for the business of the Agency, all of whom shall serve at the pleasure of the Board.

Section 9.5 – Employees.

Subject to the limits of the Agency's approved budget, the Agency may hire employees to discharge the duties and responsibilities of the Agency, subject to the general oversight and control of the Executive Director.

Section 9.6 – Independent Contractors.

Subject to the limits of the Agency's approved budget, the Board may contract for the services of such consultants, advisers and independent contractors as it may deem necessary or convenient for the business of the Agency.

Article X: Financial Provisions

Section 10.1 – Fiscal Year.

The Fiscal Year of the Agency shall be July 1 – June 30.

Section 10.2 – Establishment Of Funds.

The Board shall establish and maintain such funds and accounts as may be required by generally accepted government accounting practices. The Agency shall maintain strict accountability of all funds and report all receipts and disbursements of the Agency on no less than a quarterly basis.

Section 10.3 – Budgets.

a) Initial Budgets

The initial budget of the Agency for the Fiscal Year ending June 30, 2017, shall not exceed $50,000. The budgets of the Agency for Fiscal Years 2017 – 2018 and 2018 – 2019 shall not exceed $1,100,000 each unless otherwise agreed to by the unanimous vote of the Members as

described in Section 10.4, below.

b) Regular Budgets

Beginning for Fiscal Year 2019 – 2020, no later than sixty (60) days prior to the end of each Fiscal Year, the Board shall adopt a budget for the Agency for the ensuing Fiscal Year. The Board may authorize mid-year budget adjustments, as needed by Super Majority Vote.

Section 10.4 – Initial Contributions.

a) Fiscal Years 2017 – 2018 and 2018 - 2019

In order to provide the necessary capital to initially fund the Agency during Fiscal Year 2017 - 2018, the Members identified below shall each provide the listed Initial Contribution to the Agency's Treasurer/Auditor no later than July 7, 2017:

1) County:	$670,000
2) WRA:	$ 20,000
3) City of Salinas:	$330,000
4) City of Gonzales:	$ 20,000
5) City of Soledad:	$ 35,000
6) City of Greenfield:	$ 35,000
7) City of King:	$ 30,000
8) Castroville CSD	$ 20,000

In order to provide the necessary capital to fund the Agency during Fiscal Year 2018 – 2019, the Members identified below shall each provide the listed Initial Contribution to the Agency's Treasurer/Auditor no later than July 6, 2018:

1) County:	$670,000
2) WRA:	$ 20,000
3) City of Salinas:	$330,000
4) City of Gonzales:	$ 20,000
5) City of Soledad:	$ 35,000
6) City of Greenfield:	$ 35,000
7) City of King:	$ 30,000
8) Castroville CSD	$ 20,000

b) Additional Initial Contributions

New Members not listed above executing this Agreement no later than the Determination Date shall pay a minimum Initial Contribution of twenty thousand dollars ($20,000) per year for the two fiscal years. New Members not listed above executing this Agreement after the

Determination Date shall pay a minimum Initial Contribution of fifty thousand dollars ($50,000) per year for the two fiscal years.

Should the Board determine that additional funding for each of Fiscal Years 2017 – 2018 and 2018 – 2019 is necessary for Agency operations the Board shall adopt a resolution requesting each of the Members to consider additional funding and demonstrating in detail 1) the need for the funding, and 2) the purposes for which the additional funding will be utilized. Such requested funding shall be in the same proportion as the Initial Contributions set forth in Section 10.4 (a) unless the Members unanimously agree otherwise.

Upon receipt of the resolution requesting additional funding representatives of the Members may meet and confer regarding the request; however, each Member shall consider and act upon the request no later than 30 (thirty) days following the adoption of the resolution by the Board.

c) Reimbursement of Initial Contributions

To the extent the Agency is able to secure other funding sources, and to the extent permitted by law, the Agency shall reimburse these Initial Contributions to the Members on a proportionate basis in relation to their cumulative Initial Contributions to the Agency.

Section 10.5 – Payments To The Agency.

All costs and expenses of the Agency may be funded from: (i) voluntary contributions from third parties; (ii) grants; (iii) contributions from Members from time to time to supplement financing of the activities of the Agency; (iv) advances or loans from the Members or other sources; (v) bond revenue; and, (vi) taxes, assessments, fees and/or charges levied by the Agency under the provisions of SGMA or as otherwise authorized by law.

Section 10.6 – Directors' Stipends and Expenses.

Directors shall be eligible to receive a stipend in the amount of $ 100 for each Board meeting actually attended plus mileage to and from Board meetings. In addition, Directors shall be reimbursed for the actual and necessary expenses incurred in the discharge of their duties pursuant to an adopted Board policy. Directors are not required to accept the stipend or mileage, or expenses, and may decline the same by written notice to the Board.

Article XI: Relationship Of Agency And Its Members

Section 11.1 – Separate Entity.

In accordance with Sections 6506 and 6507 of the Act, the Agency shall be a public entity separate and apart from the Members.

Section 11.2 – Liabilities.

In accordance with Section 6507 of the Act, the debt, liabilities and obligations of the Agency shall be the debts, liabilities and obligations of the Agency alone and not of its Members. The Members do not intend hereby to be obligated either jointly or severally for the debts, liabilities or obligations of the Agency, except as may be specifically provided for in California Government Code Section 895.2 as amended or supplemented.

Section 11.3 – Insurance.

The Agency shall procure appropriate policies of insurance providing coverage to the Agency and its Directors, officers and employees for general liability, errors and omissions, property, workers compensation, and any other coverage the Board deems appropriate. Such policies shall name the Members, their officers and employees as additional insureds.

Section 11.4 – Indemnity.

Funds of the Agency may be used to defend, indemnify, and hold harmless the Agency, each Member, each Director, and any officers, agents and employees of the Agency for their actions taken within the course and scope of their duties while acting on behalf of the Agency. To the fullest extent permitted by law, the Agency agrees to save, indemnify, defend and hold harmless each Member from any liability, claims, suits, actions, arbitration proceedings, administrative proceedings, regulatory proceedings, losses, expenses or costs of any kind, whether actual, alleged or threatened, including attorney's fees and costs, court costs, interest, defense costs, and expert witness fees, where the same arise out of, or are attributable in whole or in part, to negligent acts or omissions of the Agency or its employees, officers or agents or the employees, officers or agents of any Member, while acting within the course and scope of an Member relationship with the Agency. Notwithstanding the foregoing, the sole negligence, gross negligence, or intentional acts of any Member is exempted from this Section 11.3 - Indemnity.

Section 11.5 – Agreements With Members

The Agency intends to carry out activities in furtherance of its purposes consistent with the powers established by this Agreement and with the participation of all Members. Notwithstanding the foregoing, the Board shall have the authority to approve any agreements with one or more Members in order to further the purposes of the Agency, including, but not limited to, the commencement of a condemnation action within the jurisdictional boundary of the agreeing Member or Members.

Section 11.6 – Withdrawal Of Members.

a) Any Member shall the have the ability to withdraw by providing ninety (90) days written notice of its intention to withdraw. Said notice shall be given to the Board and to each of the other Members. If such Member is an Appointing Authority, the Member's withdrawal shall not be effective unless and until the non-withdrawing Members agree to an amendment to this

Agreement providing for the composition of and appointment to the Board.

b) A Member shall not be fiscally liable for any contribution to an adopted budget provided that the Member provides written notice ninety (90) days prior to the adoption of the budget of its intention to withdraw.

c) In the event of a withdrawal, this Agreement shall continue in full force and effect among the remaining members as set forth in Section 11.8, below.

d) Notwithstanding the foregoing, Members shall not have the ability to withdraw if there is outstanding bonded debt or other long term liability of the Agency unless and until it is determined by the Board by Super Majority Vote that the withdrawal of the Member shall not adversely affect the ability of the Agency to perform its financial obligations pursuant to the bonded debt or other liability. The Board shall communicate its finding to the non-withdrawing Members who may approve the withdrawal by unanimous vote.

Section 11.7 – Termination Of Members.

a) As an alternative to pursuing litigation against a Member for failure to meet its funding obligations set forth in this Agreement or as may be adopted by the Board from time to time, the Board may vote to terminate such Member. The Board shall transmit its determination to the Members who may approve the termination by unanimous vote of the Members not proposed to be terminated. If such Member is an Appointing Authority, the Member's termination shall not be effective unless and until the non-terminated Members agree to an amendment to this Agreement providing for the composition of and appointment to the Board.

b) In the event of a termination, this Agreement shall continue in full force and effect among the remaining members as set forth in Section 11.8, below.

c) Notwithstanding the foregoing, Members may not be terminated if there is outstanding bonded debt or other long term liability of the Agency unless and until it is determined by the Board by Super Majority Vote that the termination of the Member shall not adversely affect the ability of the Agency to perform its financial obligations pursuant to the bonded debt or other liability. The Board shall communicate its finding to the Members who may approve the termination by unanimous vote of the Members not proposed to be terminated.

Section 11.8 – Continuing Obligations; Withdrawal Or Termination.

a) Provided that at least two Members remain, the withdrawal or termination of one or more Members shall not terminate this Agreement or result in the dissolution of the Agency; this Agreement shall remain in full force and effect among the remaining Members; and the Agency shall remain in operation.

b) Except as provided in Section 11.6 (b), any withdrawal or termination of a Member shall not relieve the Member of its financial obligations under this Agreement in effect prior to the effective date of the withdrawal or termination.

Section 11.9 – Disposition Of Money Or Property Upon Board Determination Of Surplus.

Upon determination by the Board that any surplus money is on hand, such surplus money shall be returned to the then existing Members in proportion to their cumulative contributions to the Agency, or such surplus money may be deposited in a Board designated reserve account. Upon determination by the Board that any surplus properties, works, rights and interests of the Agency are on hand, the Board shall first offer any such surplus for sale to the Members and such sale shall be based on highest bid received. If no such sale is consummated, the Board shall offer the surplus properties, works, rights and interests of the Agency for sale in accordance with applicable law to any governmental agency, private entity or persons for good and adequate consideration.

Section 11.10 – Termination And Dissolution.

a) Mutual Consent

i) Except as otherwise provided in this Section 11.10 (a), this Agreement may be terminated and the Agency dissolved at any time upon the unanimous approval of the Members provided that provision has been made by the Members for the payment, refunding, retirement, or other disposition of any bonded debt or other long term liability in the name of the Agency.

ii) Upon Dissolution of the Agency, each then existing Member shall receive a proportionate share, based upon the cumulative contributions of all then remaining Members, of any remaining assets after all Agency liabilities and obligations have been paid in full. The distribution of remaining assets may be made "in kind" or assets may be sold and the proceeds thereof distributed to the Members. The Agency shall remain in existence for such time as is required to determine such distribution, and the Board, or other person or entity appointed by the Members, shall be responsible for its determination. Such distribution shall occur within a reasonable time after a decision to terminate this Agreement and dissolve the Agency has been approved by the Members. No former Member that previously withdrew or was terminated as of the effective date of the decision to terminate this Agreement and dissolve the Agency shall be entitled to a distribution upon dissolution.

b) Insufficient Members

Subject to the provisions of Sections 11.6 and 11.7, should Members either be terminated or withdraw such that only one Member remains, this Agreement shall terminate and the Agency dissolved. In such event the last remaining Member shall be entitled to all assets of the Agency.

c) Failure to be Financially Sustainable

In the event that the Agency does not take the necessary actions to create a sustainable revenue stream necessary to fully finance its operating budget by the end of Fiscal Year 2018 – 2019 this Agreement shall terminate and the Agency shall be dissolved, unless otherwise agreed to by amendment to this Agreement approved unanimously by all then-existing Members. In the event of such termination and dissolution, the process of dissolution shall begin on July 1, 2019, and proceed as set forth in Section 11.10 (a) (ii), above.

d) Legislative Determination

Should the State adopt legislation specifying that the Basin should be managed by a statutorily designated entity this Agreement shall terminate and the Agency shall be dissolved upon such terms and conditions as the legislation may designate. Upon such dissolution, the assets and liabilities of the Agency shall be disposed of in the manner specified by the legislation. If the legislation does not so specify, the assets and liabilities of the Agency shall be disposed of in the manner provided in Section 11.10 (a), above.

Article XII: Miscellaneous Provisions

Section 12.1 – Complete Agreement.

The foregoing constitutes the full and complete Agreement of the Members. This Agreement supersedes all prior agreements and understandings, whether in writing or oral, related to the subject matter of this Agreement that are not set forth in writing herein.

Section 12.2 – Amendment.

This Agreement may be amended from time-to-time by the unanimous consent of the Members, acting through their governing bodies. Such amendments shall be in the form of a writing signed by each Member.

Section 12.3 – Successors And Assigns.

The rights and duties of the Members may not be assigned or delegated without the written consent of all other Members. Any attempt to assign or delegate such rights or duties in contravention of this Agreement shall be null and void. Any assignment or delegation permitted under the terms of this Agreement shall be consistent with the terms of any contracts, resolutions or indentures of the Agency then in effect.

This Agreement shall inure to the benefit of and be binding upon the successors and assigns of the Members hereto. This section does not prohibit a Member from entering into an independent agreement with another person, entity, or agency regarding the financing of that Member's contributions to the Agency or the disposition of proceeds, which that Member receives under this Agreement so long as such independent agreement does not affect, or purport to affect, the rights and duties of the Agency or the Members under this Agreement.

Section 12.4 – Dispute Resolution.

In the event there are disputes and/or controversies relating to the interpretation, construction, performance, termination, breach of, or withdrawal from this Agreement, the Members involved shall in good faith meet and confer within twenty-one (21) calendar days after written notice has been sent to all the Members. In the event that the Members involved in the dispute ("Disputing Members") are not able to resolve the dispute through informal negotiation, the Disputing Members agree to submit such dispute to formal mediation before litigation. If Disputing Members cannot agree upon the identity of a mediator within ten (10) business days

after a Disputing Member requests mediation, then the non-Disputing Members shall select a mediator to mediate the dispute. The Disputing Members shall share equally in the cost of the mediator who ultimately mediates the dispute, but neither of the Disputing Members shall be entitled to collect or be reimbursed for other related costs, including but not limited to attorneys' fees. If mediation proves unsuccessful and litigation of any dispute occurs, the prevailing Member shall be entitled to reasonable attorneys' fees, costs and expenses in addition to any other relief to which the Member may be entitled. If a Disputing Members refuses to participate in mediation prior to commencing litigation, that Member shall have waived its right to attorneys' fees and costs as the prevailing party.

Section 12.5 – Execution In Parts Or Counterparts.

This Agreement may be executed in parts or counterparts, each part or counterpart being an exact duplicate of all other parts or counterparts, and all parts or counterparts shall be considered as constituting one complete original and may be attached together when executed by the Members hereto. Facsimile or electronic signatures shall be binding.

Section 12.6 – Member Authorization.

The governing bodies of the Members have each authorized execution of this Agreement, as evidenced by their respective signatures below.

Section 12.7 – No Predetermination Or Irrevocable Commitment of Resources.

Nothing herein shall constitute a determination by the Agency or any Members that any action shall be undertaken or that any unconditional or irrevocable commitment of resources shall be made, until such time as the required compliance with all local, state, or federal laws, including without limitation the California Environmental Quality Act, National Environmental Policy Act, or permit requirements, as applicable, have been completed.

Section 12.8 – Notices.

Notices authorized or required to be given pursuant to this Agreement shall be in writing and shall be deemed to have been given when mailed, postage prepaid, or delivered during working hours to the addresses set forth for each of the Members hereto on Exhibit "A" of this Agreement, or to such other changed addresses communicated to the Agency and the Members in writing.

Section 12.9 – Severability And Validity Of Agreement.

Should the participation of any Member, or any part, term or provision of this Agreement, be decided by the courts or the legislature to be illegal, in excess of that Member's authority, in conflict with any law of the State, or otherwise rendered unenforceable or ineffectual, the validity of the remaining portions, terms or provisions of this Agreement shall not be affected thereby and each Member hereby agrees it would have entered into this Agreement upon the same remaining terms as provided herein.

Section 12.10 – Singular Includes Plural.

Whenever used in this Agreement, the singular form of any term includes the plural form and the plural form includes the singular form.

IN WITNESS WHEREOF, the Members hereto, pursuant to resolutions duly and regularly adopted by their respective governing boards, have caused their names to be affixed by their proper and respective officers as of the day and year so indicated.

COUNTY OF MONTEREY

By _____
Chair of the Board of Supervisors

Dated: 12-22-16

APPROVED AS TO FORM

CHARLES J. MCKEE, County Counsel

By _____
LESLIE J. GIRARD

WATER RESOURCES AGENCY OF THE COUNTY OF MONTEREY

By _____
Chair of the Board of Supervisors of the Water Resources Agency

Dated: 1-31-2017

APPROVED AS TO FORM

CHARLES J. MCKEE, County Counsel

By _____

CITY OF SALINAS

By _____
Mayor

Dated: _____

Section 12.10 – Singular Includes Plural.

Whenever used in this Agreement, the singular form of any term includes the plural form and the plural form includes the singular form.

IN WITNESS WHEREOF, the Members hereto, pursuant to resolutions duly and regularly adopted by their respective governing boards, have caused their names to be affixed by their proper and respective officers as of the day and year so indicated.

COUNTY OF MONTEREY

By_____
Chair of the Board of Supervisors

Dated: _____

APPROVED AS TO FORM

CHARLES J. MCKEE, County Counsel

By_____

WATER RESOURCES AGENCY OF THE COUNTY OF MONTEREY

By_____
Chair of the Board of Supervisors of the Water Resources Agency

Dated: _____

APPROVED AS TO FORM

CHARLES J. MCKEE, County Counsel

By_____

CITY OF SALINAS

By_____
Mayor

Dated: 12-20-16

APPROVED AS TO FORM

CHRISTOPHER CALLIHAN, City Attorney

By _____

CITY OF SOLEDAD

By _____
Mayor

Dated: _____

APPROVED AS TO FORM

_____, City Attorney

By _____

CITY OF GONZALES

By _____
Mayor

Dated: _____

APPROVED AS TO FORM

_____, City Attorney

By _____

CITY OF GREENFIELD

By _____
Mayor

Dated: _____

APPROVED AS TO FORM

CHRISTOPHER CALLIHAN, City Attorney

By_____

CITY OF SOLEDAD

By_____
Mayor

Dated: 03/03/17

APPROVED AS TO FORM

Michael Rodriquez, City Attorney

By_____

CITY OF GONZALES

By_____
Mayor

Dated: _____

APPROVED AS TO FORM

_____, City Attorney

By_____

CITY OF GREENFIELD

By_____
Mayor

Dated: _____

CITY OF GONZALES

By Maria Orozco

Maria Orozco, Mayor

Dated: 2/21/17

APPROVED AS TO FORM

By

Michael F. Rodriquez, City Attorney

Dated: 2-21-2017

APPROVED AS TO FORM

_____, City Attorney

By_____

CITY OF KING

By_____
Mayor

Dated: 3-24-2017

APPROVED AS TO FORM

_____, City Attorney

By 3-24-2017

CASTROVILLE COMMUNITY SERVICES

By_____
Chair of the Board of Directors

APPROVED AS TO FORM

_____, District Counsel

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

By_____
Chair of the Board of Directors

APPROVED AS TO FORM

_____, Agency Counsel

APPROVED AS TO FORM

_____, City Attorney

By_____

CITY OF KING

By_____
Mayor

Dated: _____

APPROVED AS TO FORM

_____, City Attorney

By_____

CASTROVILLE COMMUNITY SERVICES

By_____
Chair of the Board of Directors

APPROVED AS TO FORM

_____ District Counsel

APPROVED AS TO FORM

_____, City Attorney

By_____

CITY OF KING

By_____
Mayor

Dated: _____

APPROVED AS TO FORM

_____, City Attorney

By_____

CASTROVILLE COMMUNITY SERVICES

By_____
Chair of the Board of Directors

APPROVED AS TO FORM

_____, District Counsel

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

By Gloria De La Rosa
Chair of the Board of Directors

APPROVED AS TO FORM

Robert R. Wellington Agency Counsel

EXHIBIT A

MEMBERS

COUNTY OF MONTEREY
County Administrative Officer
168 W. Alisal St., Salinas, CA 93901

WATER RESOURCES AGENCY OF MONTEREY COUNTY
General Manager

CITY OF SALINAS
City Manager

CITY OF SOLEDAD
City Manager

CITY OF GONZALES
City Manager

CITY OF GREENFIELD
City Manager

CITY OF KING (KING CITY)
City Manager

CASTROVILLE COMMUNITY SERVICES DISTRICT
General Manager

EXHIBIT B

BOARD OF DIRECTORS

	Director	Representing	Specific Qualifications	Appointing Authority
a)	City of Salinas.	City of Salinas.	To be determined by the Appointing Authority.	Salinas City Council.
b)	South County Cities.	Cities of Gonzales, Soledad, Greenfield, and King City.	To be determined by the Appointing Authority.	Appropriate City Council as recommended by the City Selection sub-Committee.
c)	Other GSA Eligible Entity.	GSA Eligible Entities but not including the cities of Salinas, Gonzales, Soledad, Greenfield or King City.	Must be a representative of a GSA Eligible Entity but not including the cities of Salinas, Gonzales, Soledad, Greenfield or King City.	Monterey County Board of Supervisors.
d)	Disadvantaged Community, or Public Water System, including Mutual Water Companies serving residential customers.	Unincorporated Disadvantaged Communities, or Public Water Systems, including Mutual Water Companies serving residential customers only.	Must be a resident of a Disadvantaged Community in the unincorporated area, or a representative Public Water System, including Mutual Water Companies serving residential customers only.	Castroville Community Services District.
e)	CPUC Regulated Water Company.	CPUC Regulated Water Companies in the Basin.	Must be a representative of a CPUC Regulated Water	Salinas City Council.

			Company.	
f)	Agriculture.	Agricultural interests.	Must be an individual that is: 1) engaged in, and derives the majority of his or her gross income or revenue from, commercial agricultural production or operations; or 2) designated by an entity this is engaged in commercial agricultural production or operations, and the individual derives the majority of his or her gross income or revenue from agricultural production or operations, including as an owner, lessor, lessee, manager, officer, or substantial shareholder of a corporate entity.	Monterey County Board of Supervisors.
g)	Agriculture.	Agricultural interests.	Same as (f).	Monterey County Board of Supervisors.
h)	Agriculture.	Agricultural interests.	Same as (f).	Monterey County Board of Supervisors.
i)	Agriculture.	Agricultural interests.	Same as (f).	Monterey County Board of Supervisors.
j)	Environment.	Environmental users and interests.	Must be a representative of an	Monterey County

			established environmental organization that has a presence or is otherwise active in the Basin.	Board of Supervisors.
k)	Public Member.	Interests not otherwise represented on the Board.	A rural residential well owner; an industrial processor; a Local Small or State Small Water System; or other mutual water company.	Monterey County Board of Supervisors.

EXHIBIT C

OTHER GSA ELIGIBLE ENTITY DIRECTOR POSITION NOMINATING GROUP

COUNTY OF MONTEREY

WATER RESOURCES AGENCY OF MONTEREY COUNTY

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

EXHIBIT D

DISADVANTAGED COMMUNITY, OR PUBLIC WATER SYSTEM, INCLUDING MUTUAL WATER COMPANIES SERVING RESIDENTIAL CUSTOMERS DIRECTOR POSITION NOMINATING GROUP

CASTROVILLE COMMUNITY SERVICES DISTRICT (Group Contact)
Eric Tynan, General Manager
11499 Geil St.
Castroville, CA 95012
(831) 633-2560 phone
(831) 633-3102 fax
info@castrovillecsd.org

ENVIRONMENTAL JUSTICE COALITION FOR WATER

SAN JERARDO COOPERATIVE

SAN ARDO WATER DISTRICT

SAN VICENTE MUTUAL WATER COMPANY

EXHIBIT E

CPUC REGULATED WATER COMPANY DIRECTOR POSITION NOMINATING GROUP

ALISAL WATER CORPORATION DBA ALCO WATER SERVICE (Group Contact)
Thomas R. Adcock, President
249 Williams Road
Salinas, CA 93905
831-424-0441 phone
831-424-0611 fax
tom@alcowater.com

CALIFORNIA WATER SERVICE COMPANY

EXHIBIT F

ENVIRONMENT DIRECTOR POSITION NOMINATING GROUP

SUSTAINABLE MONTEREY COUNTY

LEAGUE OF WOMEN VOTERS OF MONTEREY COUNTY

LANDWATCH MONTEREY COUNTY

FRIENDS AND NEIGHBORS OF ELKHORN SLOUGH

CALIFORNIA NATIVE PLANT SOCIETY, MONTEREY CHAPTER

TROUT UNLIMITED

SURFRIDERS

THE NATURE CONSERVANCY

CARMEL RIVER STEELHEAD ASSOCIATION

MONTEREY HERALD

Published by The Monterey Herald
P.O. Box 271 • Monterey, California 93942
(831) 726.4382

This space is reserved for the County Clerk's Filing Stamp

MONTEREY COUNTY
Account No. 3774937
MAIS CARROLL COMMUNICATIONS COORDINATOR
168 W. ALISAL ST
SALINAS, CA 93901

Legal No. 0005925831
Notice of Public Hearing

Ordered by:

PROOF OF PUBLICATION

STATE OF CALIFORNIA
County of Monterey

I am a citizen of the United States and a resident of the County aforesaid. I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of The Monterey Herald, a newspaper of general circulation, printed and published daily and Sunday in the City of Monterey, County of Monterey, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Monterey, State of California; that the notice, of which the annexed is a printed copy (set in type not smaller than 6 point), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

03/29/17, 04/05/17

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Executed on 04/05/2017 at Monterey, California.

Danielle Landaker

Signature

NOTICE OF PUBLIC HEARING TO CONSIDER FORMATION OF A GROUNDWATER SUSTAINABILITY AGENCY

Salinas Valley Basin Groundwater Sustainability Agency

Notice is hereby given that the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") will hold a public hearing regarding the adoption of a Resolution of Intent to form a Groundwater Sustainability Agency as set forth in the Sustainable Groundwater Management Act, Part 2.74 of Division 6 of the California Water Code (commencing with Section 10720). The boundaries of the proposed GSA are the boundaries of the Salinas Valley Groundwater Basin (Basin no. 3-004), as described in California Department of Water Resources Bulletin 118 (2016 update). The public hearing is for the purpose of reviewing and providing explanation of the proposal, and allowing public input on the formation of the proposed GSA. The public hearing will be held on the following date and time, and at the following location:

Thursday, April 13, 2017
4 p.m.
City of Salinas City Council Chambers (Rotunda)
200 Lincoln Avenue, Salinas, CA 93901

Disability-related modification or accommodation, including auxiliary aids or services, may be requested by any person with a disability who requires a modification or accommodation in order to participate in the meeting. Requests should be referred to the city clerk's office at 200 Lincoln Avenue, Salinas, 758-7381, as soon as possible but by no later than 5 p.m. of the last business day prior to the meeting. Hearing impaired or tty/tdd text telephone users may contact the city by dialing 711 for the California Relay Service (CRS) or by telephoning any other service providers' CRS telephone number.

Publish: March 29; April 5 2017

PROOF OF PUBLICATION

STATE OF CALIFORNIA
County of Monterey

This space is for the county clerk's filing stamp

No:

I am a citizen of the United States and a Resident of the County aforesaid: I am Over the age of eighteen years and not a Party to or interested in the above-Entitled matter. I am the principal clerk of the printer of The King City Rustler, Greenfield News, Soledad Bee, and Gonzales Tribune newspapers of general Circulation by The Superior Court of the County of Monterey, State of California: that the notice of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspapers and not in any supplement thereof on the following dates, to wit:

3/29, 4/05/2017

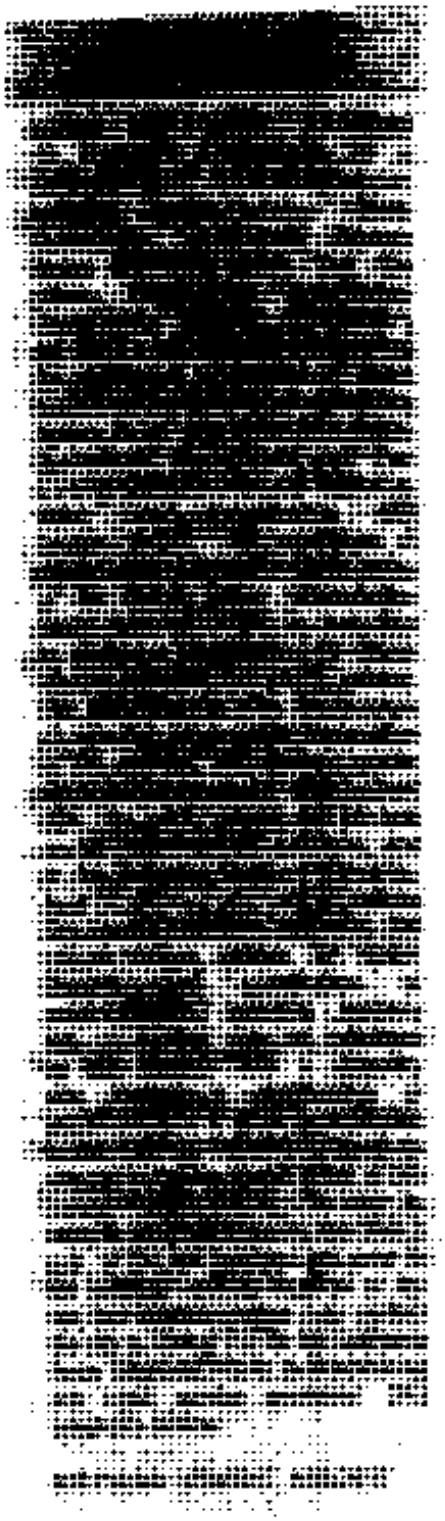
I certify (or declare) under penalty of perjury that the forgoing is true and correct.

Executed on: 4/05/2017

At King City, California

C. Johnson

CHELSEA JOHNSON, OFFICE ASSISTANT



IN THE SUPERIOR COURT of the STATE OF CALIFORNIA
in and for the County of Santa Cruz

CERTIFICATE OF PUBLICATION

Ad No.: 13806

STATE OF CALIFORNIA
COUNTY OF SANTA CRUZ } ss

I, **Alanna Anderson,**
hereby certify that the **Watsonville Register Pajaronian**, a newspaper of general circulation, within the provisions of the government code of the State of California, printed and published in the City of Watsonville, County of Santa Cruz, State of California; that I am the principal clerk of the printer of said newspaper; that the

Legal Notice: NOTICE OF PUBLIC HEARING TO CONSIDER FORMATION OF A GROUNDWATER SUSTAINABILITY AGENCY

of which the annexed clipping is a true printed copy was published in said newspaper on the following dates, to wit:

March 30, 2017
April 6, 2017

I certify under penalty of perjury that the foregoing is true and correct, at Watsonville, California, on the

April 6, 2017

Alanna Anderson, Legal Clerk

(Pas[redacted]e)

"Proof of Publication must be filed with the County Clerk's Office within 30 days of the last publication date, pursuant to Civil Code Section 2466."

Before the Board of Directors of the
Salinas Valley Basin Groundwater Sustainability Agency

Resolution No. 2017-003

Resolution authorizing the Submission to the	)
state Department of Water Resources a Notice	)
of Intent to form a Groundwater Sustainability	)
Agency for the Salinas Valley Groundwater	)
Basin	)

WHEREAS, in the fall of 2014 the California legislature adopted, and the Governor signed into law, three bills (SB 1168, AB 1739, and SB 1319) collectively referred to as the "Sustainable Groundwater Management Act" ("SGMA"), that initially became effective on January 1, 2015, and that has been amended from time-to-time thereafter; and,

WHEREAS, the stated purpose of SGMA, as set forth in California Water Code section 10720.1, is to provide for the sustainable management of groundwater basins at a local level by providing local groundwater agencies with the authority, and technical and financial assistance necessary, to sustainably manage groundwater; and,

WHEREAS, SGMA requires the designation of Groundwater Sustainability Agencies ("GSAs") for the purpose of achieving groundwater sustainability through the adoption and implementation of Groundwater Sustainability Plans ("GSPs") or an alternative plan for all medium and high priority basins as designated by the California Department of Water Resources ("DWR"); and,

WHEREAS, SGMA requires that a basin have a designated GSA by no later than June 30, 2017, and an adopted GSP by no later than January 31, 2020, if a high or medium priority basin in critical overdraft, and no later than January 31, 2022, if a high or medium priority basin; and,

WHEREAS, SGMA authorizes a combination of local agencies to form a GSA by entering into a joint powers agreement as authorized by the Joint Exercise of Powers Act (Chapter 5 of Division 7 of Title 1 of the California Government Code) ("Act"); and,

WHEREAS, the Salinas Valley Basin Groundwater Sustainability Agency ("Agency") is such a joint powers authority and formed effective December 22, 2016, for the purpose of being the GSA for the Salinas Valley Groundwater Basin ("Basin"); and,

WHEREAS, notice of a public hearing was published as required by SGMA and Government Code section 6066 in the Monterey Herald on March 29 and April 5, 2017; and,

WHEREAS, the Agency opened the required public hearing on April 13, 2017, and continued the hearing to April 20, 2017; and,

WHEREAS, the Agency conducted the public hearing on April 20, 2017; and

WHEREAS, the County of Monterey submitted a notice of intent to be the GSA for the Monterey sub-basin of the Basin, and has been declared by the State Water Resources Control Board to be the exclusive GSA for that sub-basin effective April 4, 2017; and

WHEREAS, it was the express intent of the County that the GSA responsibilities for the Monterey sub-basin be transferred or assumed by the Agency; and

WHEREAS, the Agency is committed to the sustainable management of groundwater within the Basin, and all of its sub-basins and aquifers; and,

WHEREAS, it would be in the best interests of the residents, businesses, interested parties and stakeholders in the Basin for the Agency to be designated the exclusive GSA for the Basin (but not including the area within the jurisdictional boundaries of the Marina Coast Water District, the City of Greenfield, or the adjudicated Seaside sub-basin); NOW, THEREFORE,

BE IT RESOLVED, by the Board of Directors of the Salinas Valley Basin Groundwater Sustainability Agency as follows:

1. The above recitals are true and correct.

2. The Agency hereby elects to be the Groundwater Sustainability Agency for the Salinas Valley Groundwater Basin within the County of Monterey, but not including the area within the jurisdictional boundaries of the Marina Coast Water District and the City of Greenfield, or the adjudicated Seaside sub-basin.

3. Staff is authorized and directed to submit to the Department of Water Resources a Notice of Intent to be a Groundwater Sustainability Agency in form and substance substantially similar to Attachment A, attached hereto, together with any modifications as may have been directed by the Board of Directors at the public hearing.

4. Staff is authorized and directed to take such other and further actions as may be necessary or appropriate to implement the intent and purposes of this Resolution.

PASSED AND ADOPTED on this 20th day of April, 2017, by the following vote, to-wit:

AYES: Board Members: Alejo, Calcagno, Granillo, McHatten, Pereira, Secondo, and Chair Gunter

NOES: Board Members: LeNeve, Moitoso (Alternate), McIntyre, and Stefani

ABSENT: None

I, Patricia M. Barajas, Salinas City Clerk and Interim Clerk of the Board of Directors of the Salinas Valley Basin Groundwater Sustainability Agency, hereby certify that the foregoing is the true original resolution of said Board of Directors duly adopted and entered in the minutes thereof for the meeting on April 20, 2017.

Dated: April 21, 2017

MONTEREY HERALD

Published by The Monterey Herald
P.O. Box 271 • Monterey, California 93942
(831) 726.4382

This space is reserved for the County Clerk's Filing Stamp

MARINA COAST WATER DISTRICT
Account No. 2141283
11 RESERVATION RD
MARINA, CA 93933

Legal No. 0005797267
Notice of Public hearing

Ordered by:

PROOF OF PUBLICATION

STATE OF CALIFORNIA
County of Monterey

I am a citizen of the United States and a resident of the County aforesaid. I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of The Monterey Herald, a newspaper of general circulation, printed and published daily and Sunday in the City of Monterey, County of Monterey, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Monterey, State of California; that the notice, of which the annexed is a printed copy (set in type not smaller than 6 point), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

08/19/16, 08/26/16

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Executed on 08/26/2016 at Monterey, California.

Danielle Landaker

Signature

NOTICE OF PUBLIC HEARING
Marina Coast Water District

Notice is hereby given that Marina Coast Water District (MCWD) will hold a public hearing regarding the adoption of a Resolution of Intention to form one or two Groundwater Sustainability Agencies (GSAs) as outlined in the California Water Code, Part 2.74, Sustainable Groundwater Management Act, Section 10723. The proposed GSA boundaries would encompass all of MCWD's water service areas within the Seaside Area Subbasin and the Corral de Tierra Subbasin of the Salinas Valley Groundwater Basin, excluding that portion of MCWD's service area within the Adjudicated Seaside Groundwater Basin. If the non-adjudicated portions of the Seaside Area Subbasin and of the Corral de Tierra Subbasin remain separate subbasins, then the formation of two GSAs will need to be considered. The public hearing is intended to review, provide explanation of, and allow for public input on the formation of one or two GSAs by MCWD within the proposed boundaries.

The public hearing for the proposed formation of one or two GSAs shall be held at the following
date, time, and place:
Tuesday, September 6, 2016, at 7:00 pm
Marina City Council Chambers,
211 Hillcrest Avenue, Marina, CA 93933

If you need special assistance to participate in this public hearing, please contact MCWD at (831) 384-6131. Notification 48 hours prior to the hearing will enable the District to make reasonable arrangements to ensure accessibility to this public hearing. [28 CFR 35.102-35.104 ADA Title II]

FOR ADDITIONAL INFORMATION CONTACT:
Keith Van Der Maaten, General Manager
Marina Coast Water District
11 Reservation Road, Marina, CA 93933
(831)384-6131
or kvandermaaten@mcwd.org

Publish: Aug. 19, 26, 2016

Exhibit 3

September 6, 2016

Resolution No. 2016-54
Resolution of the Board of Directors
Marina Coast Water District

Election to Become the Exclusive Groundwater Sustainability Agency
Within Portions of Two Subbasins

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("District"), at its regular meeting duly called and held on September 6, 2016, at 211 Hillcrest Avenue, Marina, California, as follows:

Recitals

A. The Sustainable Groundwater Management Act of 2014, Water Code Sections 10720 – 10736.6 ("SGMA") was signed into law on September 16, 2014; and,

B. SGMA gives local agencies, such as the District, additional authorities and powers to manage groundwater in a sustainable manner and allows for limited state intervention when those local agencies fail to comply with SGMA's requirements; and,

C. SGMA requires that each California Department of Water Resource ("DWR")-designated groundwater subbasin be managed by a single Groundwater Sustainability Agency ("GSA") or by a combination of GSAs and that such management be implemented pursuant to an approved Groundwater Sustainability Plan ("GS Plan"), or multiple coordinated GS Plans, as the case may be; and,

D. Water Code Section 10723(a) authorizes any local agency with a service area overlying a groundwater subbasin or portion thereof to establish itself as the GSA for its service area; and,

E. Water Code Section 10721(j) defines a GSA as one or more local agencies that implement the provisions of SGMA; and,

F. The District's Central Marina and Ord Community water service areas overly portions of the Seaside Area, Corral de Tierra, and 180/400 Foot Aquifer Subbasins of the Salinas Valley Groundwater Basin; and,

G. The District's Ord Community water service area is within a portion of the Adjudicated Seaside Groundwater Basin and is also within a portion of the statutory boundaries of the Monterey Peninsula Water Management District (MPWMD); and,

H. Water Code Section 10723(c)(2) designates the MPWMD as the exclusive groundwater management area within MPWMD's statutory boundaries unless MPWMD elects to opt out of being the exclusive groundwater management agency for that area; and,

I. By MPWMD Resolution No. 2016-01, the MPWMD Board of Directors elected to opt out of being the exclusive groundwater management agency for that portion of MPWMD situated north of the Adjudicated Seaside Groundwater Basin; and,

J. District staff is proposing that the District become the GSA for (1) that portion of the District's Central Marina water service area within the Seaside Area Subbasin of the Salinas Valley Groundwater Basin and (2) that portion of the District's Ord Community water service area north of the Adjudicated Seaside Groundwater Basin within Seaside Area Subbasin, which shall collectively be referred to as the "Marina Area of the Seaside Area Subbasin" and as shown on the map attached hereto as Exhibit "A"; and,

K. District staff is separately proposing that the District become the GSA for that portion of the District's Ord Community water service area within the Corral de Tierra Subbasin, which shall be referred to as the "Ord Area of the Corral de Tierra Subbasin" as shown on the map attached hereto as Exhibit "B"; and,

L. Establishing the District as the GSA for the Marina Area of the Seaside Area Subbasin and separately for the Ord Area of the Corral de Tierra Subbasin will enable the District to prepare and implement a Groundwater Sustainability Plan for those respective areas; and,

M. The District is committed to sustainable management of its groundwater resources; and,

N. Adoption of this Resolution does not constitute a "project" under California Environmental Quality Act Guidelines Section 15378(b)(5), including organizational and administrative activities of government, because there would be no direct or indirect physical change in the environment; and,

O. Prior to adopting a resolution of intent to establish the District as the GSA for the respective areas, Water Code Section 10723 requires a local agency to hold a public hearing, after publication of notice pursuant to California Government Code Section 6066, on whether or not to adopt a resolution to establish a GSA; and,

P. Pursuant to Government Code Section 6066, notices of a public hearing on whether or not to adopt a resolution to establish one or two GSAs were published on August 19, 2016 and August 26, 2016; and,

Q. On September 6, 2016, the District held a public hearing regarding adoption of a resolution to establish the District as the GSA for for the Marina Area of the Seaside Area Subbasin and separately for the Ord Area of the Corral de Tierra Subbasin as shown on the Exhibit "A" and Exhibit "B" maps, which maps exclude that portion of MCWD's Ord Community service area within the Adjudicated Seaside Groundwater Basin and exclude that portion of its service areas within the 180/400 Foot Aquifer Subbasin; and,

R. It would be in the best interest of the District for it to become the exclusive GSA for that portion of its service areas shown respectively on the Exhibit "A" and Exhibit "B" maps; and,

S. DWR has proposed that the Marina Area of the Seaside Area Subbasin and that portion of the Corral de Tierra Subbasin outside of the Adjudicated Seaside Groundwater Basin be merged into a new subbasin named the "Monterey Subbasin", but that basin boundary modification is not yet finalized so the District's service areas within the Seaside Area Subbasin and the Corral de Tierra Subbasin must be treated separately; and,

T. The District has opposed the proposed merger because it is contrary to the basin boundary modification requested by MPWMD, which the District supported, but the District desires to avoid any delays in processing the District's GSA formation notifications should the new combined Monterey Subbasin go into effect.

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS:

1. All the recitals in this Resolution are true and correct and the Board of Directors so finds, determines, and represents.

2. The District hereby elects to become the exclusive GSA (a) for the Marina Area of the Seaside Area Subbasin and (b) separately for the Ord Area of the Corral de Tierra Subbasin as shown respectively on the attached Exhibit "A" and Exhibit "B" maps, which are incorporated herein by reference.

3. District staff is hereby directed and authorized to provide separate notices of this election to become the exclusive GSA (a) for the Marina Area of the Seaside Area Subbasin and (b) for the Ord Area of the Corral de Tierra Subbasin to DWR in the manner required by law.

4. Should the new Monterey Subbasin go into effect, then the Board of Directors requests DWR to automatically convert the District's two separate GSA formation notifications into a single notification to form an exclusive GSA for one combined area in order to avoid delay in processing the District's GSA election.

PASSED AND ADOPTED on September 6, 2016, by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes:	Directors	Shriner, Lee, Moore, Gustafson
Noes:	Directors	None
Absent:	Directors	None
Abstained:	Directors	None

Howard Gustafson, President

ATTEST:

Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2016-54 adopted September 6, 2016.

Keith Van Der Maaten, Secretary

Before the Board of Supervisors in and for the County of Monterey, State of California

Resolution No. 19-430	)
Approving the formation of a Groundwater Sustainability Agency Pursuant to Water Code Section 10724 for a portion of the 180/400 Foot Aquifer Subbasin, commonly referred to as the CEMEX property, and authorizing the filing of Groundwater Sustainability Agency Formation information and documents with the Department of Water Resources (DWR); and B) finding that this action is not a project under CEQA pursuant to section 15379 of Title 14 of the California Code of Regulations	)

WHEREAS, on September 16, 2014, Governor Jerry Brown signed into law the Sustainable Groundwater Management Act ("SGMA"), which became effective on January 1, 2015, and which has been amended since that time;

WHEREAS, the intent of SGMA is to, among other things, provide for the sustainable management of medium and high-priority groundwater basins, to enhance local management of groundwater, to establish minimum standards for sustainable groundwater management, and to provide local agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater at the local level;

WHEREAS, SGMA requires the formation of one or more groundwater sustainability agencies ("GSAs") in a basin that will develop one or more groundwater sustainability plans ("GSPs") to sustainably manage groundwater in the basin;

WHEREAS, for any groundwater basin or subbasin designated pursuant to Water Code Section 10720.7 as being subject to critical conditions of overdraft, a GSP or GSPs must be adopted covering the entire basin or subbasin by January 31, 2020, to avoid being designated as a probationary basin by the State Water Resources Control Board ("SWRCB");

WHEREAS, if two or more GSAs attempt to form for the same area of a basin, the Department of Water Resources ("DWR") and/or the SWRCB may find that overlap exists in the area, and that any such unresolved overlap creates an unmanaged area;

WHEREAS, in situations where an unmanaged area exists in a basin after July 1, 2017, Water Code section 10724 authorizes the county within which the unmanaged area lies to become the GSA for the area;

WHEREAS, the area depicted in **Exhibit A** is located within the County of Monterey ("County") and includes Monterey County Assessor Parcel Numbers 203-011-001, 203-011-019, 203-011-020;

WHEREAS, the area depicted in **Exhibit A** lies within the 180/400- Foot Aquifer Subbasin depicted on **Exhibit B** ("180/400 Subbasin");

WHEREAS, the 180/400 Subbasin is located within the County;

WHEREAS, the 180/400 Subbasin has been designated as being subject to critical conditions of overdraft;

WHEREAS, on April 27, 2017, DWR posted the Salinas Valley Basin Groundwater Sustainability Agency's ("SVBGSA") GSA notice to become the GSA for the entire 180/400 Subbasin (including the area depicted in **Exhibit A**), excluding a small area covered by a GSA notice filed by Marina Coast Water District ("MCWD") for which MCWD is the exclusive GSA;

WHEREAS, on April 26, 2018, DWR posted the City of Marina's ("Marina") GSA notice to become the GSA for the area depicted in **Exhibit A**;

WHEREAS, DWR takes the position that there is overlap in the 180/400 Subbasin for the area depicted in **Exhibit A** created by the GSA notice filed by the SVBGSA and the GSA notice filed by Marina, and that such overlap creates an unmanaged area;

WHERAS, the overlap was caused by Marina's late filed notice for the area in Exhibit A, and the overlap would not exist but for Marina's filing;

WHEREAS, SVBGSA is a joint powers authority and a separate legal entity from the County and while the County is a voting member of the SVBGSA, the County represents only one (1) vote out of the eleven (11) member Agency;

WHEREAS, the SVBGSA's action to establish its jurisdictional boundaries, including the area in Exhibit A, predated Marina's filing by approximately one (1) year; and, there is no evidence that either the County or SVBGSA intentionally caused the overlap.

WHEREAS, the SVBGSA and Marina have not resolved the overlap created by their filings for the area depicted in Exhibit A;

WHEREAS, the County finds that it is in the best interest of the County and the 180/400 Subbasin for the County to exercise its right under Water Code section 10724 to become the GSA for the area depicted in **Exhibit A** and for any other unmanaged areas in the 180/400 Subbasin;

WHEREAS, the SVBGSA has prepared a GSP for the entire 180/400 Subbasin, including the area depicted in **Exhibit A**, and is collecting fees under SGMA to fund SGMA implementation in the 180/400 Subbasin;

WHEREAS, after the SVBGSA GSP prepared for the 180/400 Subbasin, is finalized, the County intends to adopt this GSP for management of the area depicted in **Exhibit A**,

WHEREAS, the County intends to enter into an agreement with the SVBGSA wherein the County, as the GSA for the area depicted in **Exhibit A**, will delegate SGMA management of such areas to the SVBGSA pursuant to the SVBGSA's GSP for the entire 180/400 Subbasin;

WHEREAS, the County finds that the adoption of this Resolution, is not a project under Title 14 California Code of Regulations, section 15378 as they will not result in any reasonably foreseeable environmental impacts, and neither the County, nor any other permitting authority is divested of future discretionary review or approval of any use of the area depicted in Exhibit A as a result of these actions. Moreover, in the event that this action is determined to constitute a project under CEQA, the action(s) would be exempt from environmental review under CEQA pursuant to CEQA Guidelines 15061(b)(3), 15307, 15308 and Water Code section 10728.6.

WHEREAS, the County noticed a public hearing as required by SGMA and Government Code section 6066 on November 28, 2019, and December 5, 2019;

WHEREAS, the County held a public hearing as required by SGMA on December 11, 2019 to consider becoming the GSA for the area depicted in Exhibit A

NOW, THEREFORE, BE IT RESOLVED, by the Board of Supervisors of the County of Monterey, as follows:

Section 1. The Board hereby finds and determines that the foregoing recitals are true and correct.

Section 2. The County hereby elects pursuant to Water Code section 10724 to be the GSA for the area of the 180/400 Subbasin depicted in **Exhibit A**, which is incorporated herein.

Section 3. The CAO or his designee is hereby authorized and directed to file a notice of formation of GSA with DWR.

Section 4. The CAO or his designee is hereby authorized and directed to submit the notice of adoption of the proposed Resolution and all information required by the Sustainable Groundwater Management Act, including but not limited to, all information required under Water Code sections 10723.8, and 10724, to DWR, and to support the development and maintenance of an interested persons list as described in Water Code section 10723.4 and a list of interested parties as described in Water Code section 10723.8(a)(4).

Section 5. Staff is authorized and directed to take any such additional actions that may be

necessary and appropriate to effectuate the County's decision to be the GSA for the area of the 180/400 Subbasin depicted in **Exhibit A.**

Section 6. The County finds that the adoption of this Resolution, is not a project under Title 14 California Code of Regulations, section 15378 as they will not result in any reasonably foreseeable environmental impacts, and neither the County, nor any other permitting authority is divested of future discretionary review or approval of any use of the area depicted in Exhibit A as a result of these actions. Moreover, in the event that this action is determined to constitute a project under CEQA, the action(s) would be exempt from environmental review under CEQA pursuant to CEQA Guidelines 15061(b)(3), 15307, 15308 and Water Code section 10728.6.

Section 7. This Resolution shall take effect immediately upon its adoption.

PASSED AND ADOPTED on this 11 day of December 2019, by the following vote, to

wit: AYES: Supervisors Supervisor Phillips, Adams, Alejo, Parker and Lopez

NOES: None

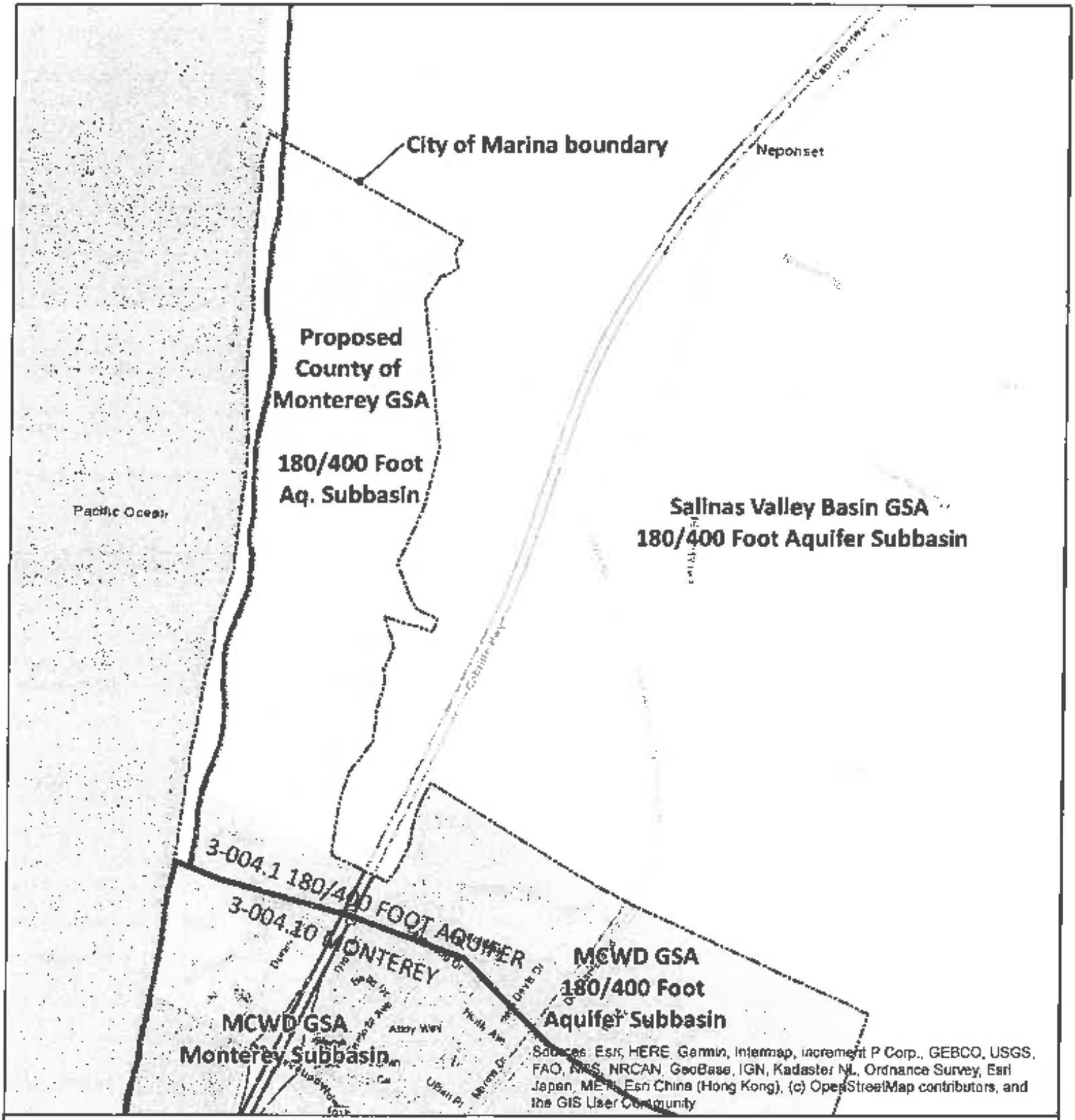
ABSENT: None

I, Valerie Ralph, Clerk of the Board of Supervisors of the County of Monterey, State of California, hereby certify that the foregoing is a true copy of an original order of said Board of Supervisors duly made and entered in the minutes thereof at page_of Minute Book 82, on December 11, 2019.

Dated: December 13, 2019
Legistar File ID No. RES 19-171

Valerie Ralph, Clerk of the Board of Supervisors
County of Monterey, State of California

By:_____
Valerie Ralph, Clerk of the Board



Proposed County of Monterey GSA

- Groundwater Basin Boundary (DWR B118)
- Marina City Limits
- Proposed County of Monterey GSA
- Marina Coast Water District GSA
- Salinas Valley Basin GSA

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Map date: November 25, 2019

MONTEREY COUNTY
WEEKLY

668 Williams Ave
(831) 394-5856
Seaside, CA 93955

Proof of publication

State of California
County of Monterey
I am a citizen of the United States and a resident of the State of California. I am over the age of 18 years and not party to or interested in the above-entitled matter.

I am the principal clerk of *Monterey County Weekly*, a newspaper of general circulation, published weekly by Milestone Communications, Inc. in the City of Seaside, County of Monterey, and which newspaper has been adjudicated a newspaper of general circulation by the Superior Court of the County of Monterey, State of California; that the notice of which the annexed is a printed copy has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates to wit.

Dec. 5, 2019

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Name....Linda S. Maceira.....

Signature.....Linda S. Maceira

Dated:.Dec. 5, 2019..Monterey, California

PUBLICATION OF SUMMARY OF PROPOSED ORDINANCE
BOARD OF SUPERVISORS
COUNTY OF MONTEREY

The Board of Supervisors of the County of Monterey has set December 10, 2019 at 10:30 a.m. at the Monterey County Government Center, Board of Supervisors Chambers, First Floor, 168 West Alisal Street, Salinas, California to consider adoption of the ordinance summarized below.

County Counsel Summary

This ordinance extends the suspension of portions of Ordinance No. 5310 until further action of the Board of Supervisors. On June 18, 2019, the Monterey County Board of Supervisors adopted Ordinance No. 5310 authorizing point-of-use (POU) and point-of-entry (POE) treatment of water to meet primary drinking water standards under certain circumstances. On August 27, 2019, the Board of Supervisors adopted a subsequent ordinance that suspended, until December 11, 2019, sections 3 and 6 and a portion of section 5 of Ordinance No. 5310 relating to utilization of POU or POE treatment by local small and state small water systems, individual lot owners within local small and state small water systems, and individual lots on private wells. This ordinance extends the suspension of these sections of Ordinance No. 5310 from December 11, 2019 until further action of the Board of Supervisors.

For additional information, contact Robin Kimball, Management Analyst at (831) 796-1297.

A certified copy of the full text of the ordinance will also be posted at the office of the Clerk of the Board of Supervisors in the Monterey County Government Center, Board of Supervisors Chambers, First Floor, 168 West Alisal Street, Salinas, California at least five days prior to the date referenced above.

DATED: 12-03-2019

Valerie Ralph
Clerk of the Board of Supervisors

MONTEREY COUNTY
WEEKLY

668 Williams Ave
(831) 394-5656
Seaside, CA 93955

Proof of publication

State of California
County of Monterey
I am a citizen of the United States and a resident of the State of California. I am over the age of 18 years and not party to or interested in the above-entitled matter.

I am the principal clerk of *Monterey County Weekly*, a newspaper of general circulation, published weekly by Milestone Communications, Inc. in the City of Seaside, County of Monterey, and which newspaper has been adjudicated a newspaper of general circulation by the Superior Court of the County of Monterey, State of California; that the notice of which the annexed is a printed copy has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates to wit.

Nov. 28, Dec. 5, 2019

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Name....Linda S. Maccira.....

Signature....Linda S. Maccira

Dated:.Dec. 5, 2019..Monterey, California

Notice of Public Hearing

Monterey County Board of Supervisors

NOTICE IS HEREBY GIVEN that the Board of Supervisors of the County of Monterey, State of California will hold a public hearing to consider the adoption of a Resolution of Intention to form a Groundwater Sustainability Agency (GSA) as set forth in the Sustainable Groundwater Management Act, Part 2.74 of Division 6 of the California Water Code, section 10724. The boundaries of the proposed GSA would encompass Monterey County Assessor Parcel Numbers (APN) 203-011-001; 203-011-019; 203-011-020; and portions of APN 203-011-023; 175-011-046; 175-011-091; 175-011-049; 175-011-060; and 233-011-011. The public hearing is for the purpose of reviewing and providing explanation of the proposal, and allowing public input on the formation of the proposed GSA. The public hearing will be held on Wednesday, December 11, 2019 at 10:30 a.m. in the Monterey County Board of Supervisors Chambers, County Government Center, 168 West Alisal Street, Salinas, California, at which time and place any and all interested persons may appear and be heard thereon.

Valerie Ralph

Clerk of the Board of Supervisors

Dated: November 25, 2019

APPENDIX 2B

COORDINATION AGREEMENT

Before the Board of Directors of the
Salinas Valley Basin Sustainable Groundwater Management Agency

Resolution No. 2017-16

Resolution approving a Coordination Agreement between Marina Coast Water District and the Salinas Valley Basin Ground Water Sustainability Agency for the management of the Monterey Subbasin.	)))

WHEREAS, the Marina Coast Water District has filed with the Department of Water Resources to become the Ground Water Sustainability Agency for the Monterey Subbasin; and,

WHEREAS, this filing has created the need for Marina Coast and the Salinas Valley Basin to coordinate management activities in the Monterey Subbasin; and

WHEREAS, the Marina Coast Water District and the Salinas Valley Basin Ground Water Sustainability Agency developed an agreement that is mutually acceptable for managing this basin; and,

WHEREAS, the proposed Coordination agreement will allow for Grant Applications that will fund Ground Water Sustainability planning in the subbasin;

NOW, THEREFORE, BE IT RESOLVED, by the Board of Directors of the Salinas Valley Basin Groundwater Sustainability Agency as follows:

The above recitals are true and correct.

The attached Coordination agreement between Marina Coast Water District and the Salinas Valley Basin Ground Water Sustainability Agency is hereby approved.

The General Manager and Agency Counsel are hereby authorized and directed to take such other and further actions as may be necessary or appropriate to implement the intent and purposes of this resolution.

PASSED AND ADOPTED on this 9th day of November 2017 by the following vote, to-wit:

AYES: Directors Alejo, Brennan, Granillo, Lipe, McHatten, McIntyre, Pereira, Secondo, Stefani, and Chair Gunter

NOES: None

ABSENT: Director Calcagno

ABSTAIN: None

I, Ann Camel, Clerk of the Board of Directors of the Salinas Valley Basin Groundwater Sustainability Agency, State of California, hereby certify that the foregoing is a true copy of an original order of said Board of Directors duly made and entered in the minutes thereof.

Dated: 11/9/17

Ann Camel, Clerk of the Board of Directors of the Salinas Valley Basin Groundwater Sustainability Agency,
County of Monterey, State of California

Ann Camel

PROPOSITION 1 Coordination Agreement

THIS PROPOSITION 1 COORDINATION AGREEMENT (the "Agreement") is made effective as of November 9, 2017 by the Marina Coast Water District Groundwater Sustainability Agency ("MCWD") and the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") regarding proposals for Sustainable Groundwater Planning ("SGWP") Grant Program funds, authorized by the Water Quality, Supply, and Infrastructure Improvement Act of 2014 ("Proposition 1") within the Monterey Subbasin and the 180/400 foot Subbasin, with reference to the following facts:

A. Eligibility criteria for Category 2 proposals for SGWP Grant Program funds, authorized by Proposition 1, only accept one application per Basin/Subbasin; and

B. An eligible agency may be part of the Proposition 1 application as a project proponent, but must identify a single entity that will act as the grant applicant and submit a basin-wide application and receive the grant on behalf of the basin; and

C. If multiple applications are received within a basin for Category 2 projects, DWR will contact the applicants and request that the Parties consolidate one single application for the basin to be submitted before the close of the open filing period; and

D. The applicant must include a Proposal level "Summary" highlighting each project contained in the Proposal and must demonstrate that it encompasses the entire basin or describes why a portion of the basin is not covered in the Proposal.

E. Applicants requesting funding for Category 2 Proposition 1 application must provide documentation of any communications with beneficial users of groundwater in the basin that may potentially be affected by implementation of the project, including, but not limited to DACs, SDACs, agricultural water users, municipal water users, wildlife refuges, or other stakeholders.

F. The Filing Period Closes November 13, 2017 for proposals for SGWP Grant Program funds; and

G. Proposition 1 requires a minimum cost share of 50% of the total project cost.

THEREFORE, in consideration of the facts recited above the Parties agree to the following with regards to Proposition 1 applications:

1. The Parties agree that MCWD shall be the Party responsible for submitting a grant application/proposal to DWR for a Category 2, Tier 2 Groundwater Sustainability Plan grant for the Monterey Subbasin and MCWD shall be the grantee if the proposal is successful. MCWD shall be responsible for the cost of preparing the grant. MCWD will coordinate with SVBGSA and obtain input from SVBGSA in preparation of the grant application/proposal for the Monterey Subbasin.

2. The Parties further agree that SVBGSA shall be the Party responsible for submitting a grant application/proposal to DWR for a Category 2, Tier 1 Groundwater Sustainability Plan grant for the 180/400 Foot Aquifer Subbasin and SVBGSA shall be the grantee if the proposal is successful. SVBGSA shall be responsible for the cost of preparing the grant. SVBGSA will coordinate with MCWD and obtain input from MCWD in preparation of the grant application/proposal for the 180/400 Foot Aquifer Subbasin.

3. A coordination committee including representatives from MCWD and SVBGSA shall be formed for each subbasin.

4. The parties agree that they shall share all data necessary to facilitate the completion of the Proposition 1 applications/proposals.

5. The Proposition 1 application for the Monterey Subbasin will include:

a) A project for the preparation of the GSP by MCWD for the Marina Subarea and the Ord Subarea, as shown on attached Exhibit "A;" and

b) A project for the preparation of a GSP by SVBGSA for the Corral de Tierra Subarea, also as shown on attached Exhibit "A".

6. The Marina, Ord and Corral de Tierra subareas shall be managed as follows:

a) If MCWD is allowed under the Sustainable Groundwater Management Act ("SGMA") to include the Ord Subarea within its Groundwater Sustainability Agency boundaries, MCWD shall manage the Marina and Ord Subareas as part of its GSA under the GSP described in Section 5 (a), above.

b) If MCWD is not allowed under SGMA to include the Ord Subarea within its Groundwater Sustainability Agency boundaries, the Ord Subarea may be designated by the SVBGSA as a Management Area within the boundaries of its GSA, and MCWD shall be allowed to manage the Ord Subarea under the GSP described in Section 5 (a), above.

c) SVBGSA shall manage the Corral de Tierra Subarea.

7. The GSP Project for the Monterey Subbasin will include review and potential refinement of the portion of the Salinas Valley Integrated Hydrologic Model ("SVIHM") that addresses the Monterey Subbasin and nearby subbasins. SVIHM is being developed by the USGS for the entire Salinas River Valley Basin.

8. MCWD will provide matching grant funds for development of the GSP and for SVIHM model review and refinement for the Marina Subarea and Ord Subarea of the Monterey Subbasin. Notwithstanding anything to the contrary, in the event MCWD is prevented from including the Ord Subarea within its GSP or the SVBGSA elects to include the Ord Subarea within its own GSP for the Monterey Subbasin, then SVBGSA shall reimburse

MCWD for all matching funds which MCWD has provided or expended proportionately for the Ord subarea after the effective date of this agreement, and SVBGSA shall be responsible for all matching funds applicable to the Ord Subarea for purposes of the SGWP Grant Program.

9. SVBGSA and MCWD may include additional project(s) in each other's grant applications for the Monterey and 180/400 Foot Aquifer Subbasins if they provide all required information in the appropriate format and demonstrate matching funds by an agreed upon timeframe.

10. The Parties acknowledge that the submission deadline for any Proposition 1 application is November 13, 2017. As such, the Parties agree to the following schedule for coordination of grant applications for the Monterey and 180/400 Foot Aquifer Subbasins:

- Proposition 1 Applicant to share draft Proposition 1 application with other Party (10/20/2017)
- Proposition 1 Applicant to receive feedback on Draft Proposition 1 application from other Party (by 10/27/2017)
- Proposition 1 Applicant to obtain complete information from other Party for any independent Projects (for which other Party is providing matching funds) for inclusion in in Draft Proposition I application (10/27/2017)
- Submit Prop 1 application to DWR by 11/13/2017

In the event either Party fails to provide any of the required information to the submitting Party by the identified dates, then this Agreement shall terminate and either Party may submit a Proposition 1 application on their own behalf, without regard to the other Party.

11. Assuming agreement is reached between the Parties regarding the Proposition 1 applications for the Monterey Subbasin and 180/400 Foot Aquifer Subbasin, the Parties will provide letters of support for each other's Proposition 1 grant applications for the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin by November 3, 2017.

Agreed and acknowledged on November 21, 2017, by the signatures below:

SALINAS VALLEY BASIN
GROUNDWATER SUSTAINABILITY AGENCY

By: _____
Gary Petersen
Title: General Manager

APPROVED AS TO FORM:

_____
Leslie J. Girard
SVBGSA Agency Counsel

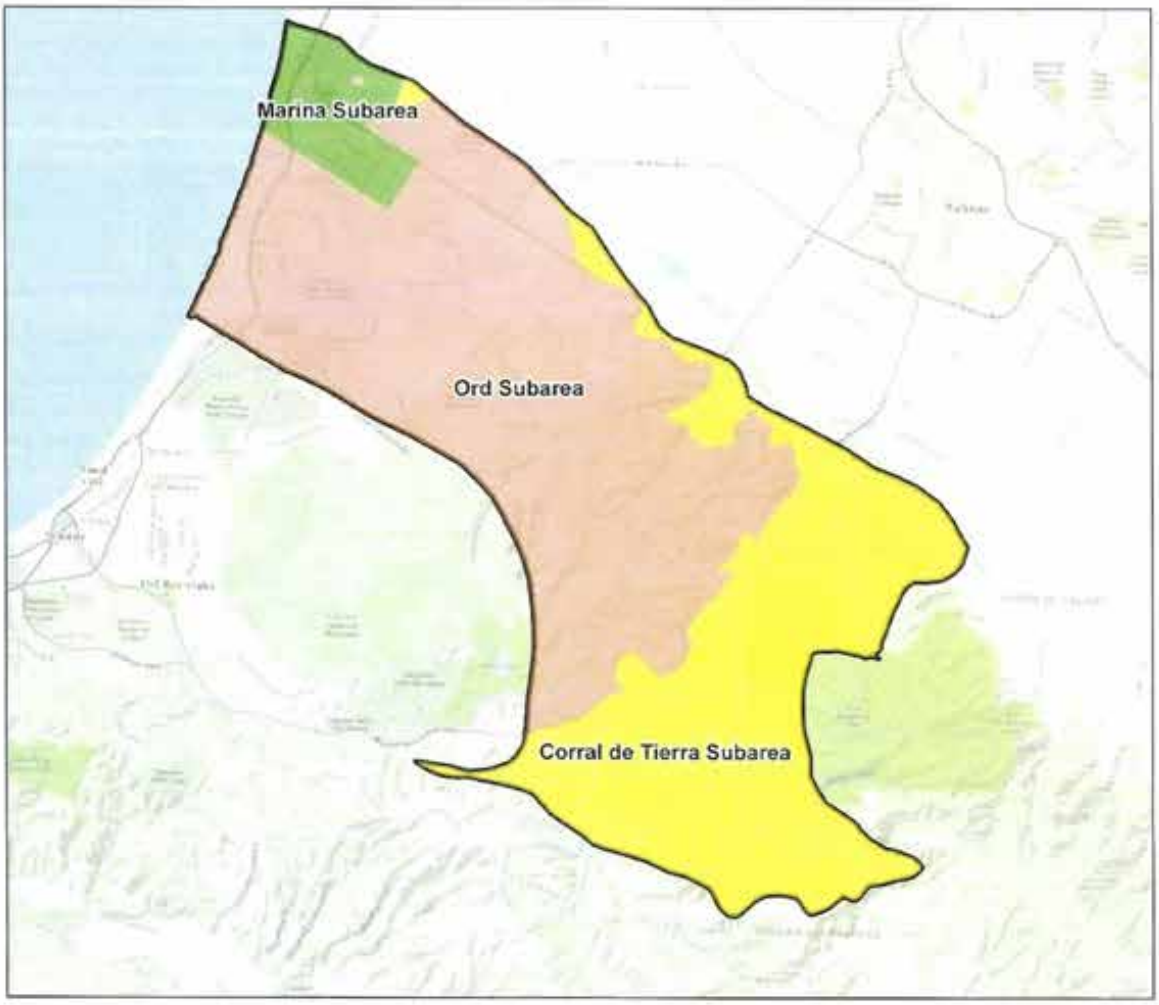
MARINA COAST WATER DISTRICT
GROUNDWATER SUSTAINABILITY AGENCY

By: _____
Keith Van Der Maaten
Title: General Manager

APPROVED AS TO FORM:

_____
Roger K. Masuda
MCWDGSA Agency Counsel

EXHIBIT A. MONTEREY BASIN SUBAREAS



Legend

- Monterey Subbasin (DWR 3-004.10)
- Marina Subarea
- Ord Subarea
- Corral de Tierra Subarea

N

0 1.5 3

(Approximate Scale in Miles)

Before the Board of Directors of the
Salinas Valley Basin Sustainable Groundwater Management Agency

Resolution No. 2018-11	)
Authorizing Execution of a Framework	)
Agreement for the Monterey Basin	)
Groundwater Sustainability Plan between the	)
Marina Coast Water District Groundwater	)
Sustainability Agency and the Salinas Valley	)
Basin Groundwater Sustainability Agency	)

WHEREAS, the Sustainable Groundwater Management Act (SGMA) of 2014, Water Code Sections 10720-10736.6 was signed into law September 16, 2014; and,

WHEREAS, SGMA gives local agencies authorities and powers to manage groundwater; and,

WHEREAS, Groundwater Sustainability Plans, in conformance with SGMA, for the 180/400 Aquifer and the Monterey subbasins are required by January 31, 2020 and 2022 respectively; and,

WHEREAS, SGMA requires a coordinated Groundwater Sustainability Plan (GSP) or GSPs among or between adjacent GSAs and adjacent subbasins; and,

WHEREAS, GSP development requires collaboration amongst GSAs and other local or regional water management groups at the groundwater subbasin level and encourages collaboration across groundwater subbasin boundaries; and,

WHEREAS, the Marina Coast Water District Groundwater Sustainability Agency (MCWDGSA) and the Salinas Valley Groundwater Sustainability Agency previously entered into a Proposition 1 Coordination Agreement regarding cooperation and coordination on the application for and receipt of Proposition 1grant funds to fund the development of GSPs for the Monterey Subbasin and the 180/400 Foot Aquifer Subbasin; and,

WHEREAS, the proposed Framework Agreement's intent is that one GSP will be developed for the entire Monterey Subbasin (i.e. the Monterey Subbasin GSP), which will contain three management areas that generally encompass the Marina Subarea, the Ord Subarea (both of which are generally located north of State Route 68), and the Corral de Tierra Subarea (located generally south of State Route 68); and,

WHEREAS, the Framework Agreement clarifies that the MCWDGSA will prepare the GSP components for the Marina Management Area and the Ord Management Area, and SVBGSA will prepare the GSP components for the Corral de Tierra Management Area and the GSP for the entire 180/400 Foot Aquifer Subbasin; and,

WHEREAS, the Agreement requires the MCWDGSA and the SVBGSA to actively consult with each other and include each other for review of draft work products during the GSP

development process for the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin; NOW, THEREFORE,

BE IT RESOLVED, by the Board of Directors of the Salinas Valley Basin Groundwater Sustainability Agency, that the General Manager is hereby authorized and directed to execute the Framework Agreement for the Monterey Groundwater Basin Groundwater Sustainability Plan between the Marina Coast Water District Groundwater Sustainability Agency and Salinas Valley Basin Groundwater Sustainability Agency attached hereto as Exhibit A.

BE IT FURTHER RESOLVED, that the General Manager and Agency Counsel are hereby authorized and directed to take such further actions as may be necessary or appropriate to implement the intent and purposes of this Resolution.

PASSED AND ADOPTED on this 13th day of December 2018 by the following vote, to-wit:

AYES: Directors Alejo, Brennan, Calcagno, Granillo, Gunter, Lipe, McIntyre, Pereira, Secondo, Stefani, and Chairperson McHatten

NOES: None

ABSENT: None

ABSTAIN: None

I, Ann Camel, Clerk of the Board of Directors of the Salinas Valley Basin Groundwater Sustainability Agency, State of California, hereby certify that the foregoing is a true copy of an original order of said Board of Directors duly made and entered in the minutes thereof.

Dated: 12/13/18

Ann Camel, Clerk of the Board of Directors of the Salinas Valley Basin Groundwater Sustainability Agency,
County of Monterey, State of California

Ann Camel

FRAMEWORK AGREEMENT

This Framework Agreement is made effective as of 12/13/18 by the Marina Coast Water District Groundwater Sustainability Agency (MCWD) and Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) (collectively, the "Parties") regarding Groundwater Sustainability Plan (GSP) development for the Monterey Subbasin and the 180/400 Foot Aquifer Subbasin, with reference to the following:

RECITALS

A. On September 16, 2014 Governor Jerry Brown signed into law Senate Bills 1168 and 1319 and Assembly Bill 1739, known collectively as the Sustainable Groundwater Management Act (the "Act"), effective January 1, 2015; and

B. The Act was amended by Senate Bill 13, effective January 1, 2016; and

C. The legislative intent of the Act is to provide sustainable management of groundwater basins, to enhance local management of groundwater, to establish minimum standards for sustainable groundwater management, and to provide local agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater; and

D. The Act requires formation of one or more groundwater sustainability agencies ("GSAs") that will be responsible for developing a single or multiple groundwater sustainability plan ("GSP") for a groundwater basin; and

E. The purpose of this Framework Agreement is to outline the process to be used by the Parties to work collaboratively to develop one GSP for the entire Monterey Subbasin and one GSP for the entire 180/400 Foot Aquifer Subbasin (the "GSPs"). It is further intended to guide the Parties' coordination during GSP development in the Monterey Subbasin and the 180/400 Foot Aquifer Subbasin and further intended to, in part, implement the intent and purposes of the Coordination Agreement between the Parties dated November 21, 2017.

F. The Parties recognize that a detailed approach is to be developed by the Parties' technical staff under these guidelines to make sure that the elements of the GSPs are appropriately coordinated to support sustainable management.

NOW, THEREFORE, in consideration of the promises, terms, conditions and covenants contained herein, the Parties to this Agreement hereby agree as follows:

1. Overarching Approach. The Parties agree that one GSP will be developed for the entire Monterey Subbasin (i.e. the Monterey Subbasin GSP), which will contain three management areas that generally encompass the Marina Subarea, the Ord Subarea (both of which are generally located north of State Route 68), and the Corral de Tierra Subarea (located generally south of State

Route 68). The Parties recognize that the exact boundaries of the management areas are to be confirmed. Consistent with the Proposition 1 Grant Work Plans:

(a) MCWD GSA will prepare the GSP components for the Marina Management Area and the Ord Management Area;

(b) SVBGSA will prepare the GSP components for the Corral de Tierra Management Area.

(c) The Parties further agree that SVBGSA will prepare a GSP for the entire 180/400 Foot Aquifer Subbasin.

(d) The Parties agree that they will actively consult with each other, and include each other for review of draft work products during the GSP development process for the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin.

2. Schedule. The Parties agree to develop a detailed approach and schedule for development of the GSPs. The detailed approach and schedule for the Monterey Subbasin GSP should outline the process of preparing separate and common GSP components, as well as identify the timing of data sharing and review of key work products. The detailed approach and schedule for the 180/400 Foot Aquifer should identify the process and timing of consultation and review for key work products. The Parties recognize that a successful GSP relies on involving each other for early input and providing draft work products to the other Party for timely review, and further recognize that the GSP for the 180/400 Foot Aquifer Subbasin must be filed with DWR no later than January 31, 2020, and the GSP for the Monterey Subbasin must be filed no later than January 31, 2022.

3. Coordination Committees; Stakeholder Engagement. The Parties agree to form a Steering Committee that oversees activities under this agreement. The Steering Committee shall include the General Manager and one Board Member from each Party, who will update each Party's Board of Directors. Staff and consultants from each Party may participate in the Steering Committee as necessary. In addition, the Parties agree to form a Technical Committee that consists of staff and/or technical consultants to perform activities under this agreement. The Steering Committee and Technical Committee shall each hold regular meetings pursuant to schedules described in Attachment A and may hold special meetings and workshops as necessary.

The Parties agree to work collaboratively to develop and implement stakeholder engagement plans for the GSPs and ensure regular, productive communication between the Parties, stakeholders, and stakeholder representatives. Each Party is responsible for guiding efforts within their respective plan preparation areas in both basins, e.g., MCWD for the Marina and Ord Subareas of the Monterey Subbasin, and SVBGSA for the Corral de Tierra Subarea of the Monterey Subbasin as well as the 180/400 Foot Subbasin

4. Data Management and Exchange. (a) The Parties agree to develop and maintain coordinated data management system(s) that meet the requirement California Code of Regulations (CCR) Title 23, Section 352.6, such as a single DMS or separate DMSs with coordinated schema to facilitate data sharing.

(b) Each Party shall be responsible for the collection of information to support GSP analyses within their respective plan preparation areas, including but not limited to data to support groundwater conditions assessment, hydrogeologic conceptual model development, numerical model development, and water budget analysis.

(c) The Parties agree, to the fullest extent permitted by law, to make all data necessary to facilitate development of the GSPs available to the other Party and conduct information exchange, either through a formal or informal request, in a timely fashion. To the extent it is necessary to make a written request for information to another Party, each Party shall designate a representative to respond to information requests and provide the name and contact information of the designee to the Coordination Committee. Nothing in this Agreement shall be construed to prohibit any Party from voluntarily exchanging information with any other Party by any other mechanism separate from the Coordination Committee.

(d) It is understood and agreed that a Party to this Agreement may provide the other Party with confidential information. To ensure the protection of such confidential information and in consideration of the agreement to exchange said information, appropriate arrangements may be made to restrict or prevent disclosure.

(e) It is further understood that information to be exchanged may include data obtained from the Monterey County Water Resources Agency (MCWRA) under agreements with the MCWRA. The Parties agree to make the data obtained from MCWRA available for information exchange to the extent permitted by law, and as long as provision of such exchanges follow the terms of agreement with MCWRA.

(f) The Parties agree to consider the development of a Uniform Data Sharing and Confidentiality Agreement with MCWRA so that there will be uniform rules among the three agencies as to how and what data is to be shared, what data shall be considered confidential, and how confidential data is to be secured, protected, shared, and released.

5. Water Budget. The Parties agree to prepare coordinated water budgets and basin setting information for the Monterey and 180/400 Foot Aquifer Subbasins, as required by 23 CCR 354.18. The Parties agree to work to reach consensus on inputs, assumptions, and methodology, as well as review and potential refinement of the portion of the Salinas Valley Integrated Hydrological Model that addresses the Monterey Subbasin and 180/400 Foot Aquifer Subbasins.

6. Monitoring Network. The Parties agree to develop coordinated monitoring network objectives for the Monterey and 180/400 Foot Aquifer Subbasins. The monitoring network shall facilitate the collection of data necessary to characterize groundwater and related surface water conditions and evaluate changing conditions that occur from implementation of the GSPs in each Management Area.

7. Proposition 1 Grant Administration. The Parties agree to coordinate grant administration for GSP development in the Monterey Subbasin. Pursuant to the provisions of the Proposition 1 Sustainable Groundwater Planning Grant Agreement for the Monterey Subbasin,

MCWD will submit invoices, deliverables and other grant administration materials to DWR on behalf of SVBGSA and will redistribute SVBGSA's potion of grant reimbursements to SVBGSA. However, MCWD will not be responsible for verifying the format or information within SVBGSA's submittals. SVBGSA is responsible for timely providing MCWD the information necessary for preparation of quarterly progress reports and grant completion reports.

8. Indemnification. Each Party agrees to defend, indemnify and hold harmless the other Party, and their officers, employees and agents, from against any and all demands, claims, causes of action, suits, judgements, liabilities, liens, losses, damages, expenses, fines, penalties and assessments (collectively, "damages") arising out of or related to the preparation, consideration and approval of a GSP or GSP components by the indemnifying Party for its respective management area, except in the case of a claim or litigation by one Party against the other. The Parties agree to cooperate in the defense of any claim or lawsuit arising out of such actions to the extent permitted by law.

9. Termination. Either Party by majority vote of its governing body may terminate this Framework Agreement for any reason or no reason upon at least nine (9) months' prior written notice to the other Party. Such notice may be made by personal delivery or first class U.S. Mail (postage prepaid), and shall be deemed delivered upon actual receipt of the notice by the other Party. Such notice shall be addressed to the General Manager of the non-noticing Party. Within thirty (30) days of delivery of the notice, the Steering Committee representatives shall personally meet and attempt in good faith to resolve the dispute.

Notwithstanding anything to the contrary herein, this Framework Agreement shall not be terminated (the "effective termination date") unless and until the parties shall have entered into intra-basin coordination agreements in accordance with Water Code §10727.6 and 23 CCR §357.4 for each parties' respective GSP for their respective portions of the 180/400 Foot Aquifer and the Monterey Subbasin. The intra-basin coordination agreement must address any necessary approvals resulting in grant changes from DWR as a result of changing from a single GSP for each of the sub-basins to coordinated multiple GSP's for each of the sub-basins.

Until the effective termination date, each Party shall continue to develop their respective portions of the GS Plans pursuant to the Proposition 1 Coordination Agreement. The Parties shall obtain any necessary approvals for resulting grant changes from DWR. All reimbursements required by that agreement shall be due and payable on the effective termination date.

IN WITNESS WHEREOF, MCWD and SVBGSA execute this Framework Agreement effective as of the date first written above.

Marina Coast Water District Groundwater Sustainability Agency.

By: _____

Date: 1/4/19

APPROVED AS TO FORM

Roger K. Masuda

Roger Masuda
MCWDGSA General Counsel

Salinas Valley Basin Groundwater
Sustainability Agency,

By: _____

Date: _____

APPROVED AS TO FORM

_____

Leslie J. Girard
SVBGSA General Counsel

APPROVED AS TO FORM

Roger Masuda
MCWDGSA General Counsel

Salinas Valley Basin Groundwater
Sustainability Agency,

By: _____

Date: 12/13/18

APPROVED AS TO FORM

Leslie J. Girard
SVBGSA General Counsel

ATTACHMENT A
Regular Committee Meeting Schedules

The Steering Committee for coordinating GSP development in the 180/400 Foot Aquifer and Monterey Subbasins will meet quarterly beginning the fourth quarter of 2018. Meetings of the Steering Committee shall be subject to the California Open Meeting Law ("Brown Act"). The first meeting of the Committee shall be called by the General Manager of the SVBGSA, who shall preside pro tem at the start of the meeting. At the initial meeting the Committee shall choose a chairperson and set a regular schedule of meetings as required by the Brown Act.

The Technical Committee will meet regularly every other month starting September 2018, exact time and location to be determined. Meetings of the Technical Committee are not subject to the Brown Act. During the Technical Committee meetings, GSA staff and technical consultants will

- Provide status update regarding work progress and schedule;
- Exchange data and information available at the time of the meeting;
- Coordinate development and review of work products; and
- Present and discuss technical topics.

November 19, 2018

Resolution No. 2018-GSA02
Resolution of the Board of Directors
Marina Coast Water District Groundwater Sustainability Agency
Authorizing the General Manager to Execute a Framework Agreement for the
Monterey Groundwater Basin Groundwater Sustainability Plan between the
Marina Coast Water District Groundwater Sustainability Agency and the
Salinas Valley Basin Groundwater Sustainability Agency

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District Groundwater Sustainability Agency ("District"), at a regular meeting duly called and held on November 19, 2018, at 211 Hillcrest Avenue, Marina, California as follows:

WHEREAS, the Sustainable Groundwater Management Act (SGMA) of 2014, Water Code Sections 10720-10736.6 was signed into law September 16, 2014; and,

WHEREAS, the District formed Groundwater Sustainability Agencies for the Central Marina and Ord Community Service Areas in portions of the Monterey Subbasin and the 180/400 Subbasin in conformance with the SGMA; and,

WHEREAS, SGMA gives local agencies, such as the District, additional authorities and powers to manage groundwater; and,

WHEREAS, the District is committed to sustainable management of its groundwater resources; and,

WHEREAS, the Groundwater Sustainability Plans for the District GSAs in conformance with SGMA for the 180/400 Aquifer and the Monterey subbasins are required by 2020 and 2022 respectively; and,

WHEREAS, the District has commenced Groundwater Sustainability Planning and that doing so is consistent with the goals and objectives stated in the District's Strategic Plan; and,

WHEREAS, SGMA requires a coordinated a Groundwater Sustainability Plan (GSP) or GSPs among or between adjacent GSAs and adjacent subbasins; and,

WHEREAS, GSP development requires collaboration amongst GSAs and other local or regional water management groups at the groundwater subbasin level and encourages collaboration across groundwater subbasin boundaries; and,

WHEREAS, the Framework Agreement's intent is that one GSP will be developed for the entire Monterey Subbasin (i.e. the Monterey Subbasin GSP), which will contain three management areas that generally encompass the Marina Subarea, the Ord Subarea (both of which are generally located north of State Route 68), and the Corral de Tierra Subarea (located generally south of State Route 68); and,

WHEREAS, the Agreement clarifies that the MCWDGSA will prepare the GSP components for the Marina Management Area and the Ord Management Area and SVBGSA will

prepare the GSP components for the Corral de Tierra Management Area and that the SVBGSA will prepare a GSP for the entire 180/400 Foot Aquifer Subbasin; and,

WHEREAS, the Agreement directs both the MCWDGSA and the SVBGSA will actively consult with each other and include each other for review of draft work products during the GSP development process for the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby Authorize the General Manager to execute a Framework Agreement for the Monterey Groundwater Basin Groundwater Sustainability Plan between the Marina Coast Water District Groundwater Sustainability Agency and Salinas Valley Basin Groundwater Sustainability Agency.

PASSED AND ADOPTED on Novwember 19, 2018 by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes:	Directors	Cortez, Lee, Shriner, Moore
Noes:	Directors	None
Absent:	Directors	Gustafson
Abstained:	Directors	None

Thomas P. Moore

Thomas P. Moore, President

ATTEST:

Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District Groundwater Sustainability Agency hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2018-GSA02 adopted November 19, 2018.

Keith Van Der Maaten, Secretary

APPENDIX 4A

METHODOLOGY FOR IDENTIFYING POTENTIAL GROUNDWATER DEPENDENT ECOSYSTEMS

INTRODUCTION

Groundwater dependent ecosystems (GDEs) within the Salinas Valley are identified in accordance with §354.16(g) of the Groundwater Sustainability Plan regulations. The procedure for identifying GDEs follows guidance developed by The Nature Conservancy (TNC) and detailed in the *Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans* report (Rohde et al., 2018). This process differentiates between indicators of Groundwater Dependent Ecosystems (iGDEs), potential Groundwater Dependent Ecosystems, and true Groundwater Dependent Ecosystems.

- iGDEs were developed by The Nature Conservancy in partnership with the California Department of Fish and Wildlife (DFW) and DWR using the best available statewide data. The iGDEs are identified using locations of springs and seeps, wetlands, and vegetation known to rely on groundwater. The Nature Conservancy also uses the term "Natural Communities Commonly Associated with Groundwater" to refer to these iGDEs.
- Potential GDE are iGDEs that, through mapping analyses, may be connected to shallow groundwater and therefore be supported by shallow groundwater.
- True GDEs are potential GDE's that have been field verified to establish that they are supported by groundwater. The methodology described herein does not identify true GDEs.

The procedure consists of the following steps:

- Review geospatial data from TNC that show indicators of groundwater dependent ecosystems (iGDEs) within the Salinas Valley
- Assess the connection to groundwater for indicators of groundwater dependent ecosystems
- Identify potential GDEs. Potential GDEs are iGDEs that might be connected to groundwater. Potential GDEs should be field verified before they are established as true GDEs.

Geospatial data showing iGDEs were downloaded from TNC's website for Natural Communities Commonly Associated with Groundwater (https://gis.water.ca.gov/app/NCDatasetViewer). The iGDEs present in the Salinas Valley include areas identified as Wetlands or GDE Vegetation. All iGDEs in the 180/400-Foot Aquifer Subbasin, as identified by TNC, are shown on Figure 4A-1.

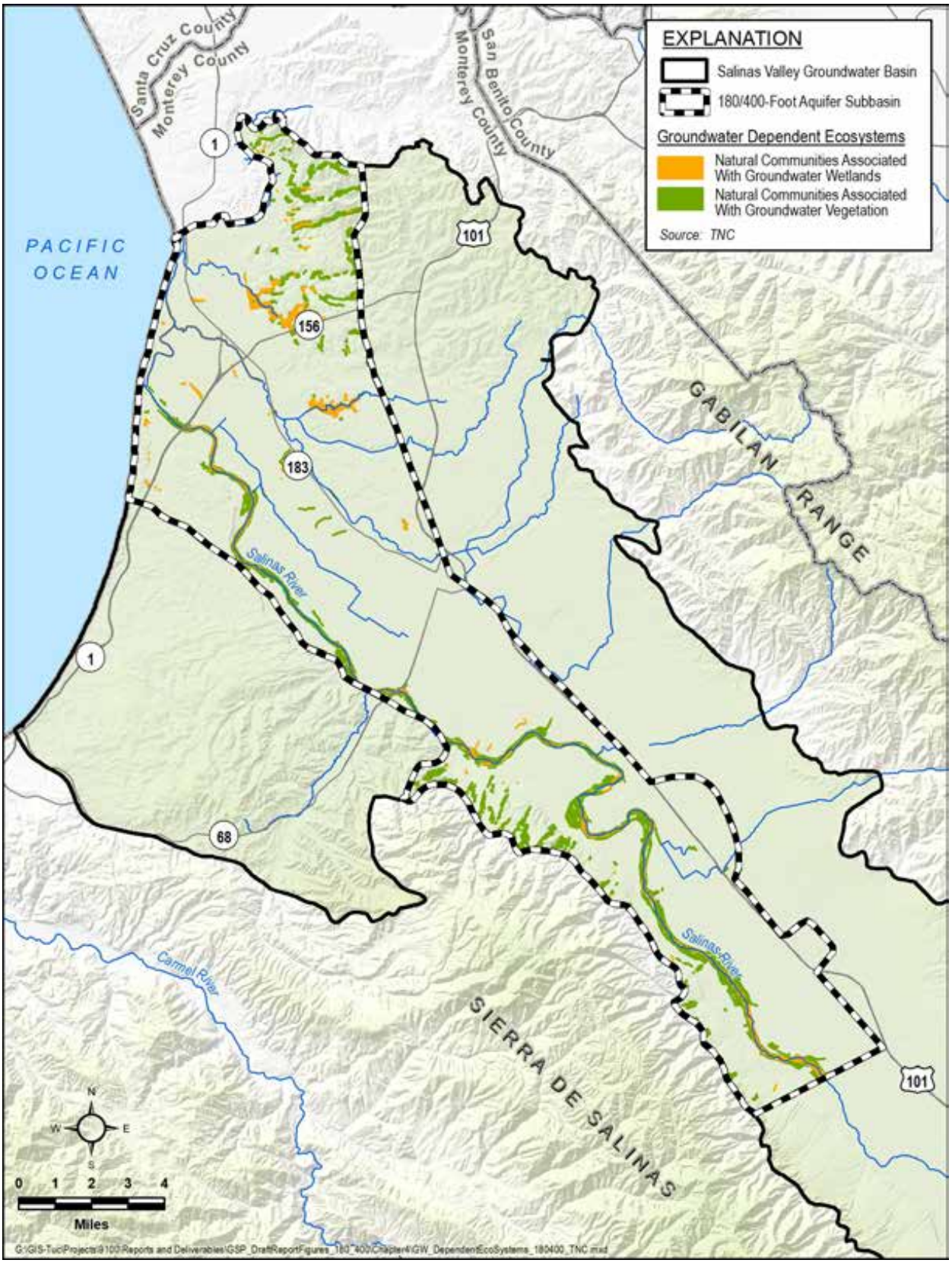


Figure 4A-1: Areas with Indicators of Groundwater Dependent Ecosystems (iGDEs) (TNC, 2018)

CRITERIA FOR CONNECTION TO GROUNDWATER

The iGDEs identified by TNC data can only be potential GDEs if they are connected to a groundwater source that supports the vegetation or wetlands. Identified iGDEs that are supported by streamflows, soil moisture, or shallow perched aquifers, rather than by a regional groundwater aquifer, are not considered potential GDEs for this report. The report by Rohde et al. (2018) provides a general list of questions, or criteria, applicable to all iGDEs for assessing connection to groundwater. These general questions are:

1. Is the iGDE underlain by a shallow unconfined or perched aquifer that has been delineated as being part of a Bulletin 118 principal aquifer in the Subbasin?
2. Is the depth to groundwater under the iGDE less than 30 feet?
3. Is the iGDE located in an area known to discharge groundwater (e.g. springs/seeps)?

Datasets used to assess the potential connection of the iGDEs to groundwater include the Monterey County surface geologic map (County of Monterey, 2007), measured and interpolated groundwater levels in the Monterey County groundwater monitoring network, and geospatial data included in the National Hydrographic Dataset (NHD) provided by the U.S. Geological Survey showing the location of mapped springs and seeps.

The datasets described above are used to assess the potential connection of iGDEs to groundwater based on the three criteria listed above. To be considered a potential GDE, the iGDEs must satisfy at least one of the three criteria described above; or the landforms around the iGDE must suggest the area could support potential GDEs. Following the suggestions in Rhode (2018), example landforms that could support potential GDEs might be mapped springs, seeps, or a break in the slope of the ground. In the absence of more formal field reconnaissance, the results of this screening level analysis only identify potential GDEs in the Subbasin. Additional field verification is necessary to definitively determine the true GDEs in the 180/400-Foot Aquifer Subbasin.

Question 1: Is the iGDE underlain by a shallow unconfined or perched aquifer that has been delineated as being part of a Bulletin 118 principal aquifer in the Subbasin?

Bulletin 118 (DWR, 2004) identifies the blue clay layer known as the Salinas Aquitard as a confining unit above the 180-Foot Aquifer. This feature is present in the lower Salinas Valley north of the town of Chualar. North of Chualar, the Salinas Valley Aquitard separates the surficial deposits from the principal aquifers. Therefore, only iGDEs overlying Quaternary alluvial units in the 180/400-Foot Aquifer Subbasin south of Chualar, are classified as potential GDEs. Figure 4A-2 shows the iGDEs associated with the shallow, unconfined Quaternary Alluvial (Qa) Aquifer.

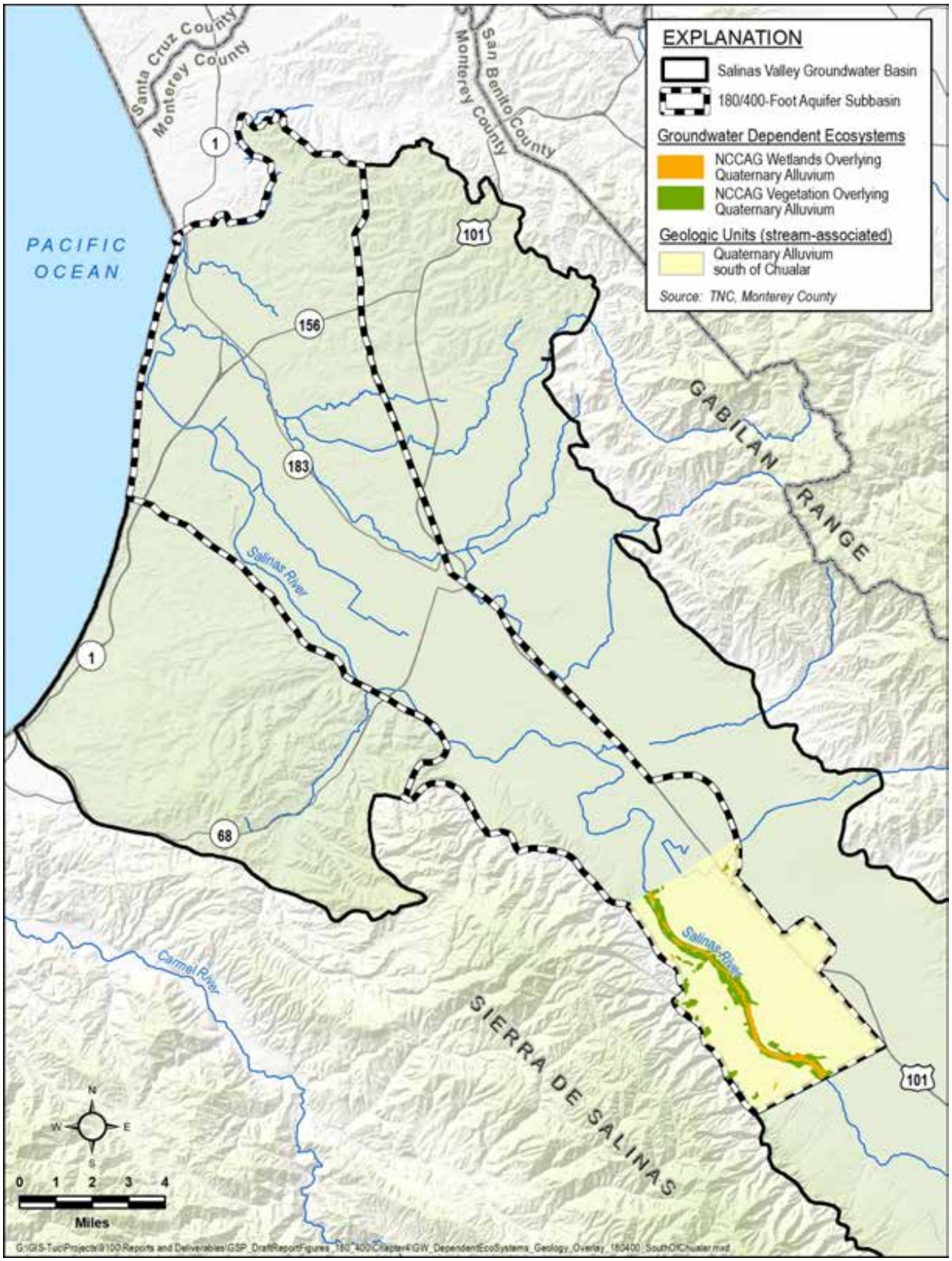


Figure 4A-2: iGDEs Associated with the Shallow, Unconfined Quaternary Alluvial (Qa) Aquifer

This criterion clearly has the potential to overestimate the number of potential GDEs in the Subbasin. The subjective assessment of what constitutes a shallow unconfined aquifer may result in identifying potential GDEs in areas that do not have the underlying groundwater to support the GDE. This emphasizes the need for field verification of the potential GDEs identified in this GSP.

Question 2: Is depth to groundwater under the iGDE less than 30 feet?

Depth to water is routinely measured by MCWRA staff within a network of monitoring wells. This analysis uses Fall 2013 depth to water data from MCWRA, where available, to interpolate a surface showing depth to water throughout the 180/400-Foot Aquifer Subbasin. Based on the measured groundwater level data and interpolation results, iGDEs overlying areas where estimated depth to groundwater is less than 30 feet are shown on Figure 4A-3.

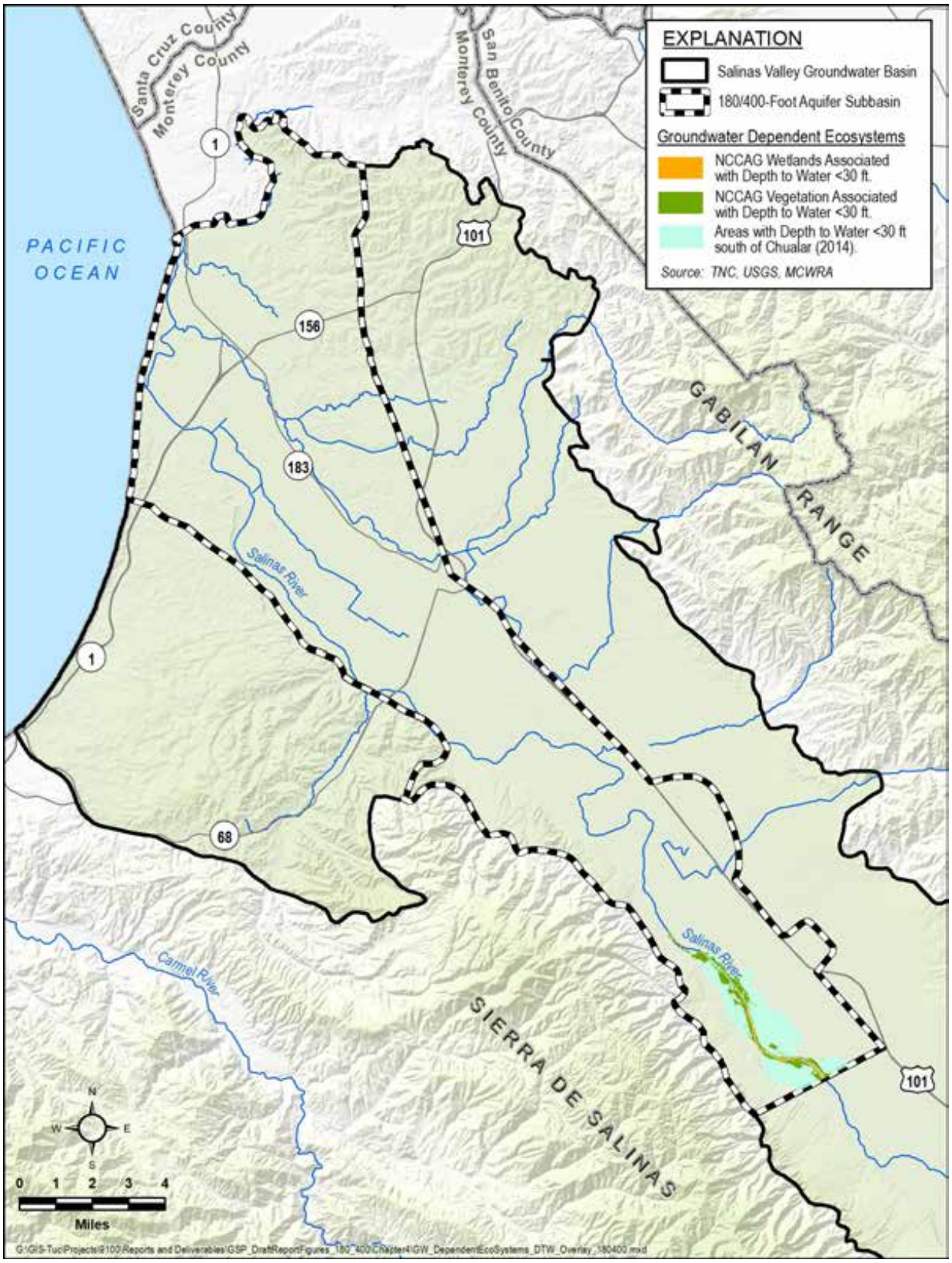


Figure 4A-3: Potential GDEs based on Depth to Groundwater Less than 30 Feet

Question 3: Is the iGDE located in an area known to discharge groundwater (e.g., springs/seeps)?

There are no springs and seeps identified by the National Hydrography Dataset (NHD) within or in the immediate vicinity of the Subbasin. Therefore, no potential GDEs in the 180/400-Foot Aquifer Subbasin are in an area known to discharge groundwater.

FINAL DELINEATION OF POTENTIAL GROUNDWATER DEPENDENT ECOSYSTEMS

The final delineation of potential GDEs are the combination of all the potential GDEs identified by the three criteria listed above. A map showing the final delineated potential GDEs in the 180/400-Foot Aquifer Subbasin is shown in Figure 4A-4.

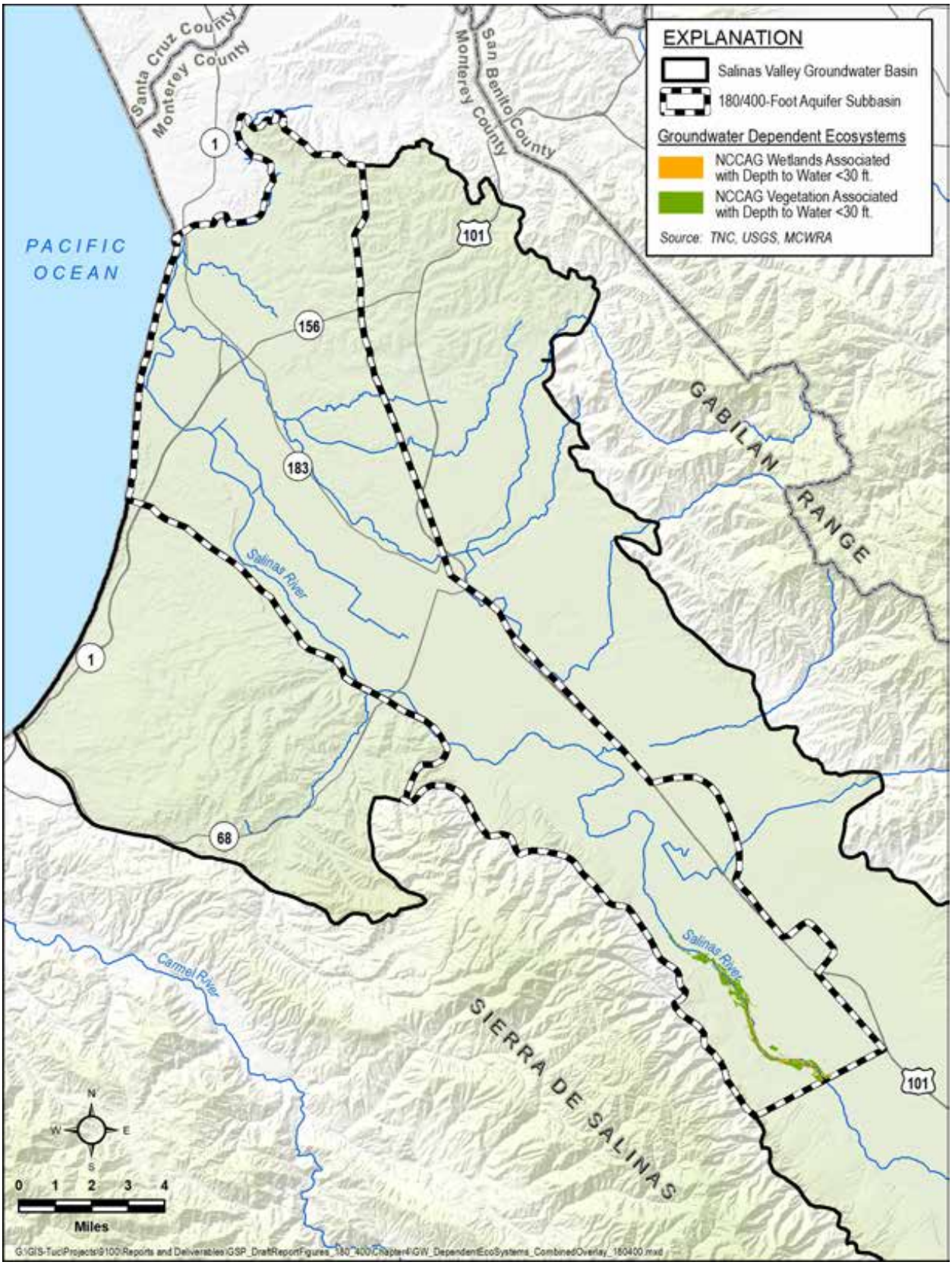


Figure 4A-4: Final Delineation of Extent of Potential GDEs

REFERENCES

Rohde, M. M., S. Matsumoto, J. Howard, S. Liu, L. Riege, and E.J. Remson, 2018, Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans: The Nature Conservancy, San Francisco, California.

California Department of Water Resources (DWR), 2004, Bulletin 118 Basin Descriptions: Salinas Valley Groundwater Basin, 180/400 Subbasin, accessed at https://water.ca.gov/Programs/Groundwater-Management/ Bulletin-118

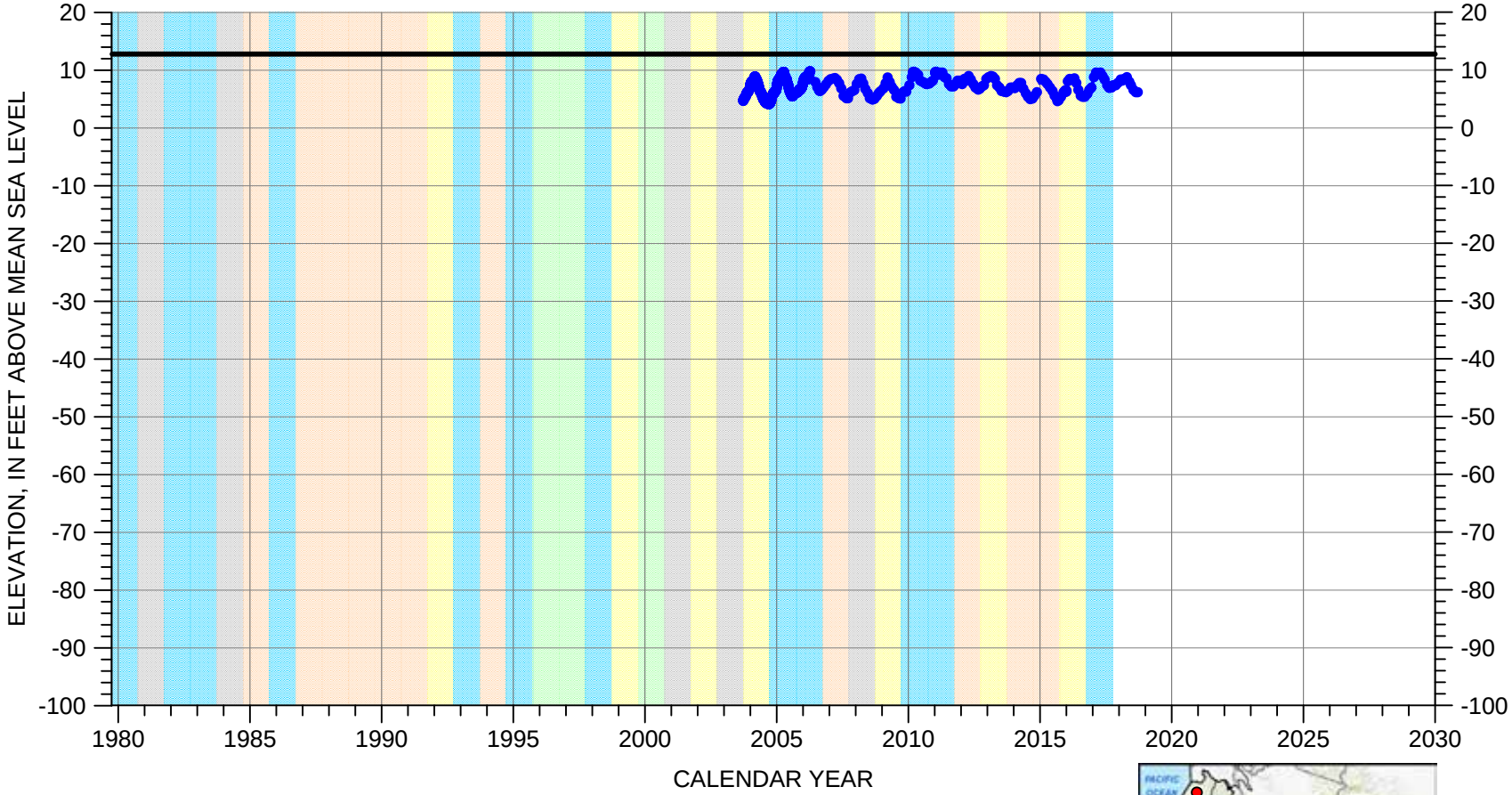
County of Monterey, Planning Department, 2007, Surface geology map, accessed at https://earthworks.stanford.edu/catalog/stanford-cm427jp1187

APPENDIX 5A

HYDROGRAPHS

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-21Q01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

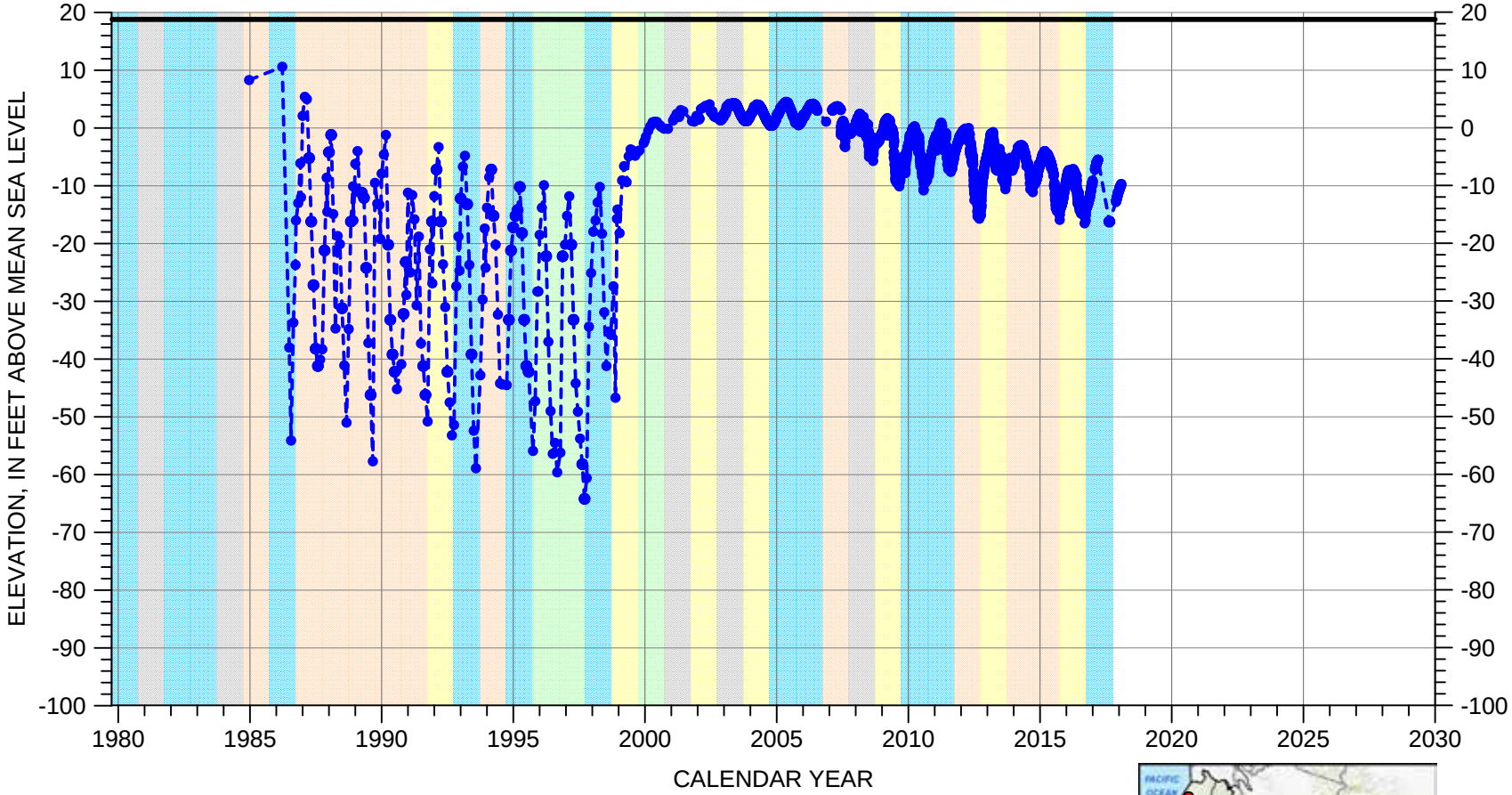
Well Depth: 157.4 feet

Screened Interval: 105-155 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\13S_02E-21Q01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-32E05

180/400-Foot Aquifer Subbasin
(Deep Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

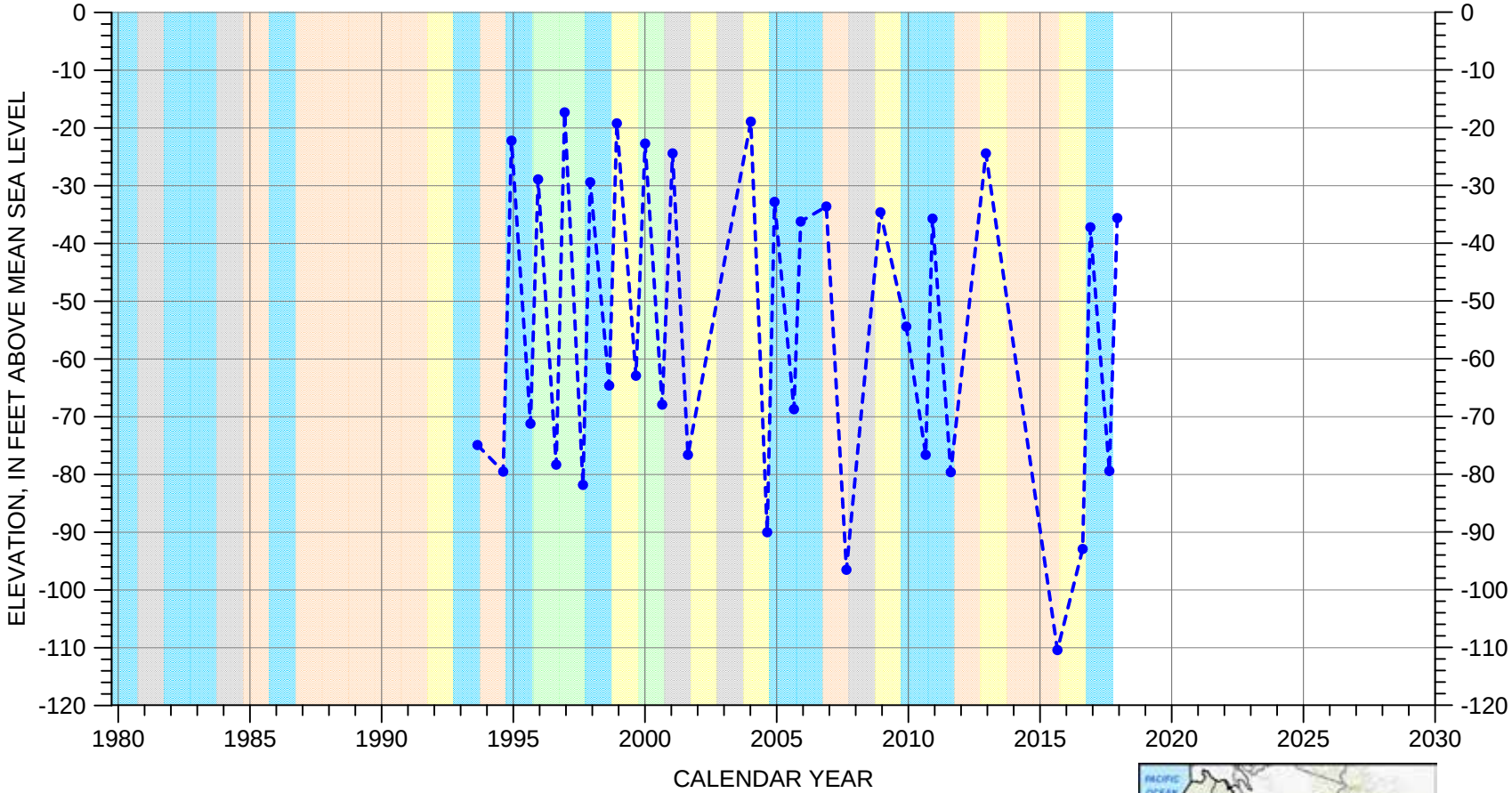
Well Depth: 1605 feet

Screened Interval: unknown

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\13S_02E-32E05.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-01C01

180/400-Foot Aquifer Subbasin



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (64.4 FT MSL)

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

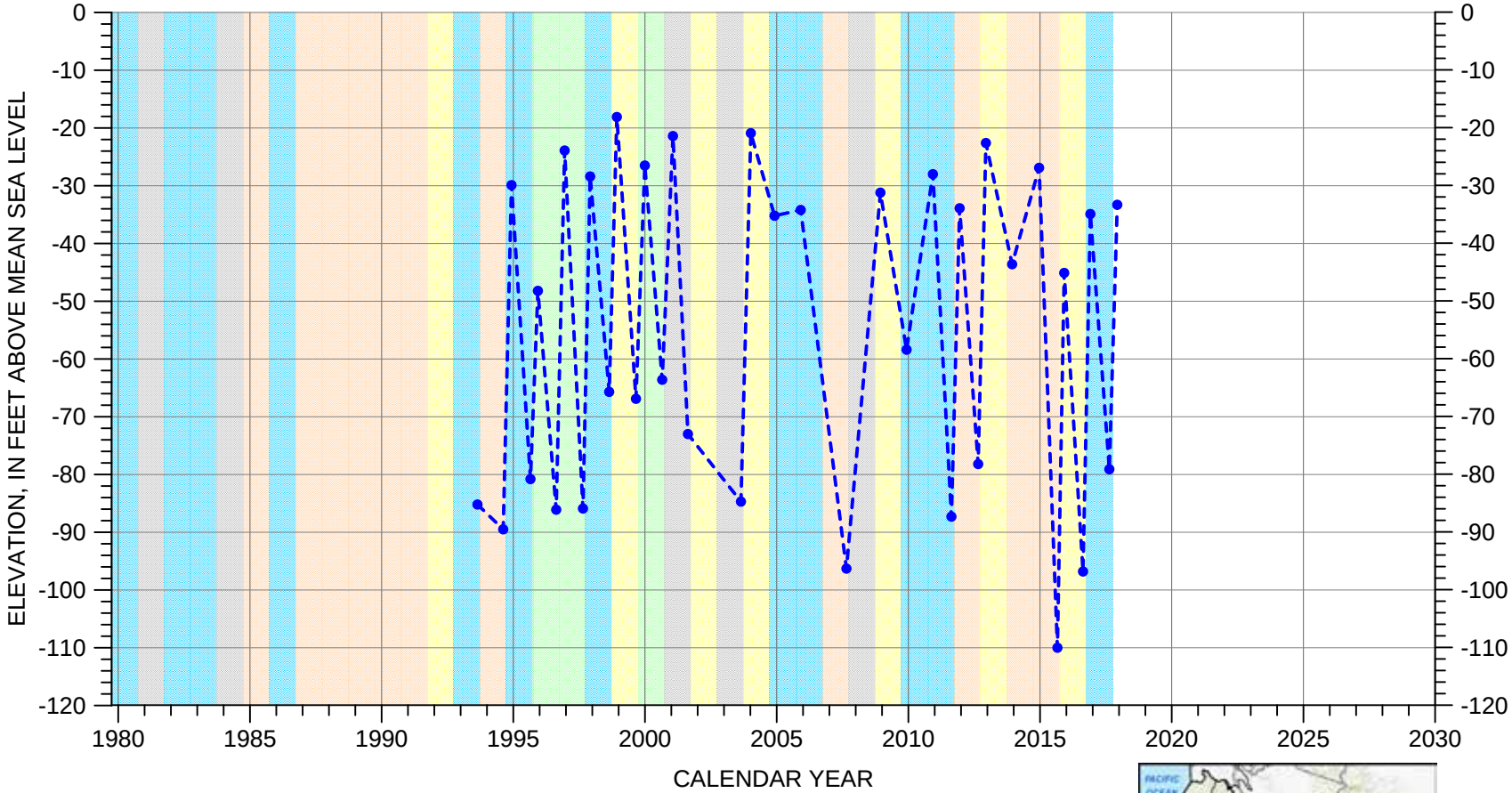
Well Depth: 591 feet

Screened Interval: 350-591 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-01C01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-02A02

180/400-Foot Aquifer Subbasin



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (54.8 FT MSL)

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

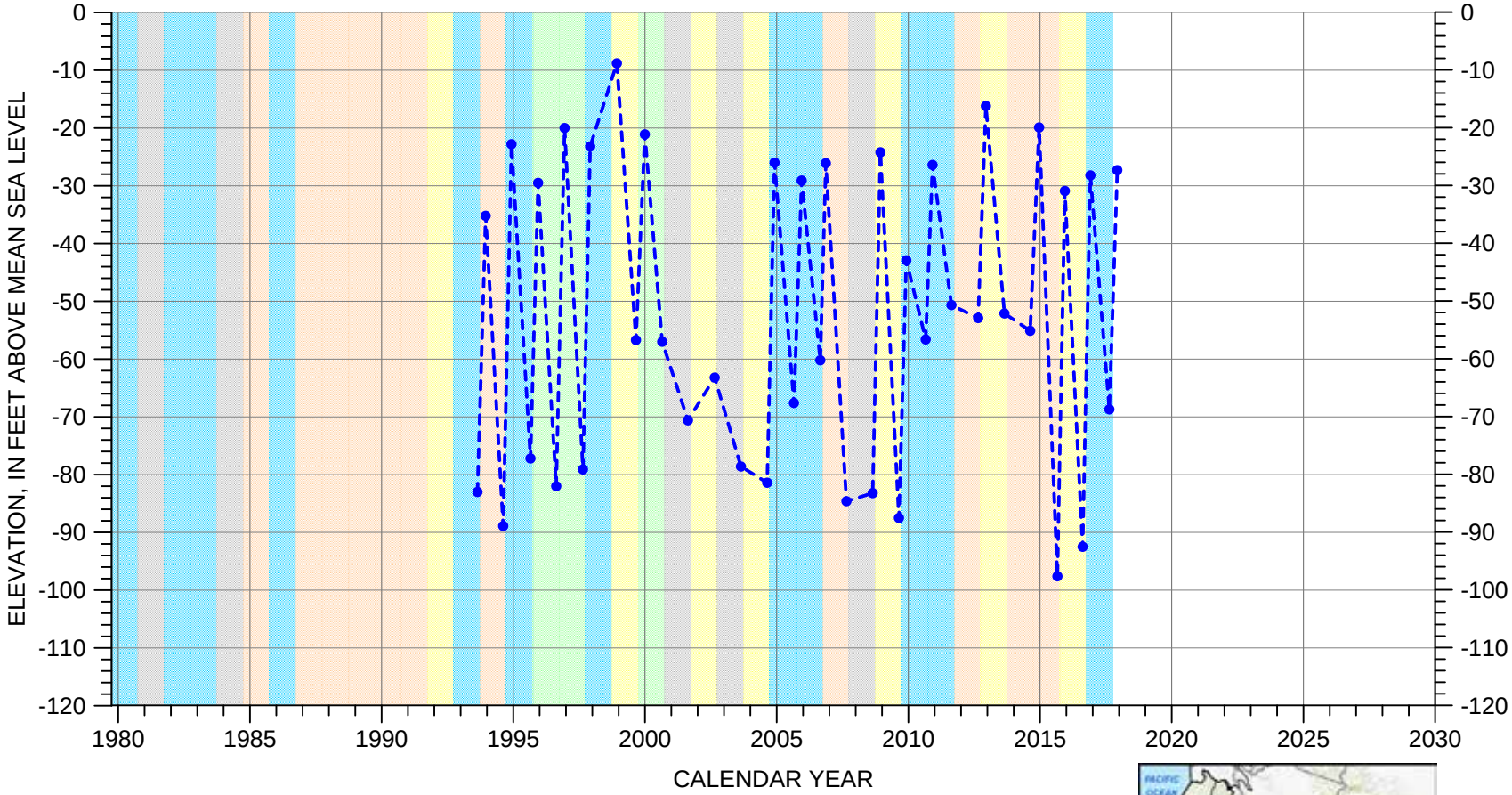
Well Depth: 810 feet

Screened Interval: 360-810 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-02A02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-02C03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (60.4 FT MSL)

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

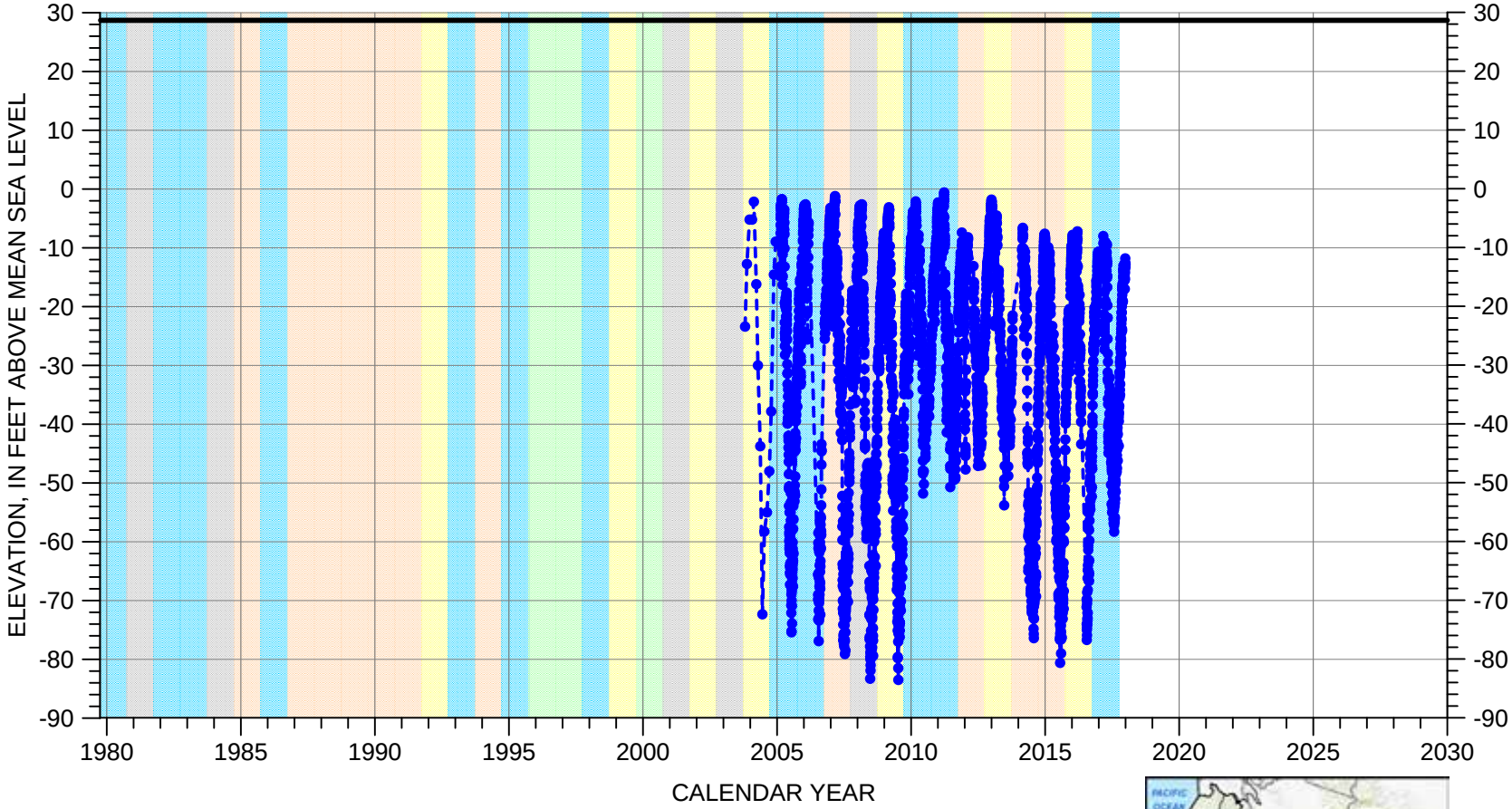
Well Depth: 835 feet

Screened Interval: 393-832 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\SalinasHydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-02C03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-03F03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

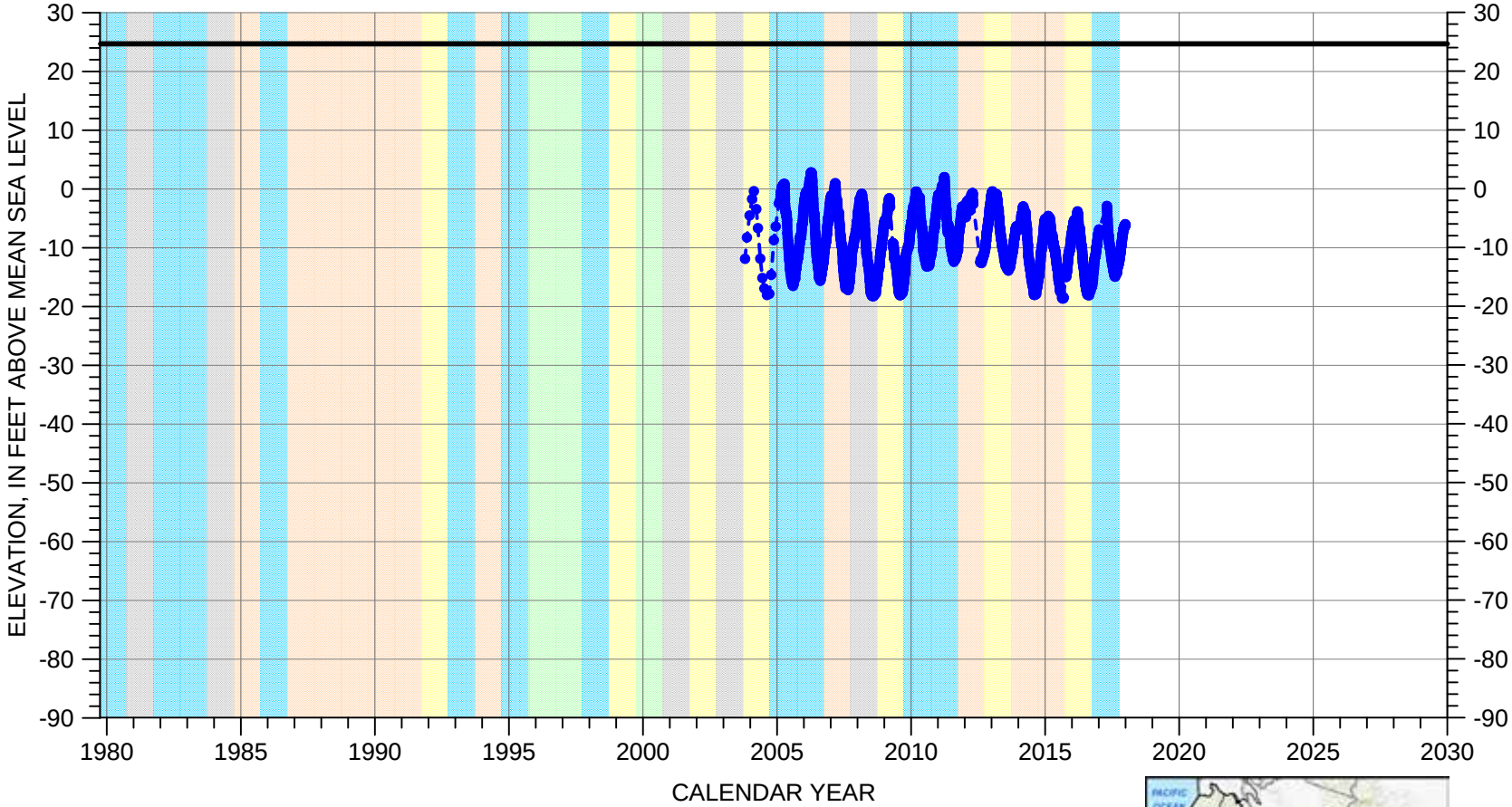
Well Depth: 455 feet

Screened Interval: 420-450 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-03F03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-03F04

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

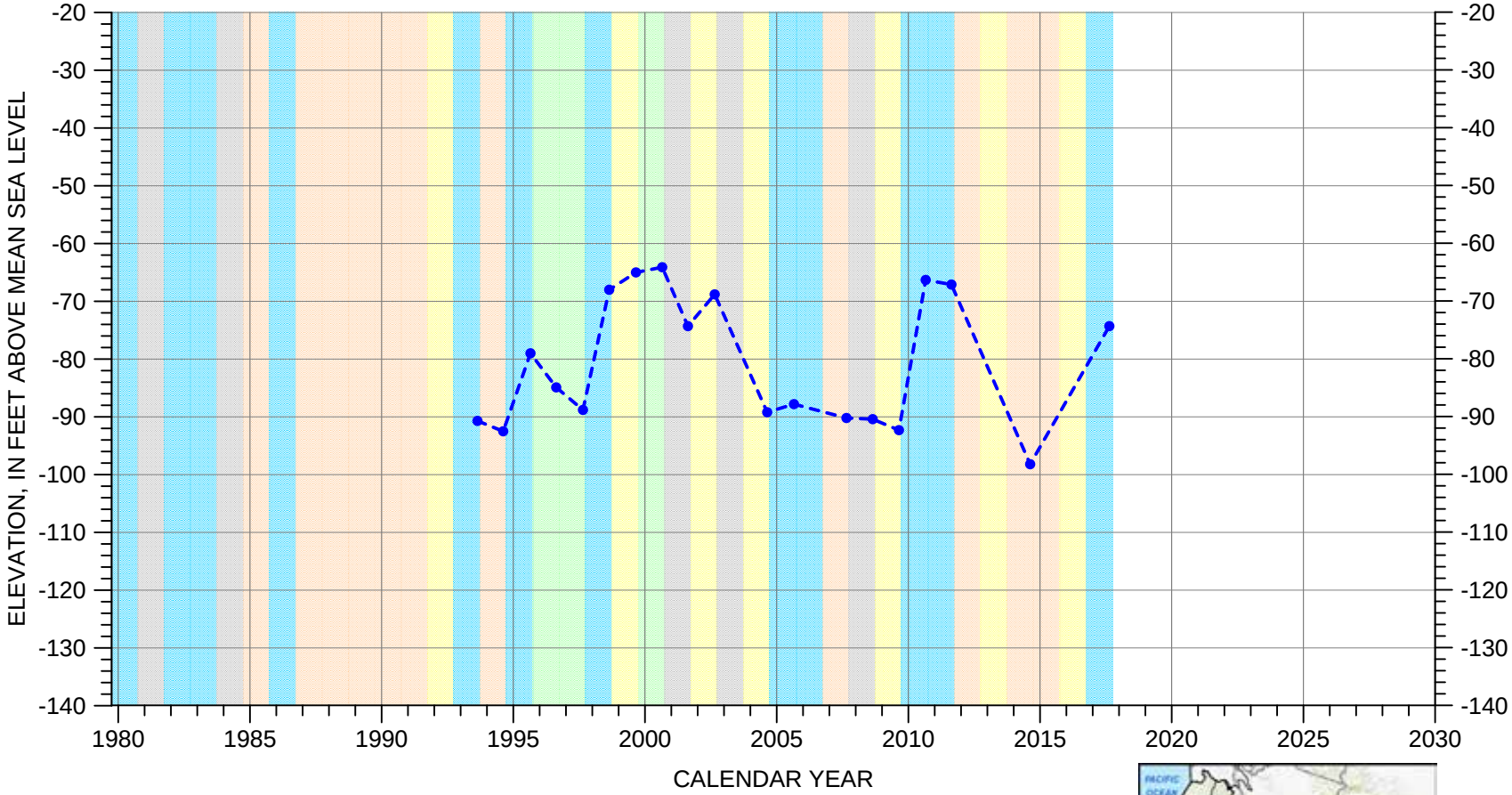
Well Depth: 205 feet

Screened Interval: 154-204 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-03F04.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-03H01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (41.7 FT MSL)

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

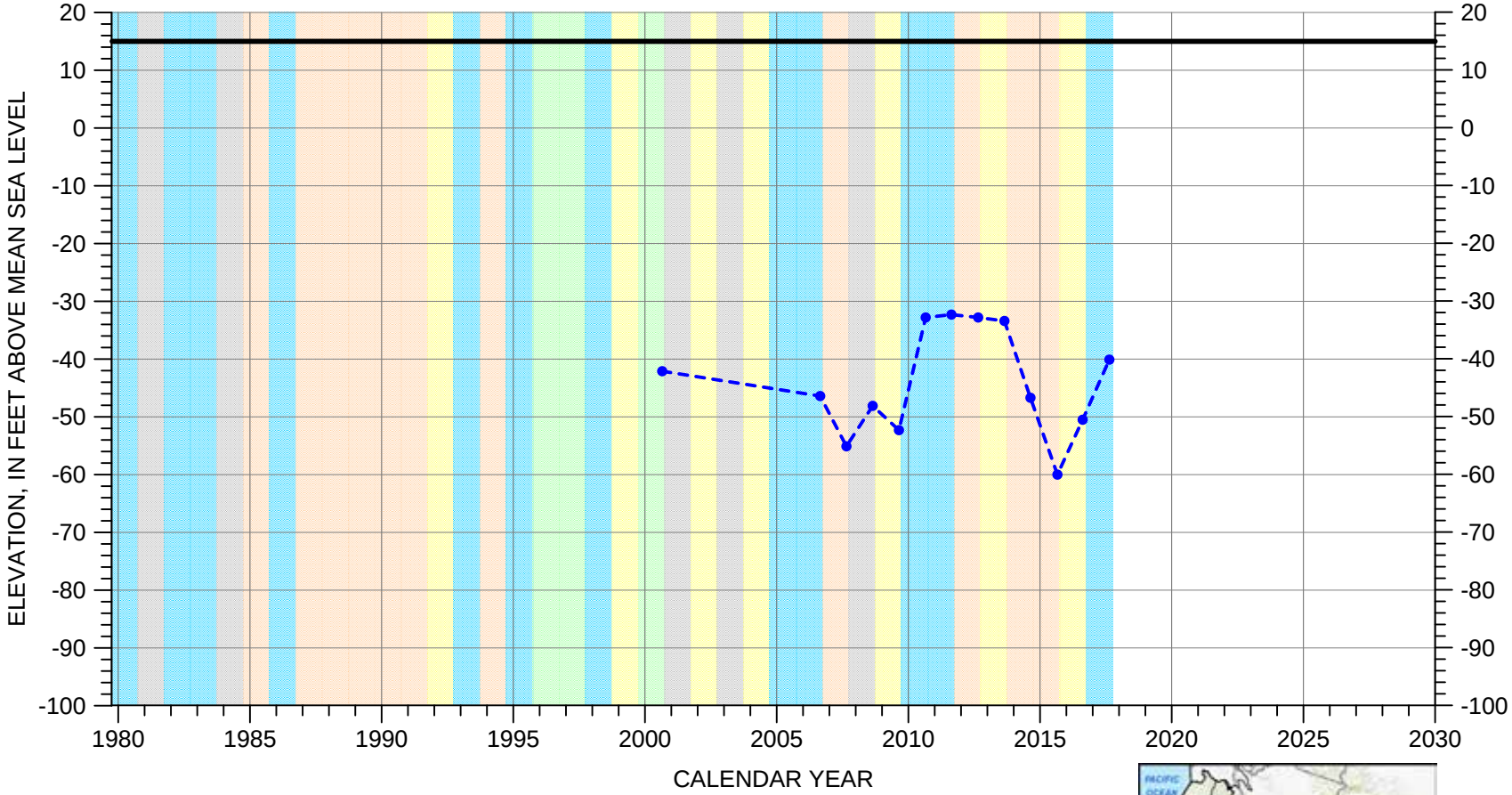
Well Depth: 800 feet

Screened Interval: 350-800 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-03H01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-04G02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

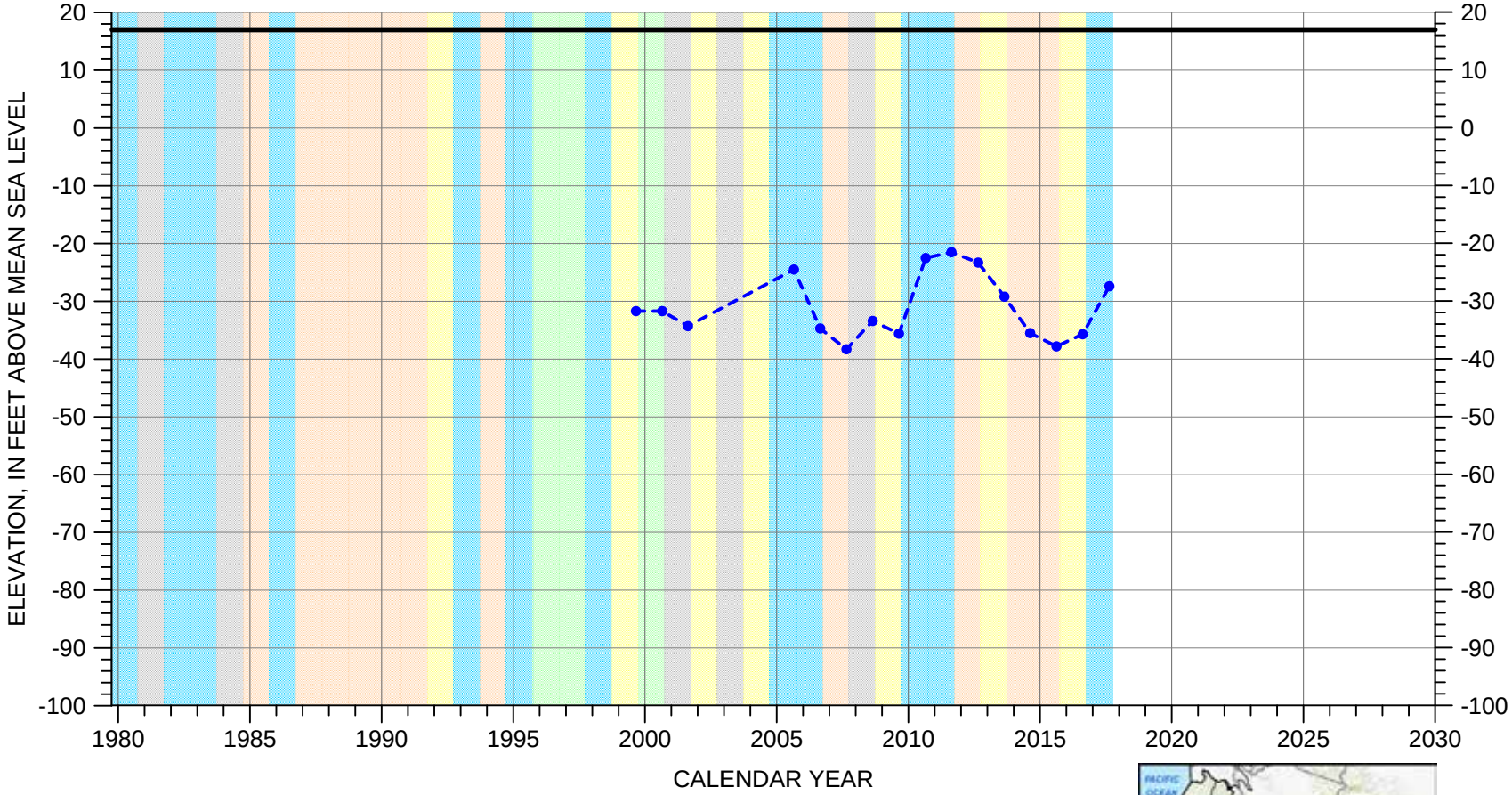
Well Depth: 620 feet

Screened Interval: 370-610 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-04G02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-09D04

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

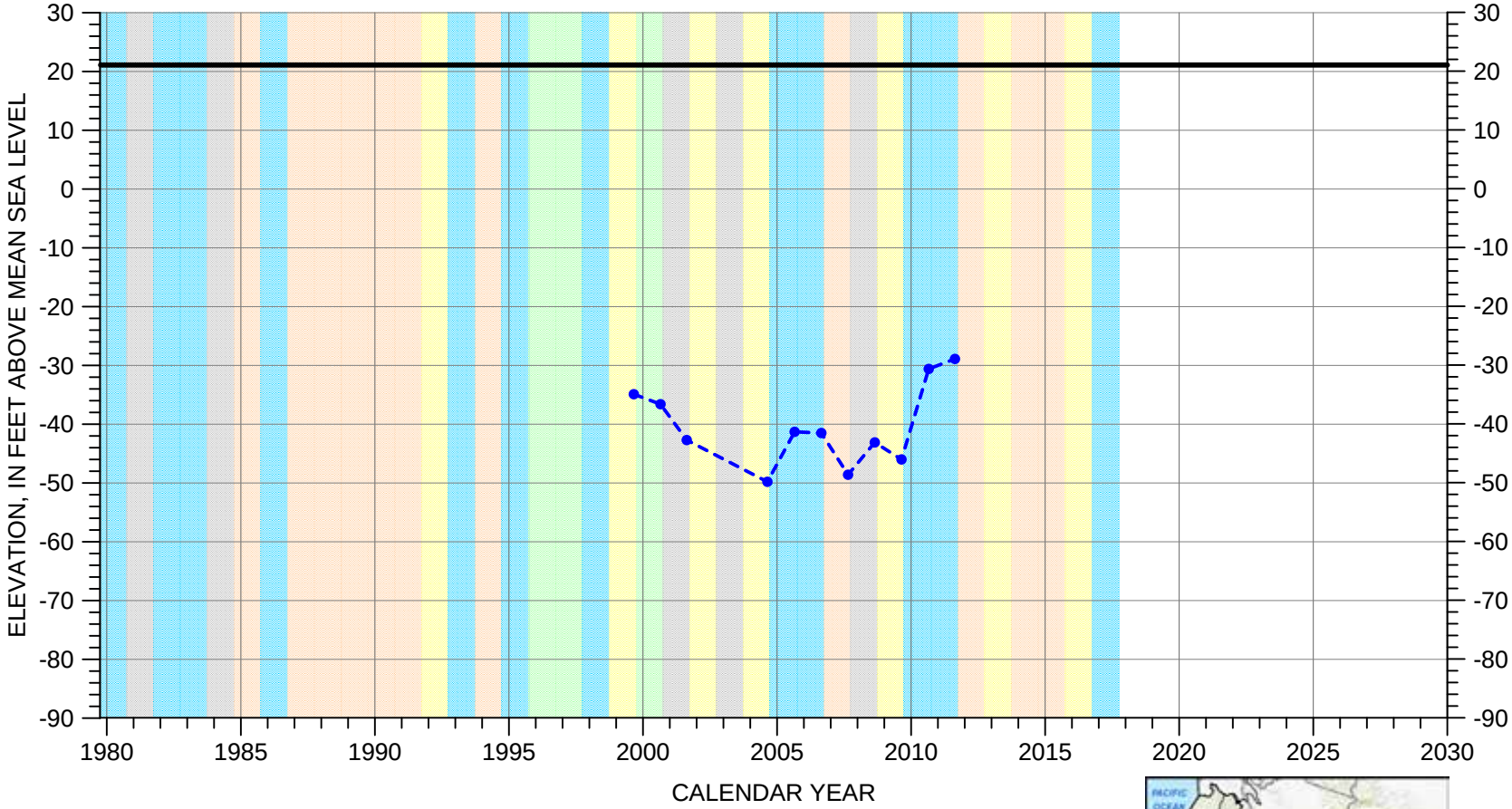
Well Depth: 610 feet

Screened Interval: 350-600 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-09D04.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-09K02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

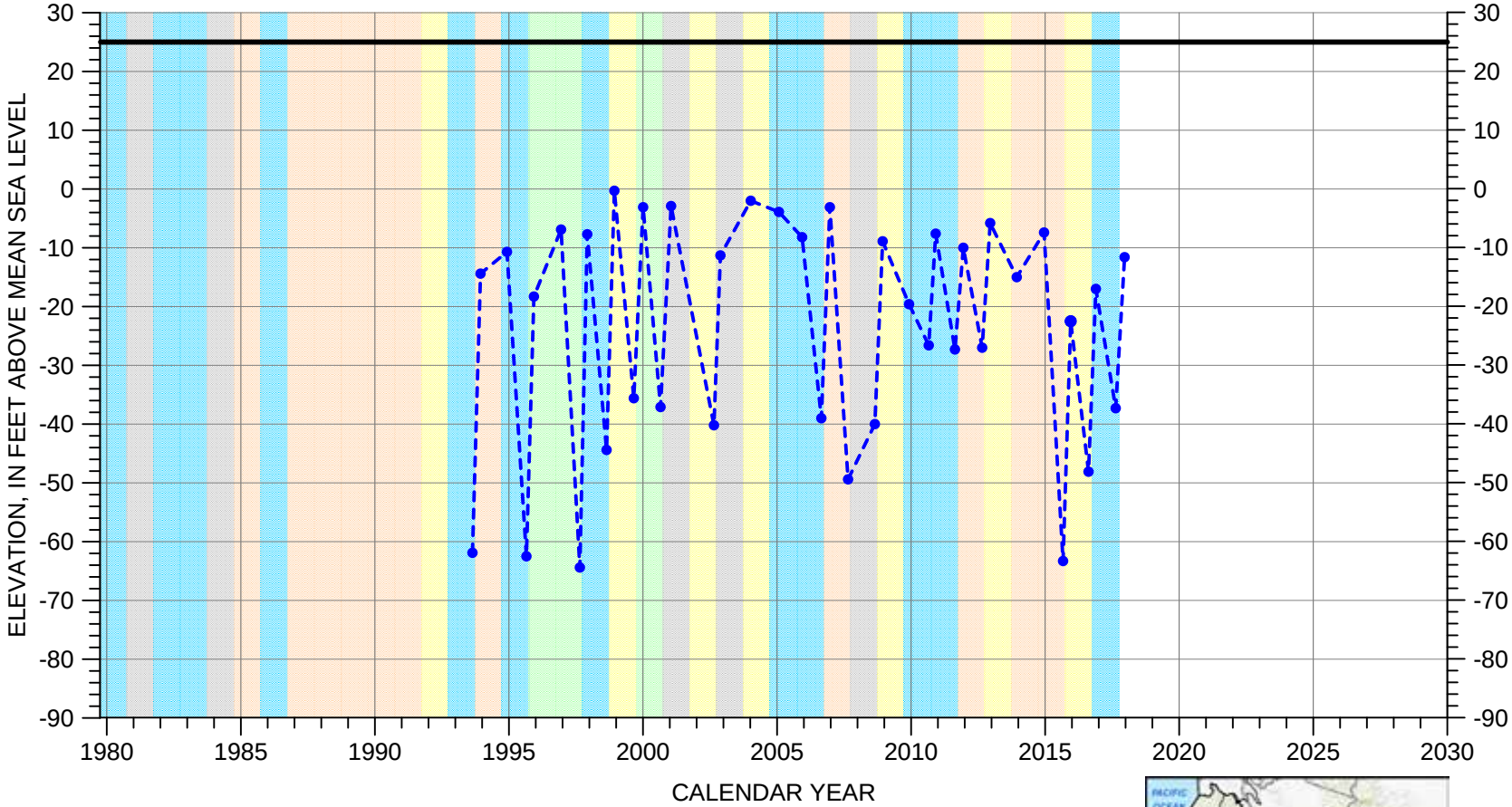
Well Depth: 610 feet

Screened Interval: 360-600 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-09K02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-10E02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

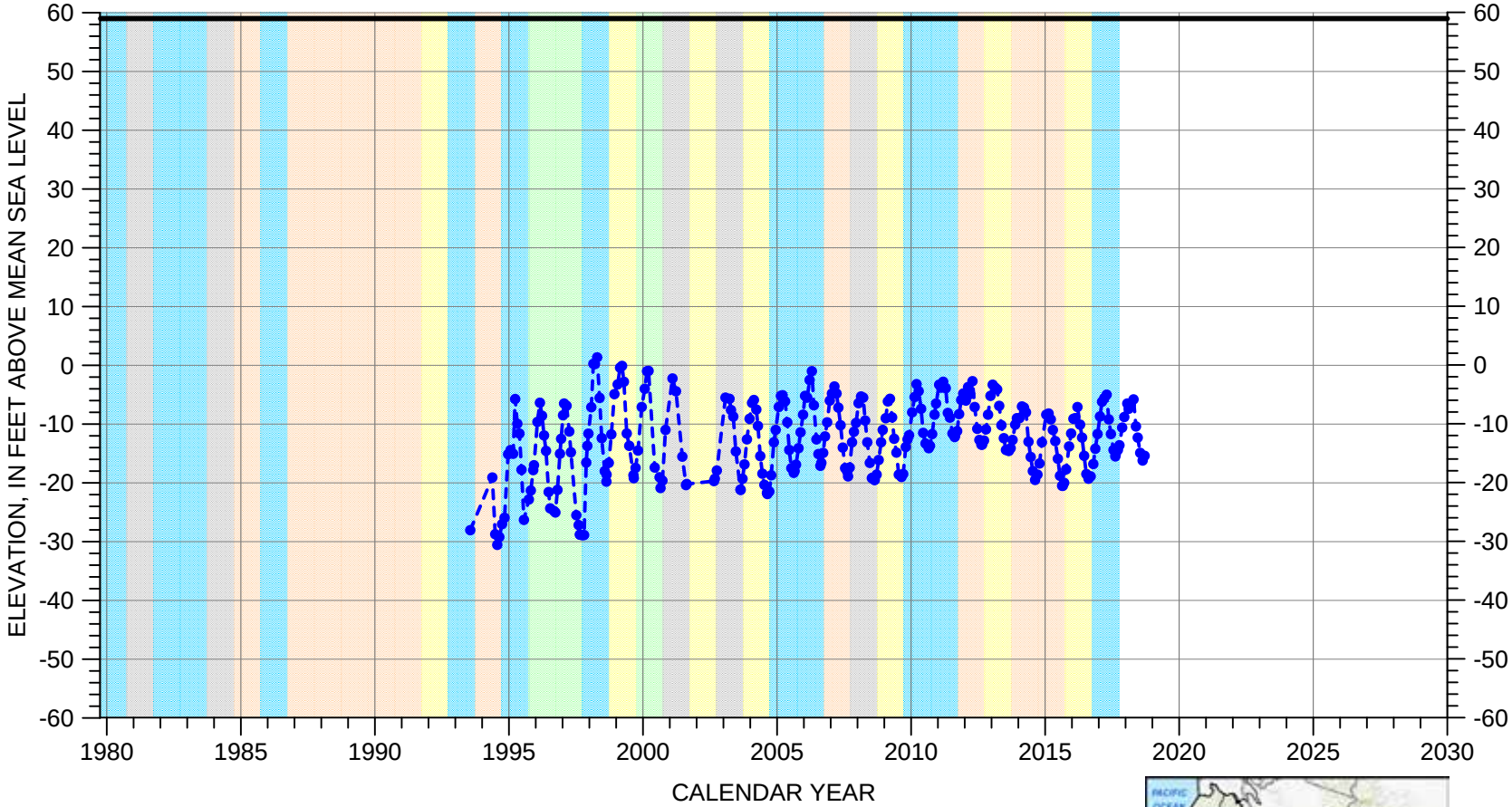
Well Depth: 717 feet

Screened Interval: 298-660 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\SalinasHydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-10E02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-11A02

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

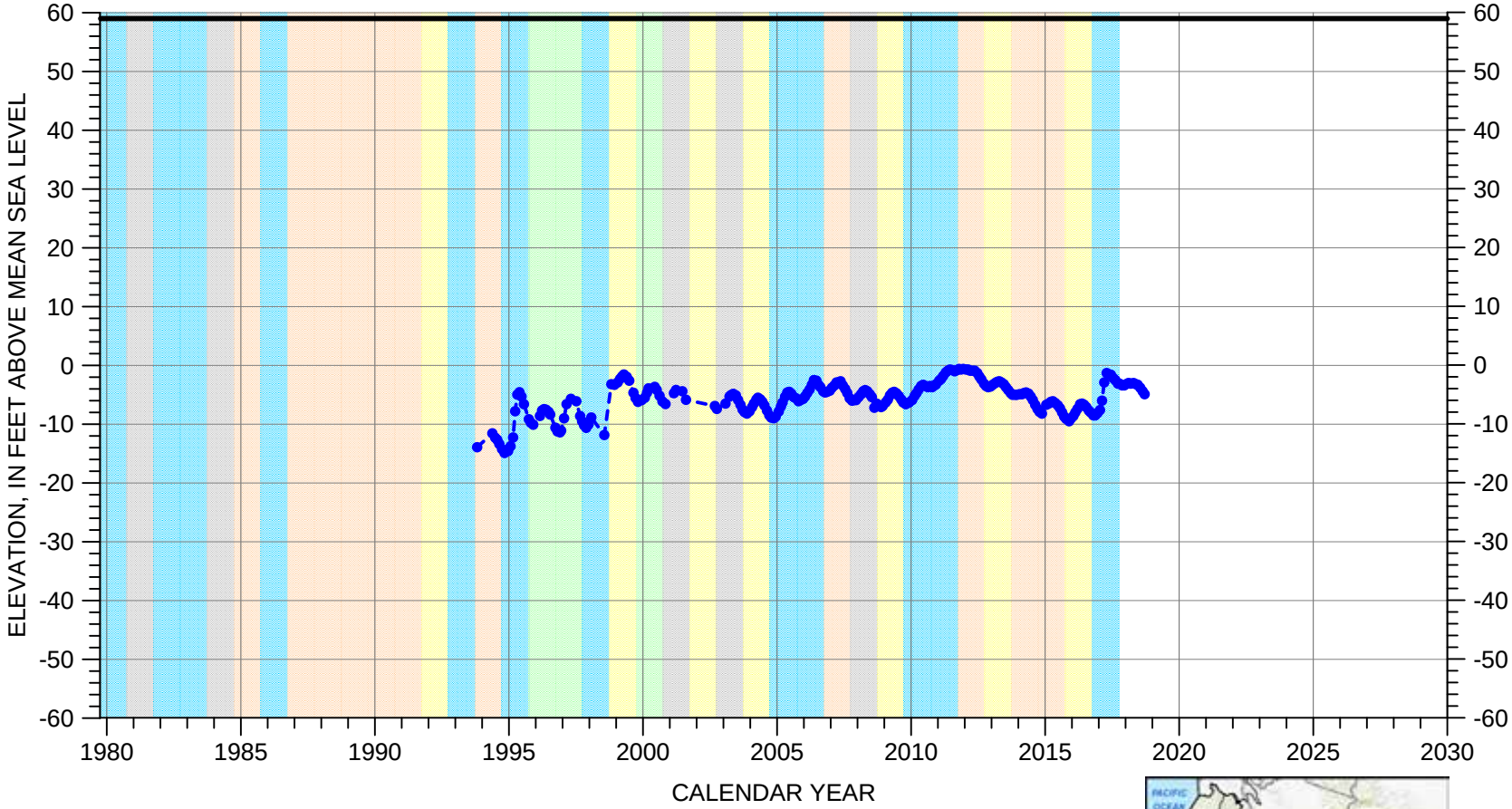
Well Depth: 250 feet

Screened Interval: 190-240 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-11A02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-11A03

180/400-Foot Aquifer Subbasin



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

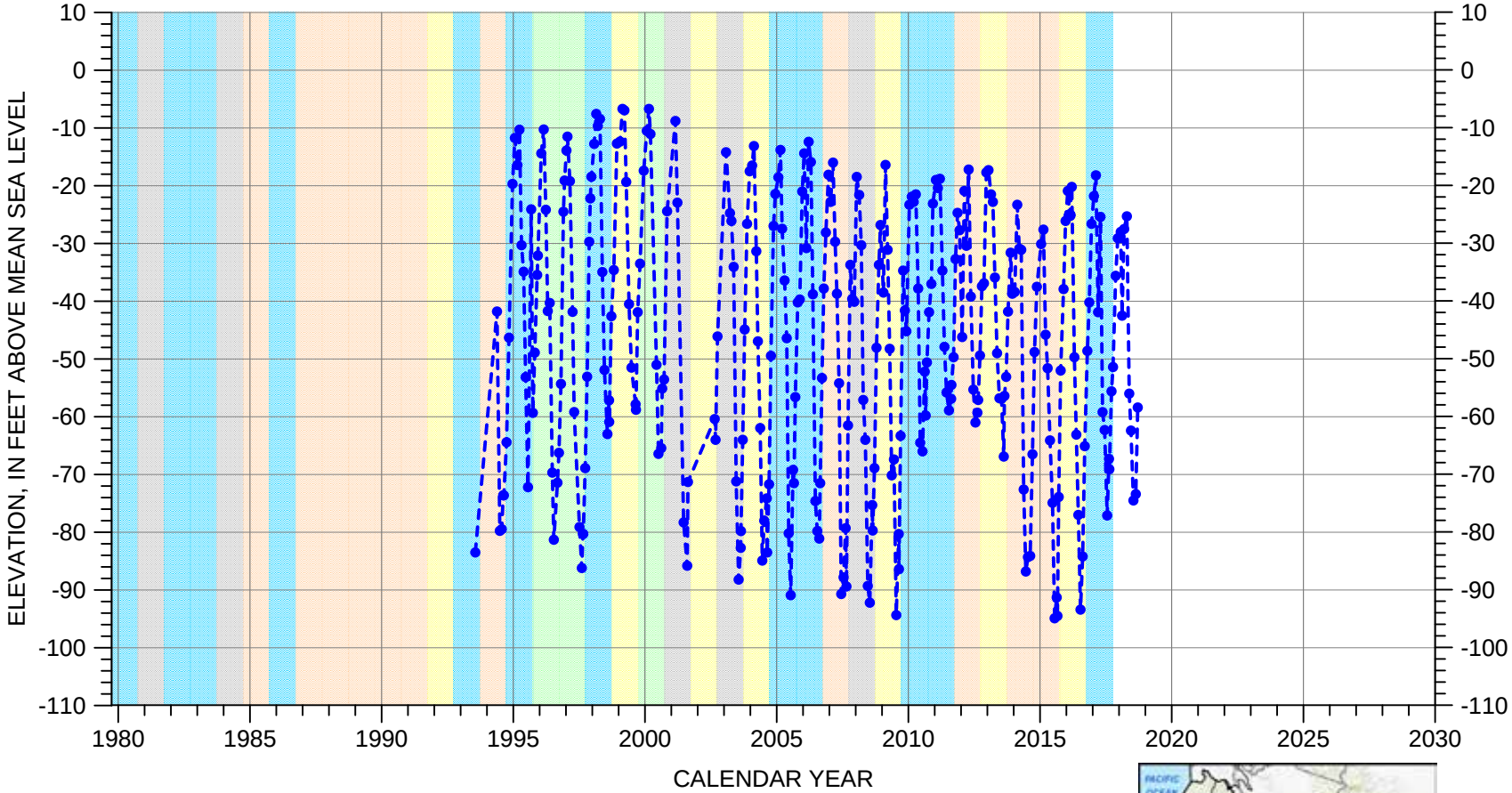
Well Depth: 100 feet

Screened Interval: 60-90 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-11A03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-11A04

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (58.9 FT MSL)

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

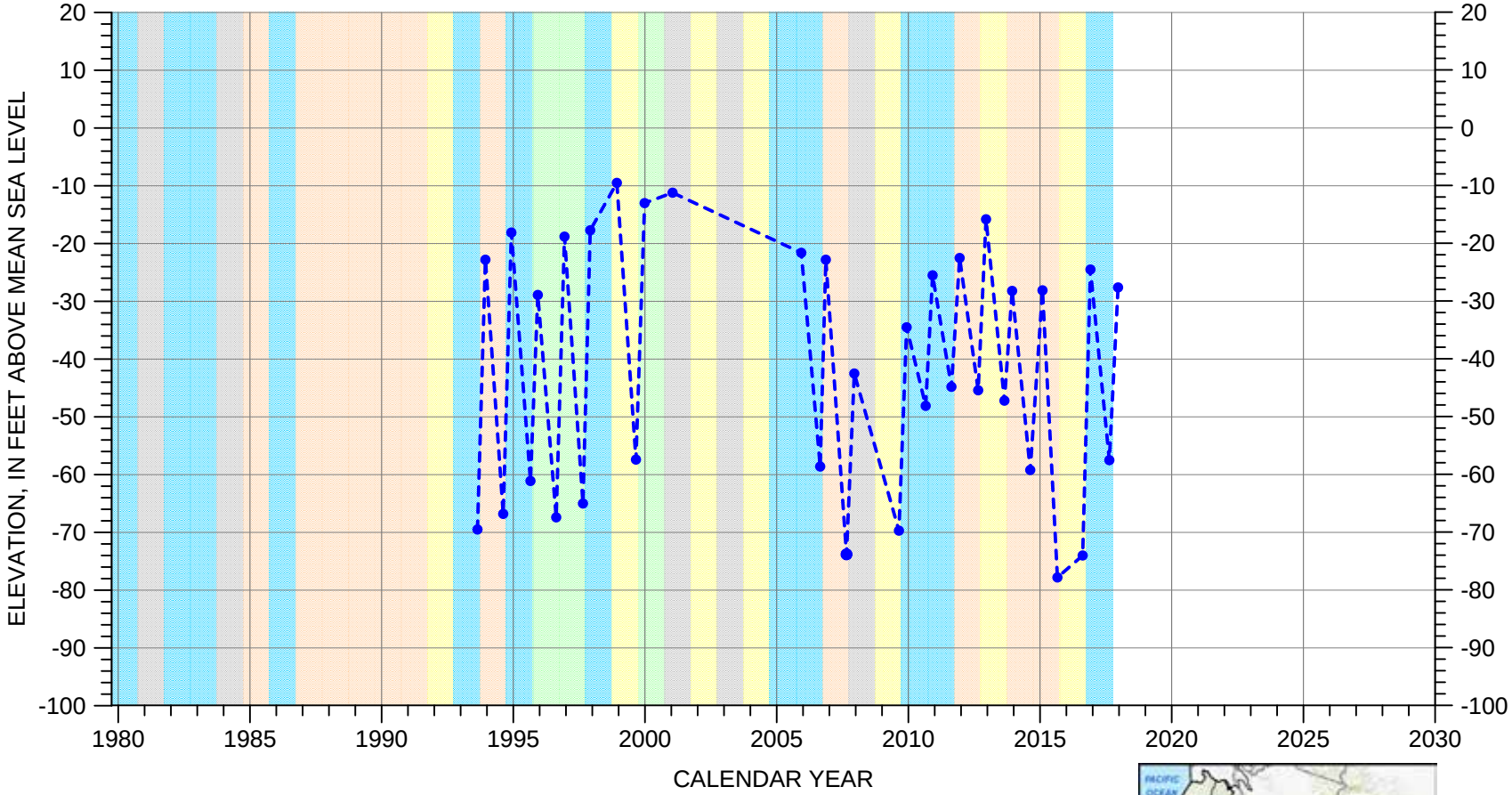
Well Depth: 490 feet

Screened Interval: 450-480 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-11A04.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-11M03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (41.5 FT MSL)

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

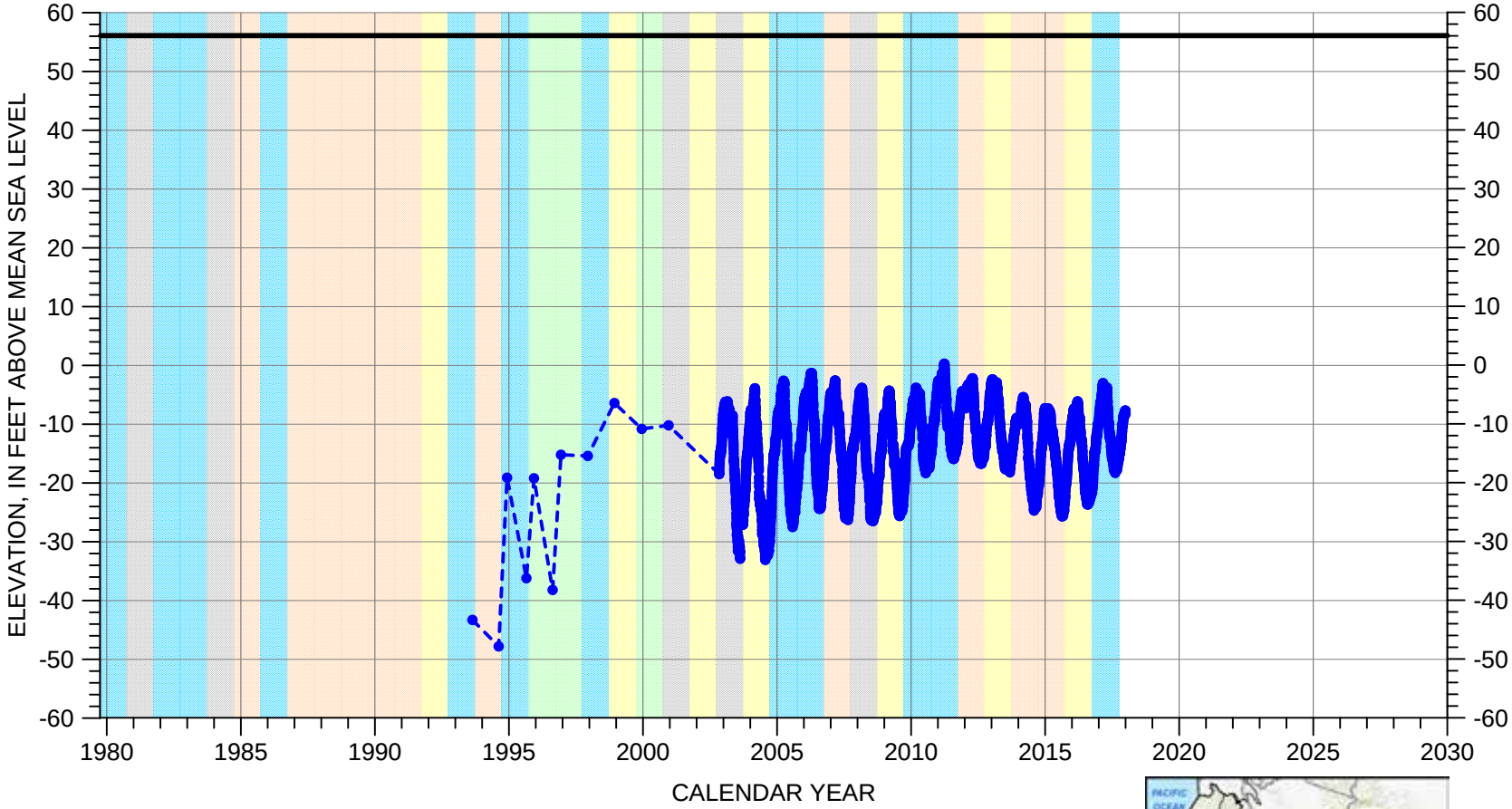
Well Depth: 660 feet

Screened Interval: 400-660 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\SalinasHydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-11M03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-12B02

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

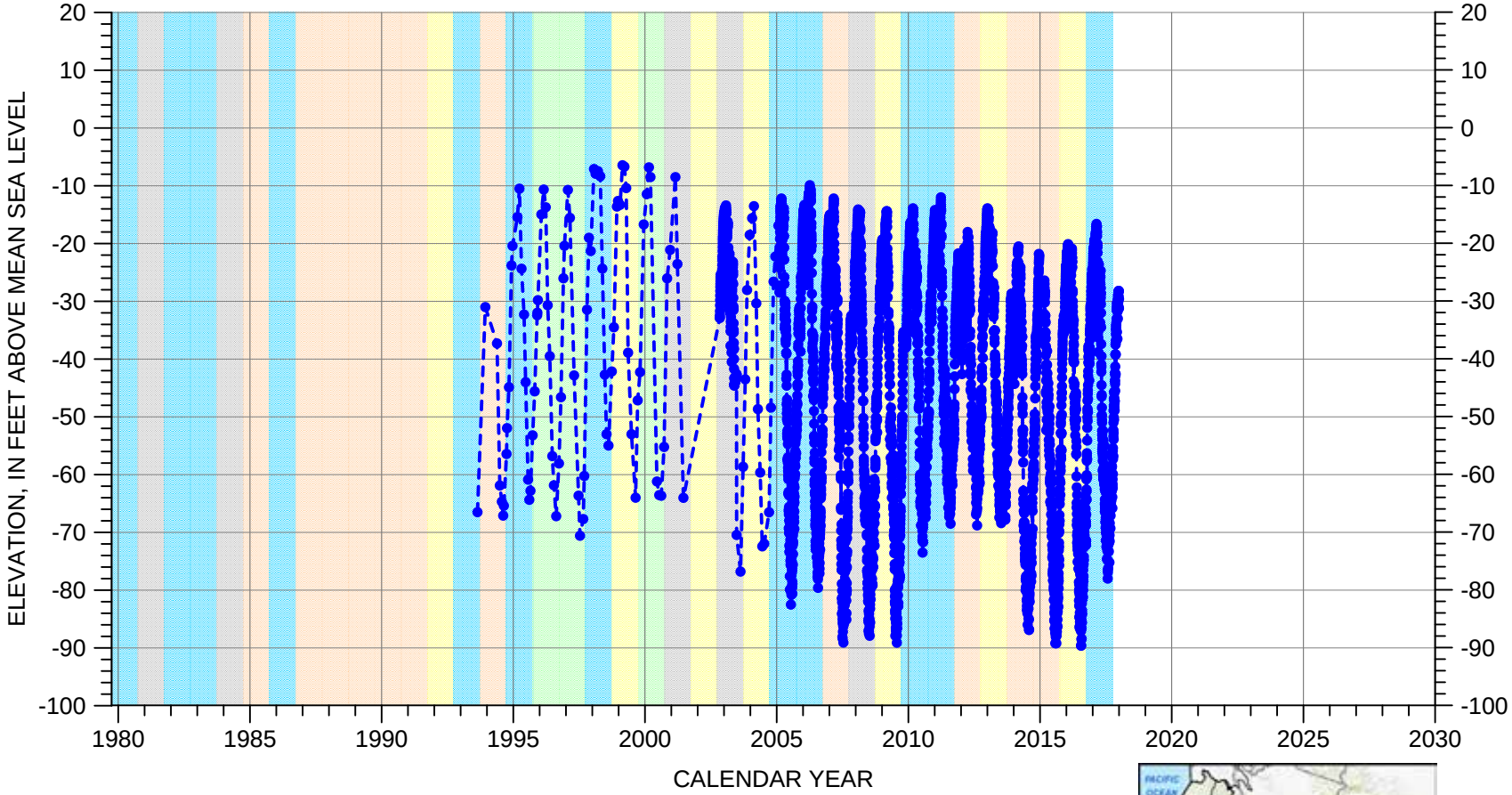
Well Depth: 265 feet

Screened Interval: 210-260 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-12B02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-12B03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (56.1 FT MSL)

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

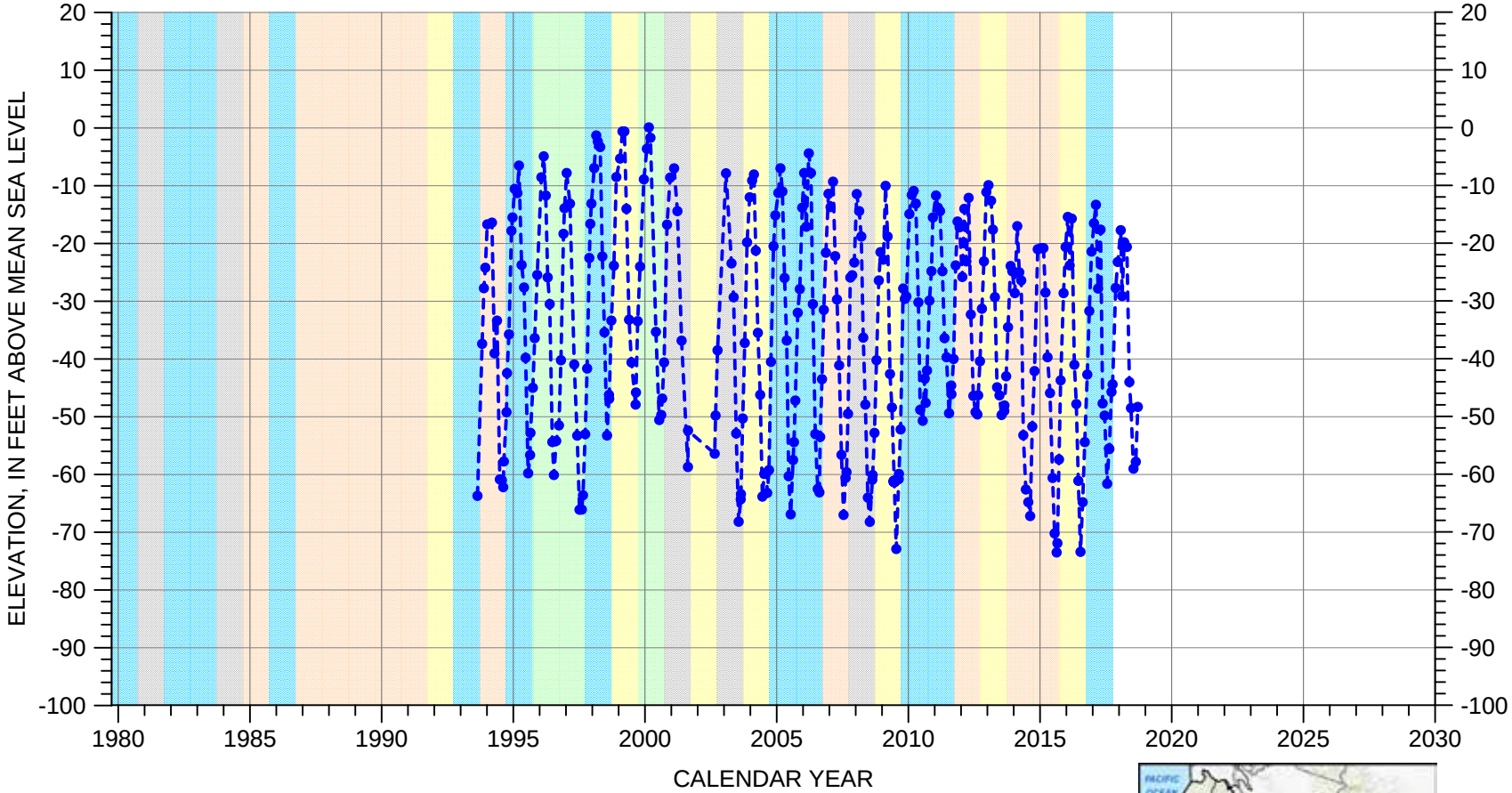
Well Depth: 390 feet

Screened Interval: 350-380 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-12B03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-13F02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (44.6 FT MSL)

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

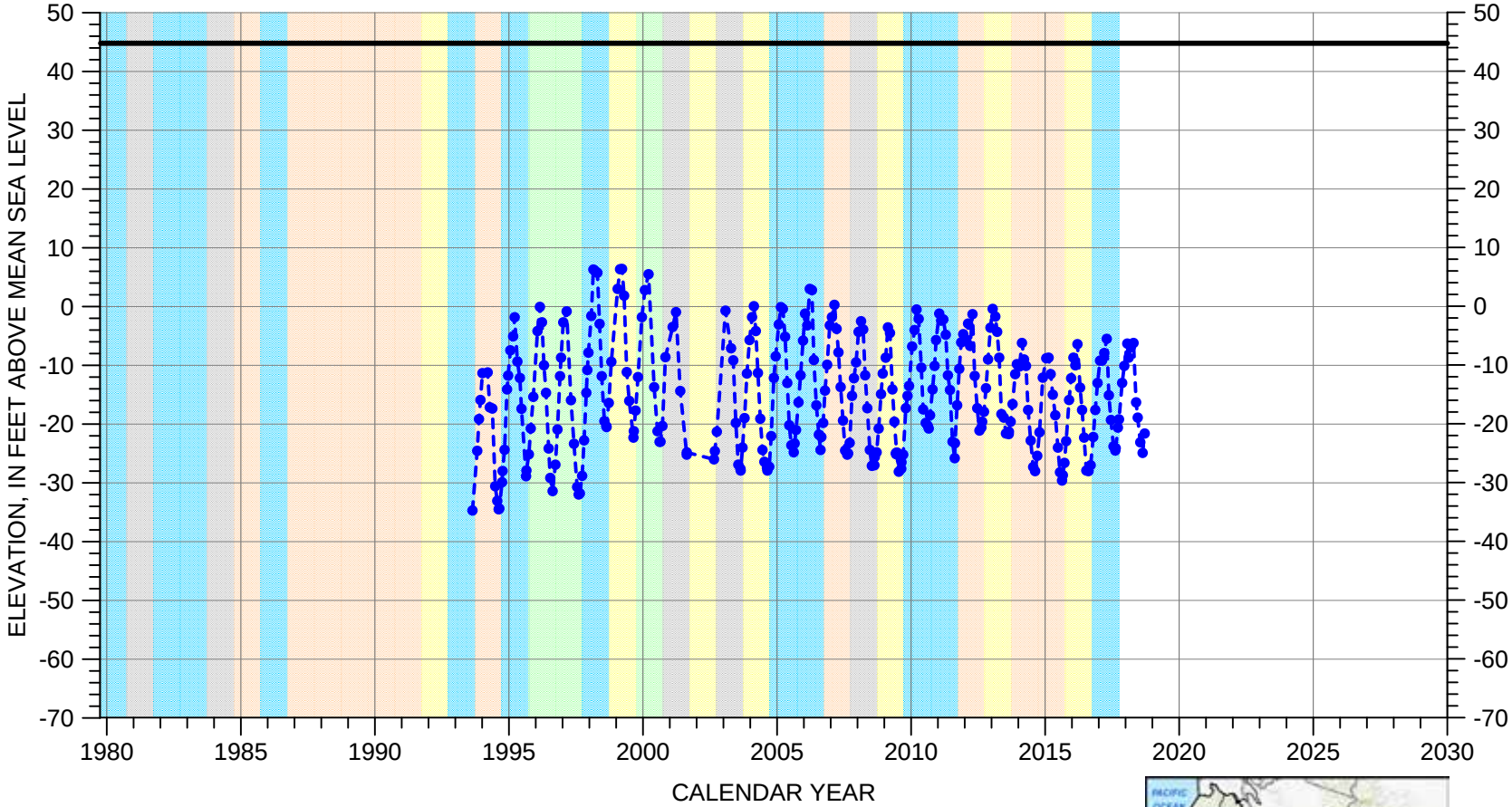
Well Depth: 480 feet

Screened Interval: 420-470 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-13F02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-13F03

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

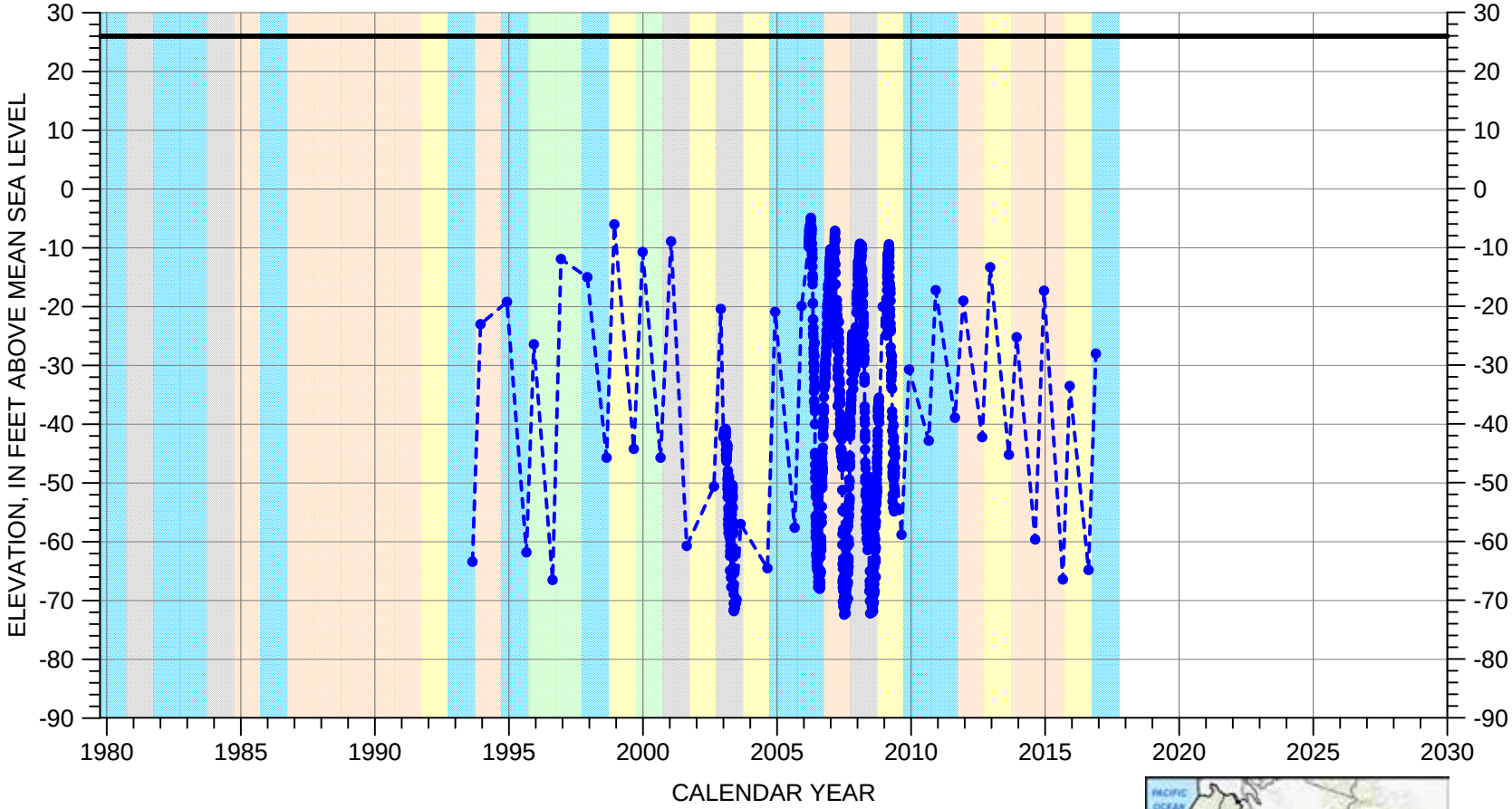
Well Depth: 280 feet

Screened Interval: 230-270 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-13F03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-14L03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

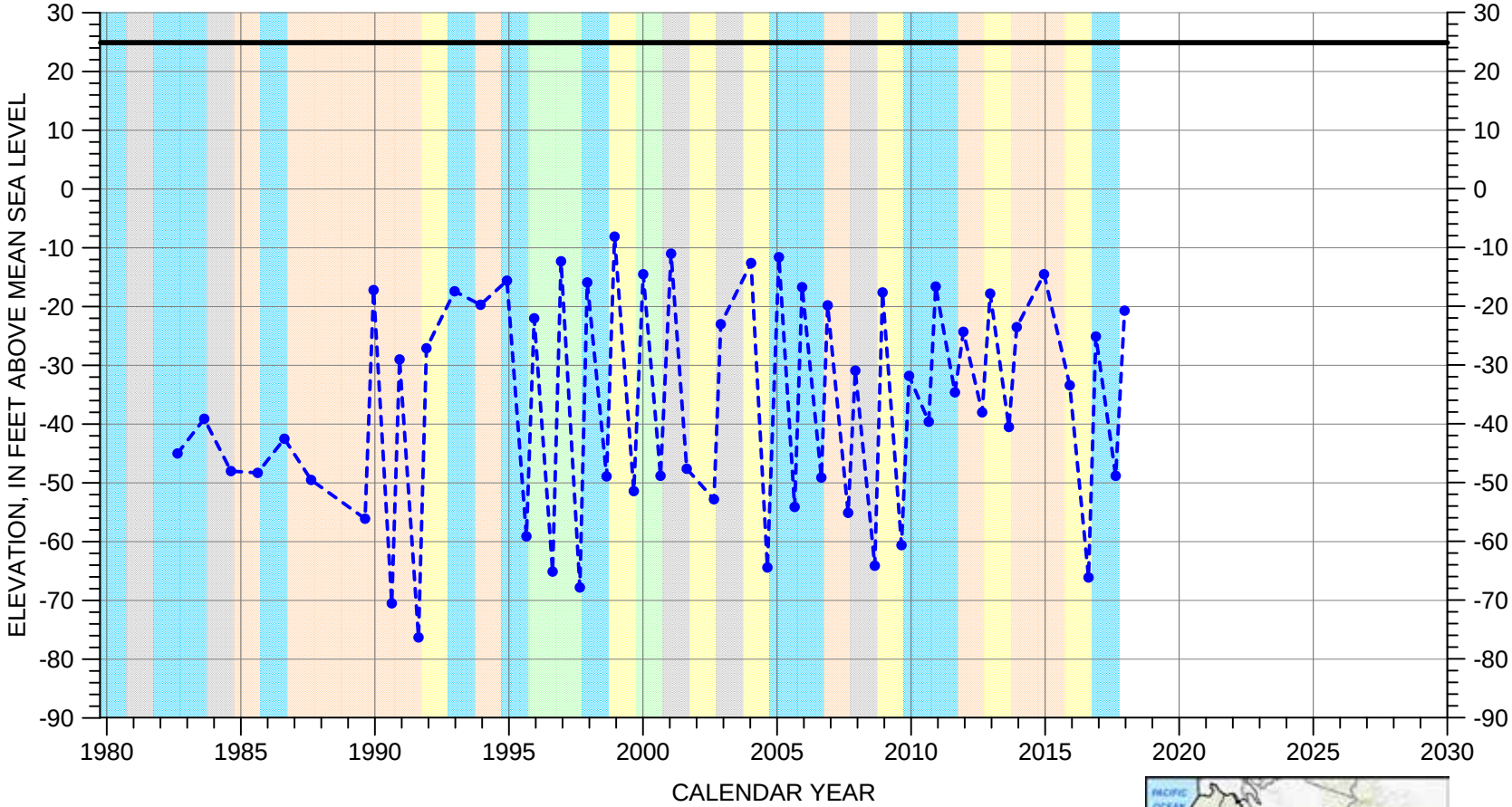
Well Depth: 612 feet

Screened Interval: 332-612 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-14L03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-15A01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

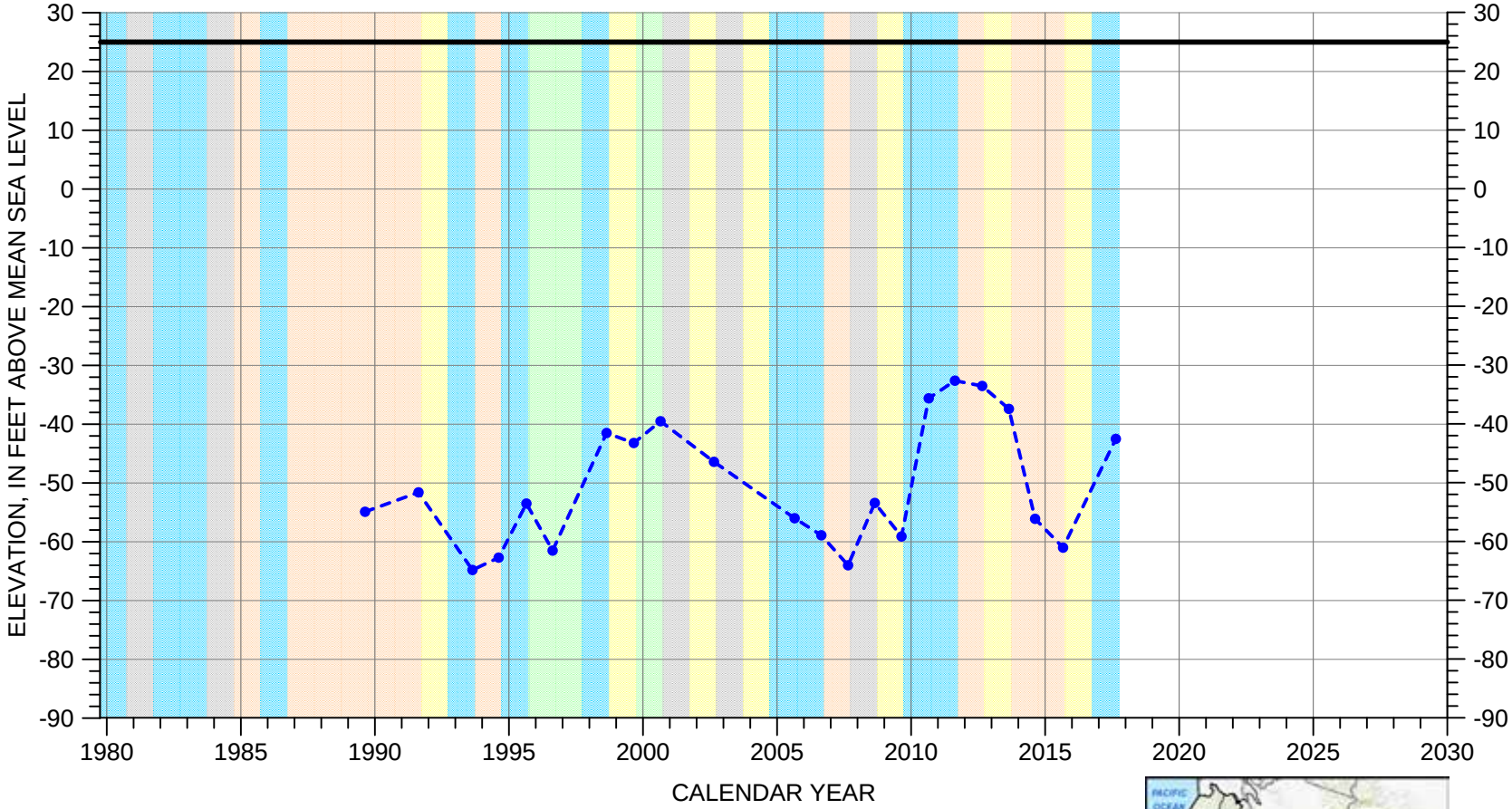
Well Depth: 623 feet

Screened Interval: 386-608 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\SalinasHydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-15A01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-15C02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

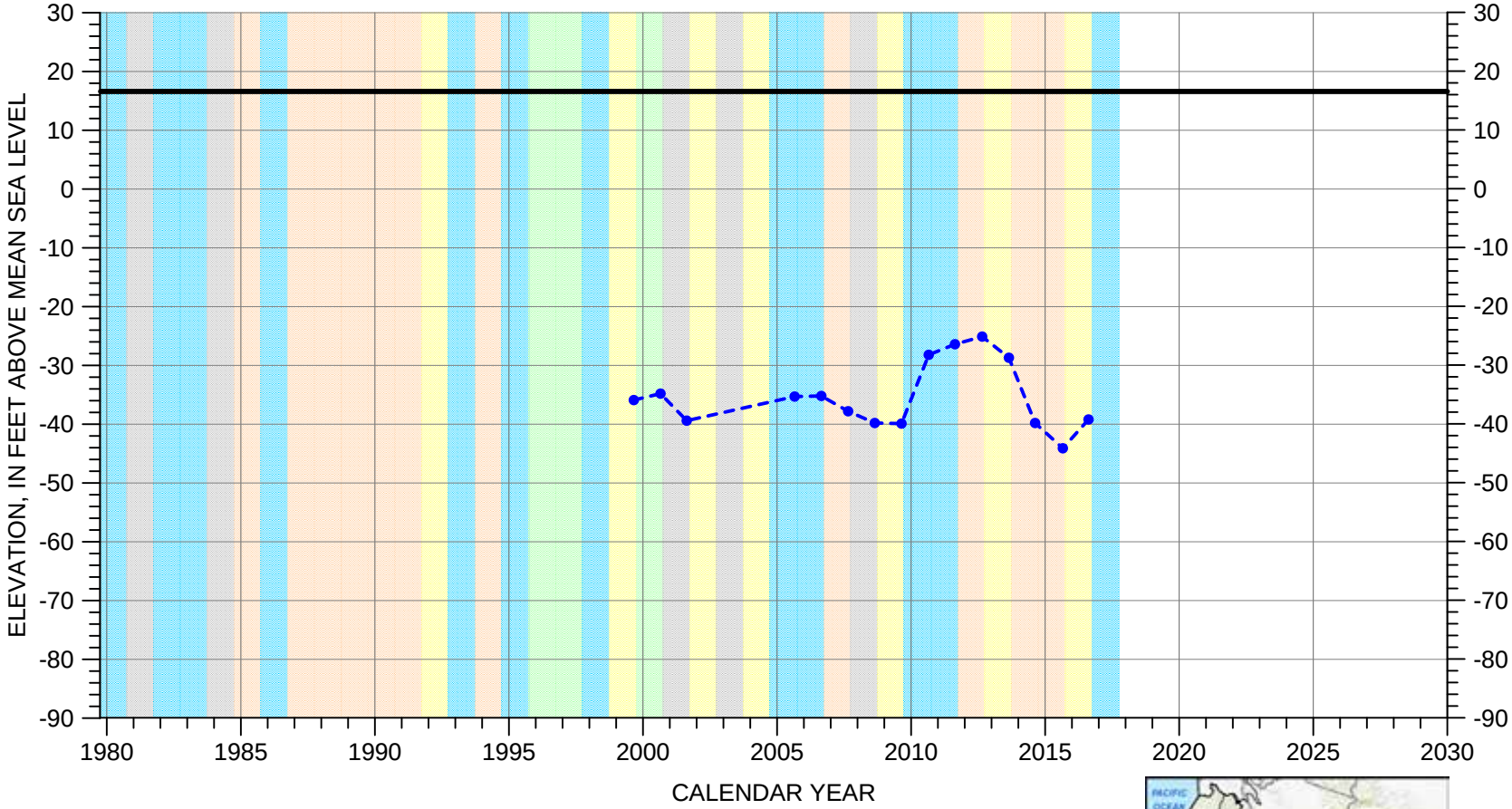
Well Depth: 550 feet

Screened Interval: 328-550 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-15C02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-16G01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

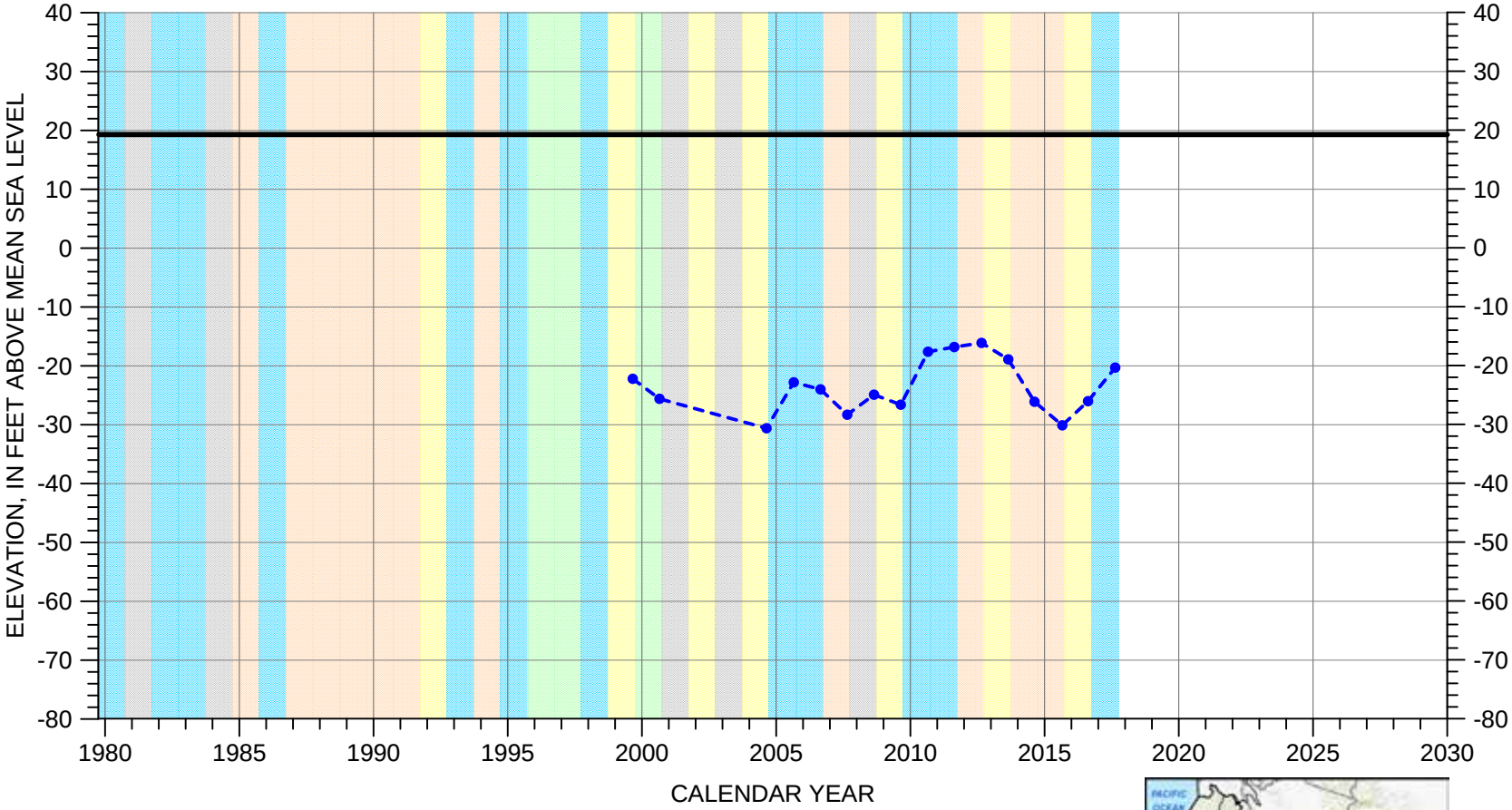
Well Depth: 610 feet

Screened Interval: 330-600 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-16G01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-17B03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

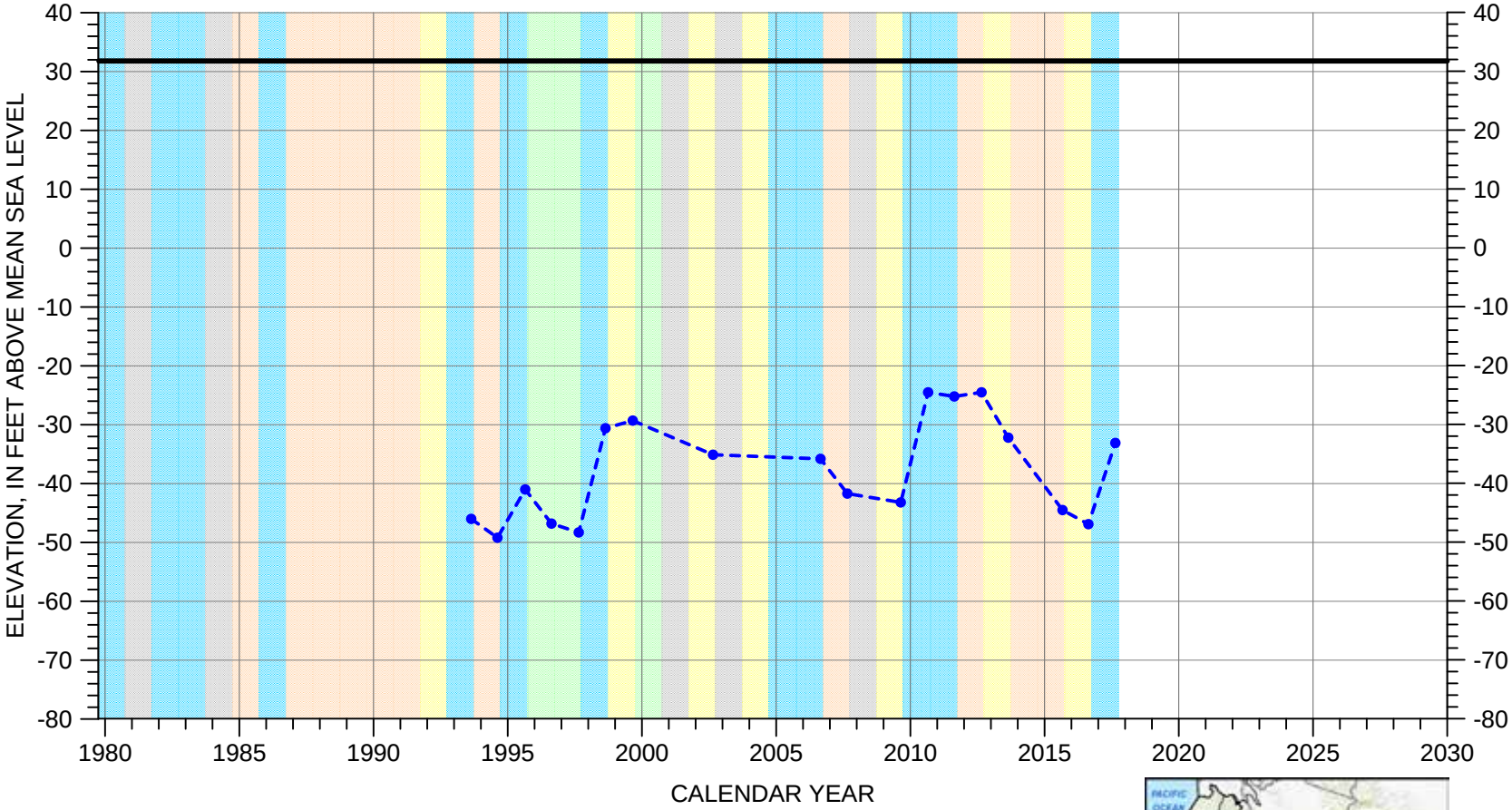
Well Depth: 615 feet

Screened Interval: 330-600 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-17B03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-22B01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

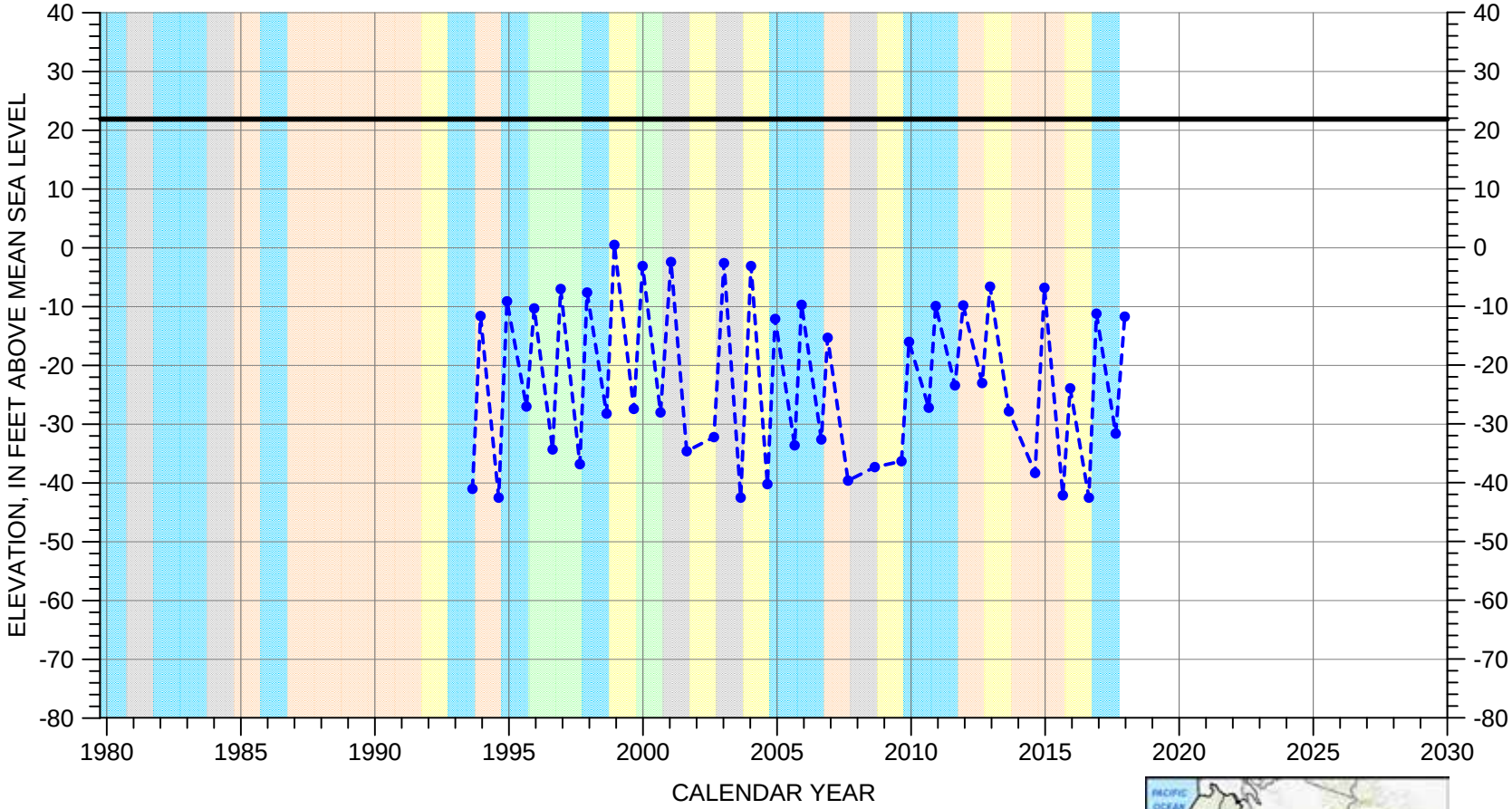
Well Depth: 670 feet

Screened Interval: 410-670 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-22B01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-22L01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

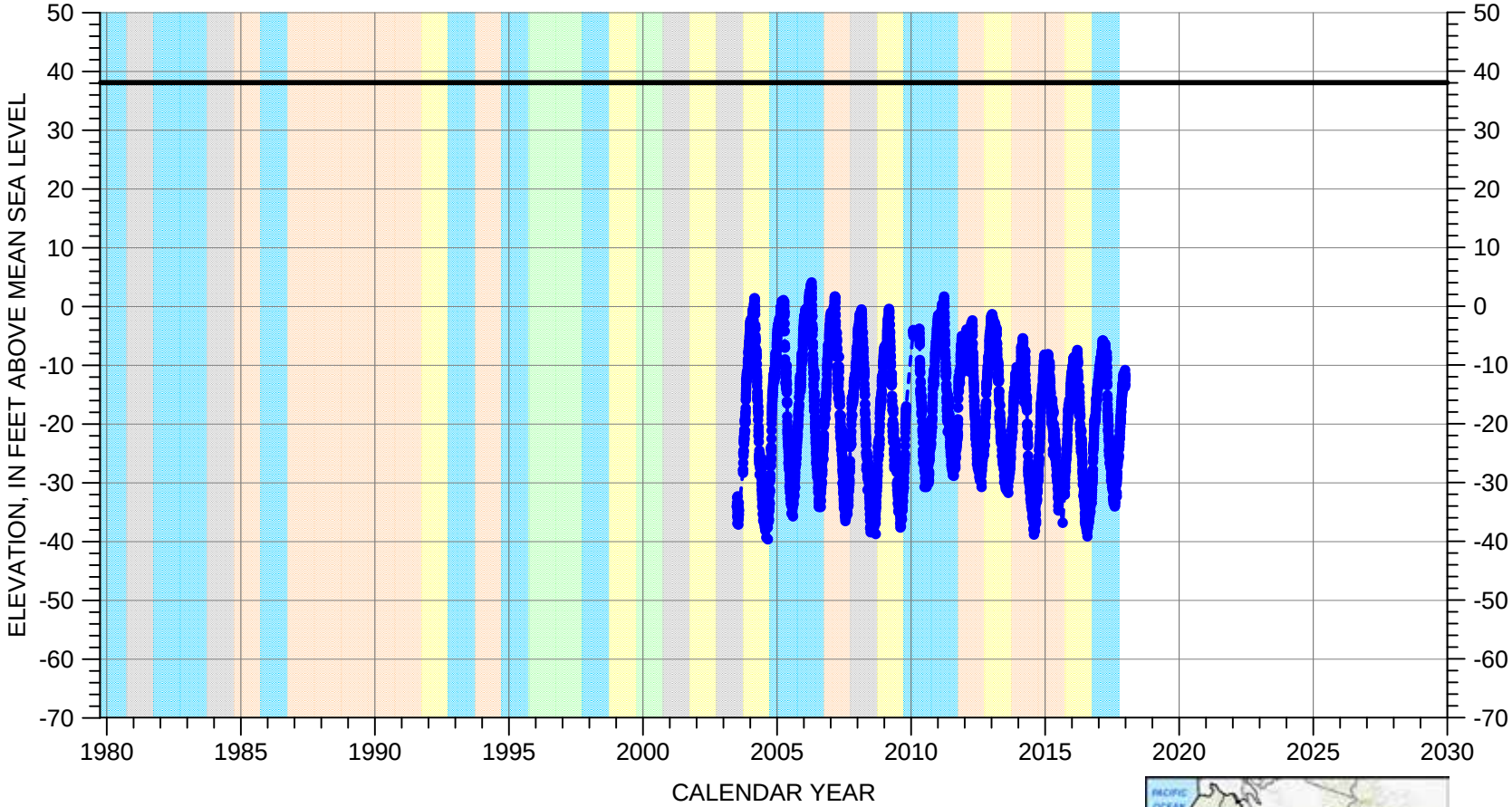
Well Depth: 680 feet

Screened Interval: 420-680 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-22L01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-26H01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

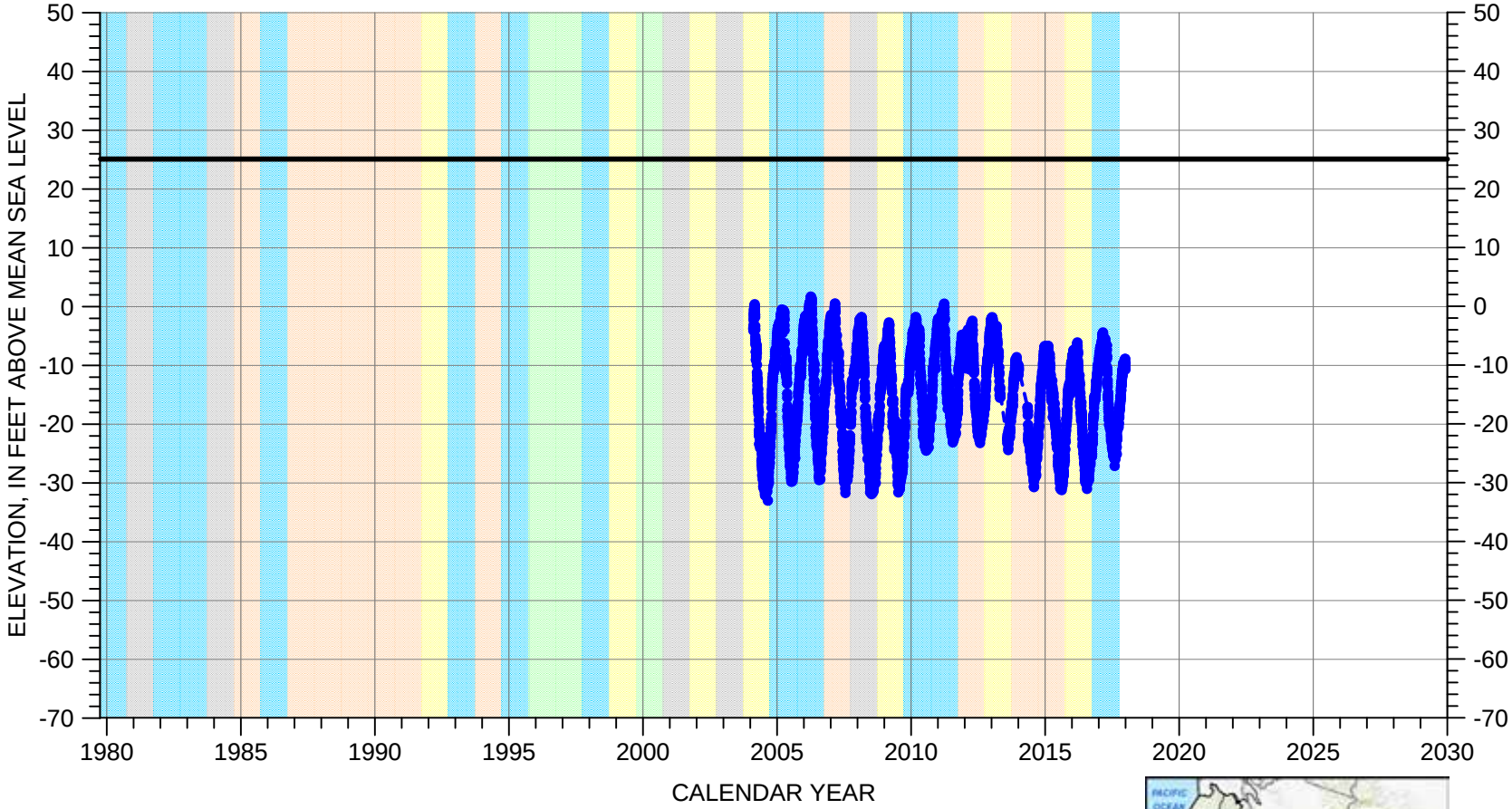
Well Depth: 339.3 feet

Screened Interval: 287-337 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\SalinasHydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-26H01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-27A01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

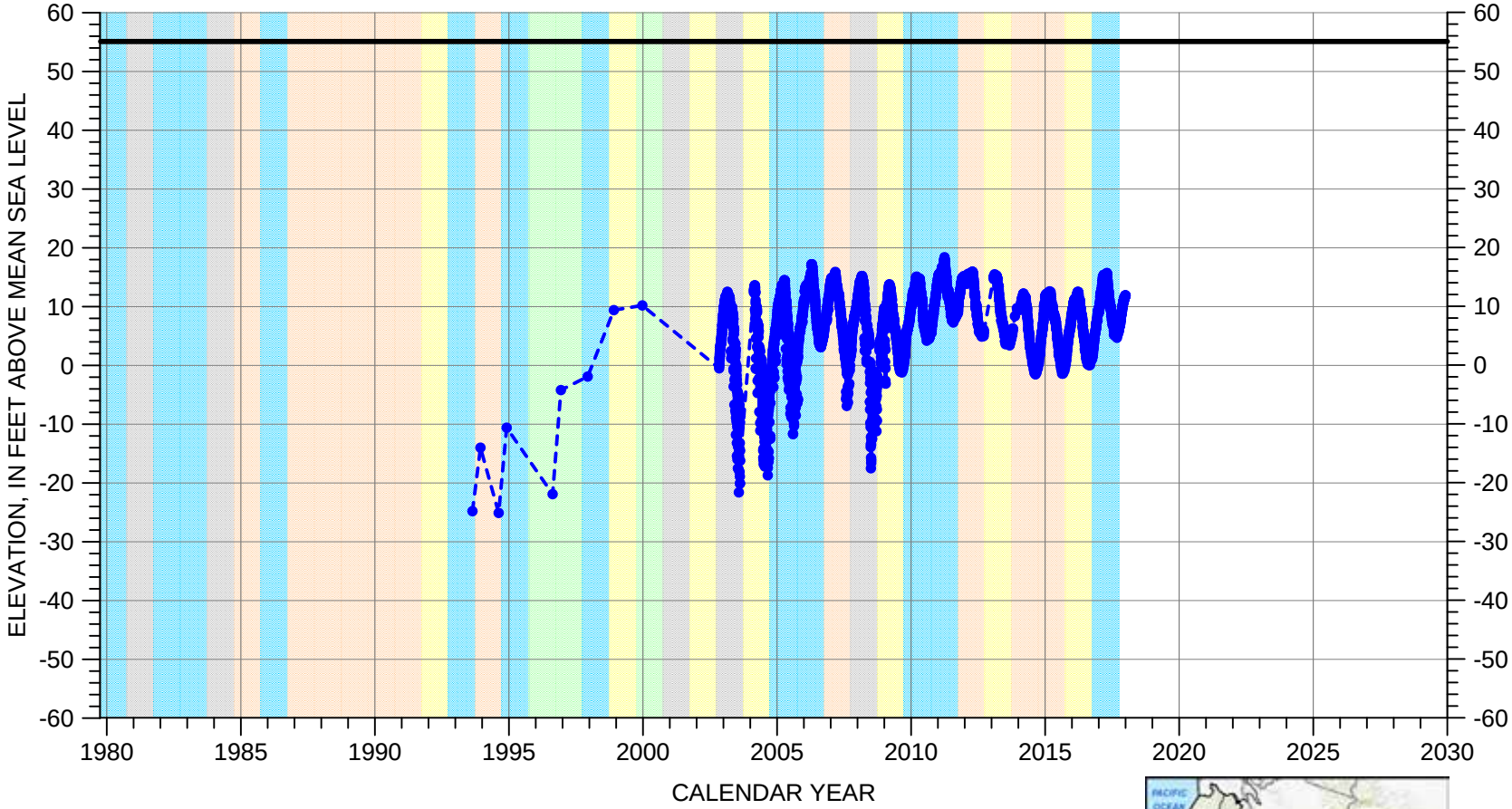
Well Depth: 292.7 feet

Screened Interval: 240-290 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_02E-27A01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-18C01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

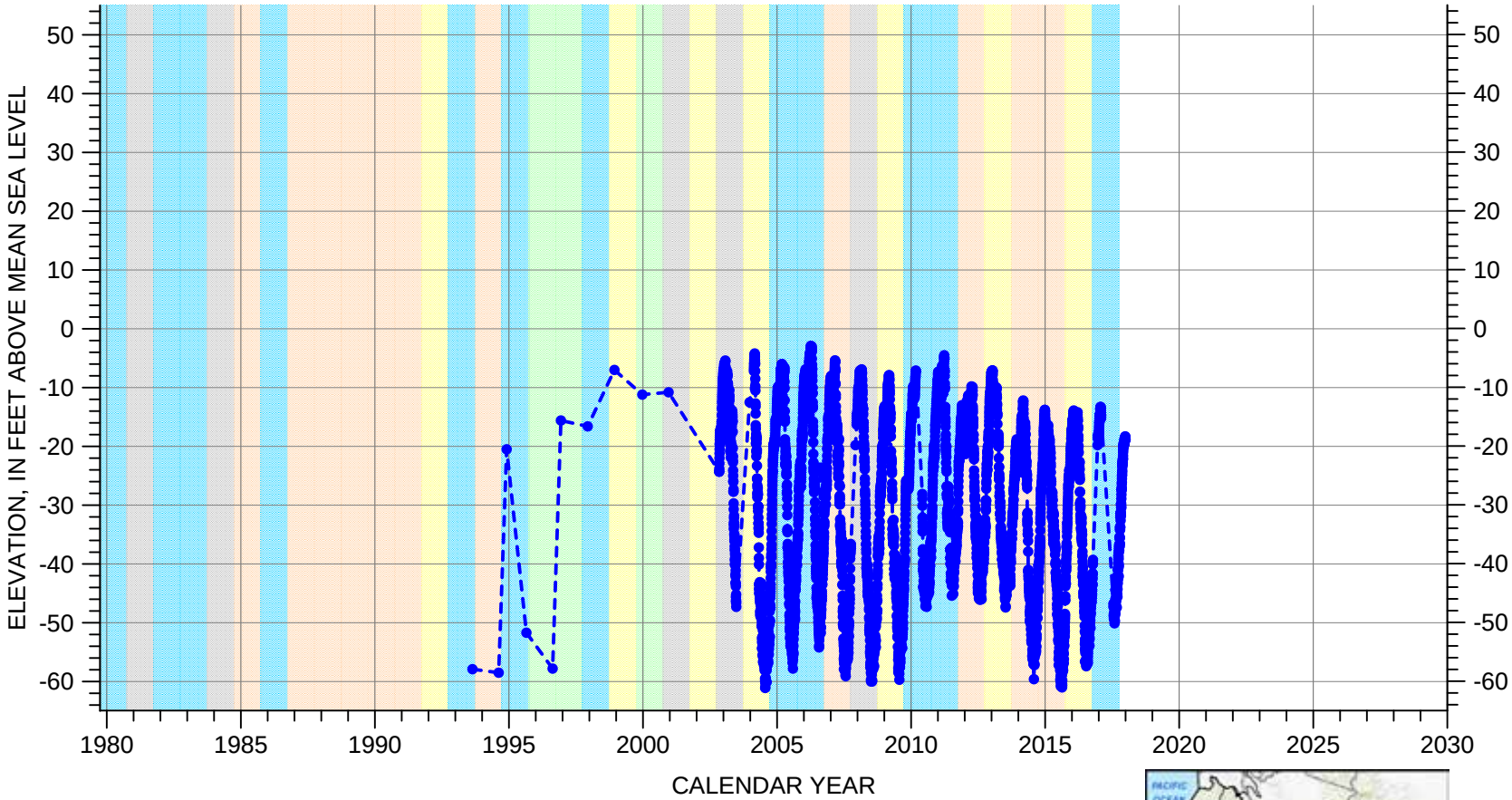
Well Depth: 225 feet

Screened Interval: 165-215 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_03E-18C01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-18C02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (55.1 FT MSL)

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

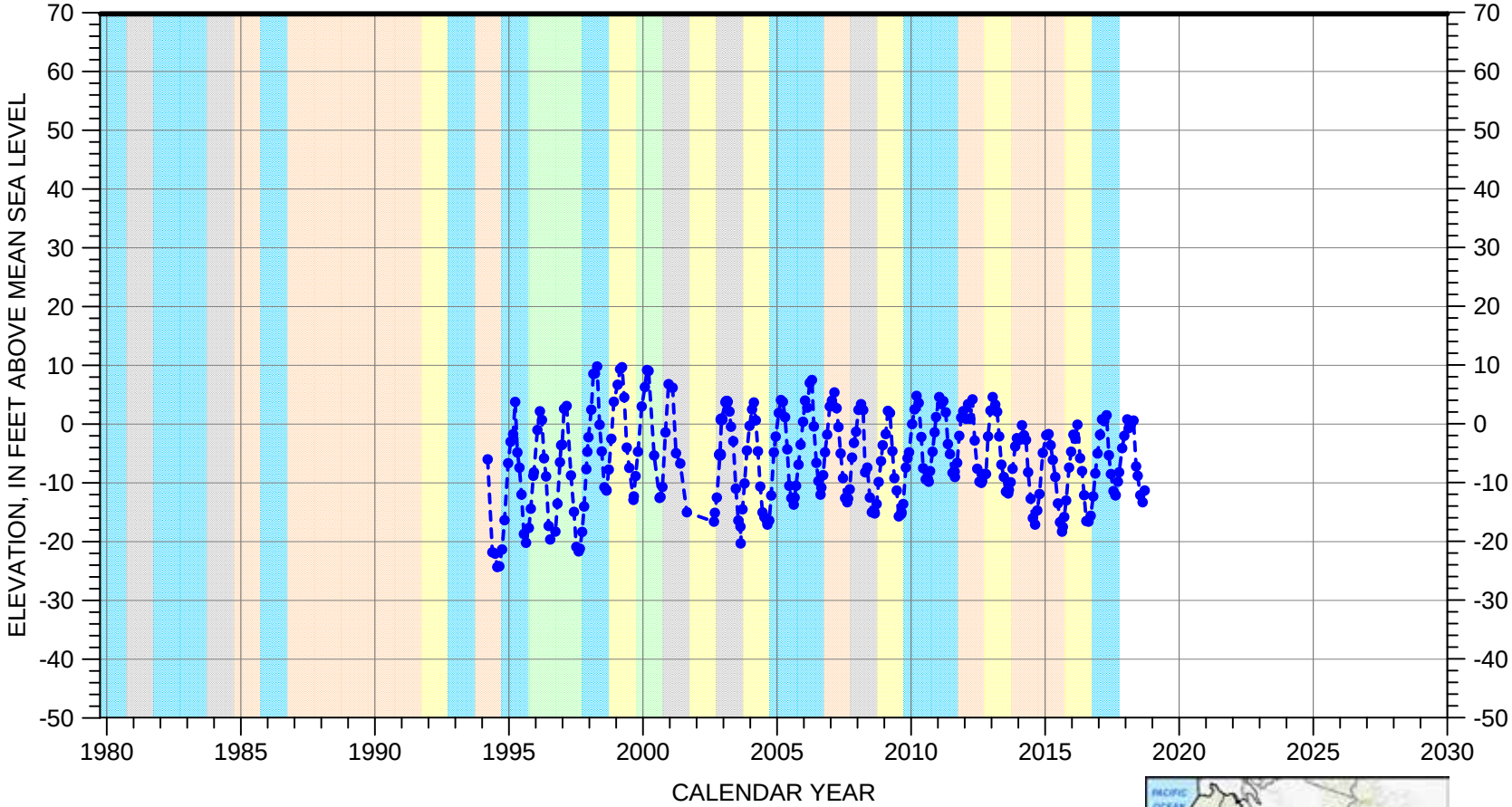
Well Depth: 395 feet

Screened Interval: 270-385 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_03E-18C02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-18E03

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

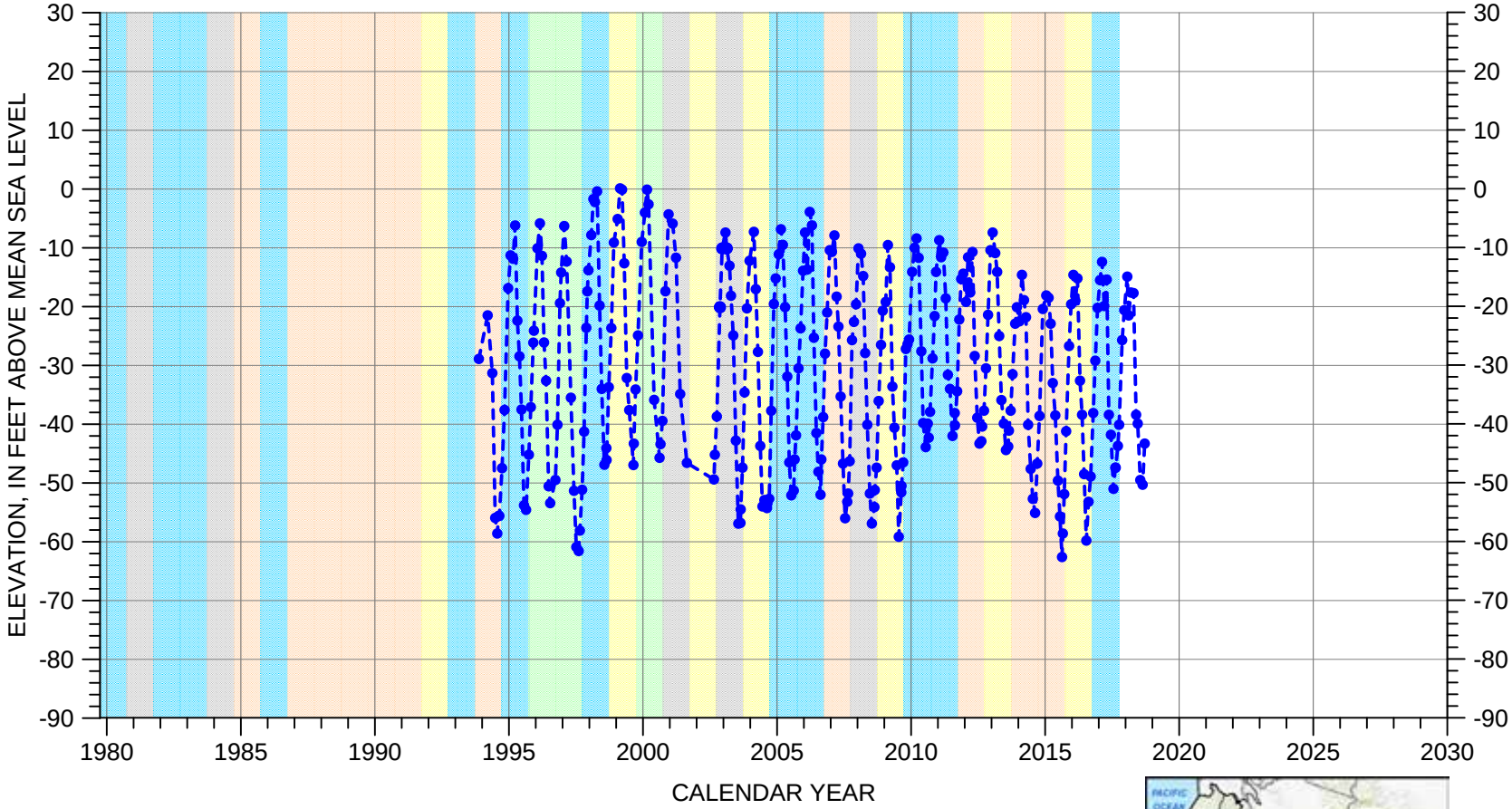
Well Depth: 260 feet

Screened Interval: 230-250 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY14S_03E-18E03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-18E04

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (69.9 FT MSL)

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

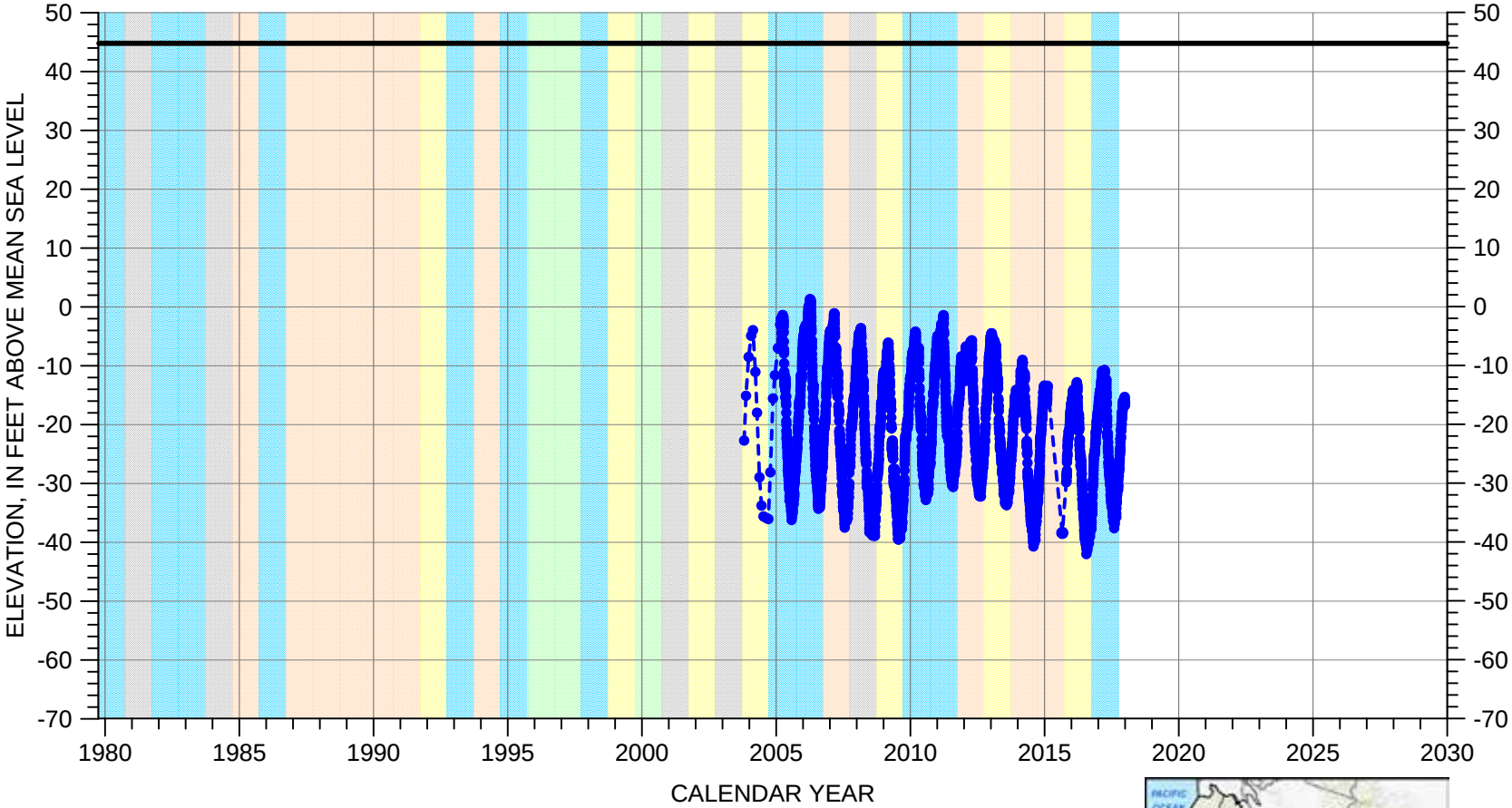
Well Depth: 495 feet

Screened Interval: 335-485 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\SalinasHydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_03E-18E04.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-30G08

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

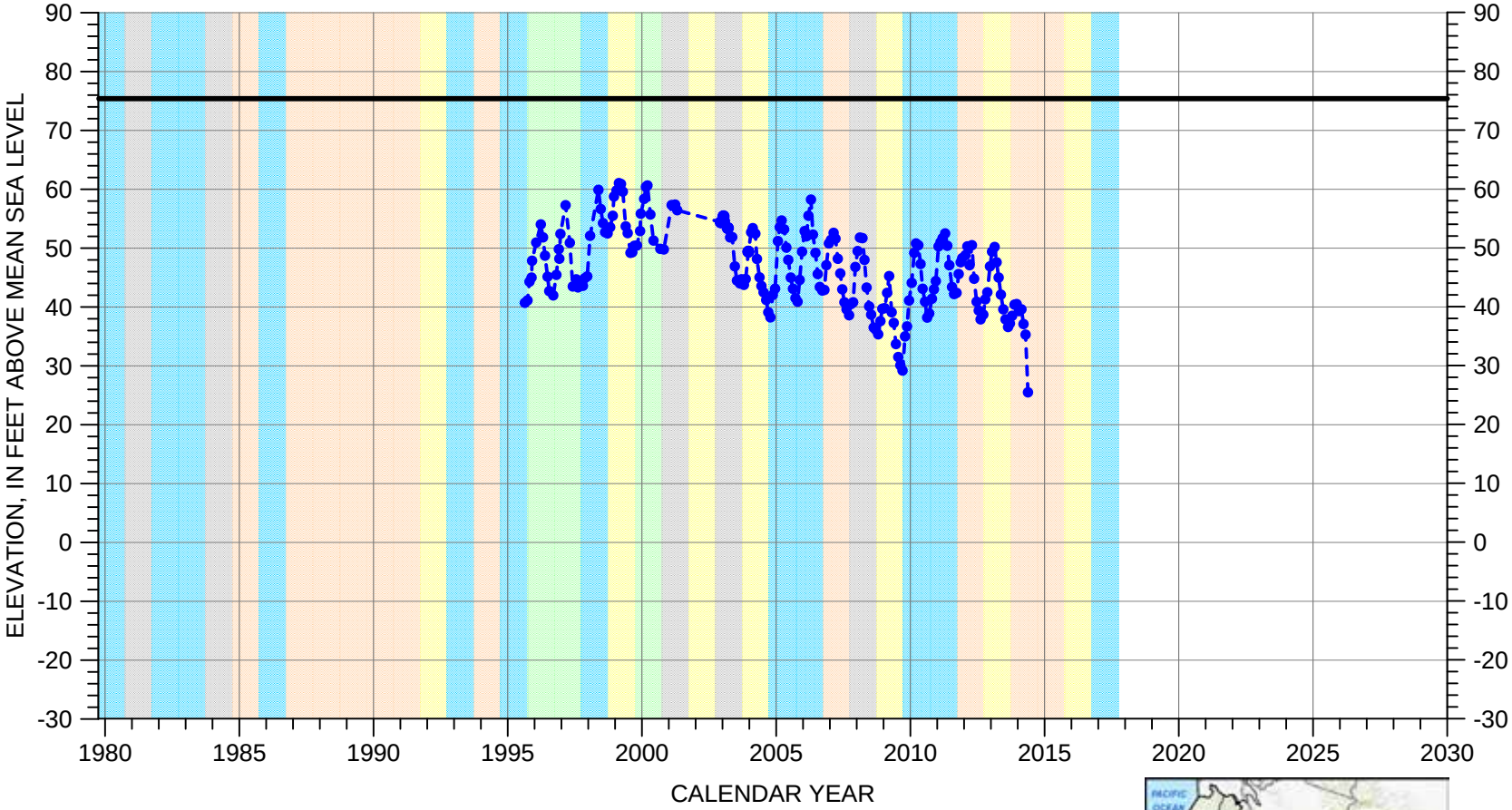
Well Depth: 293 feet

Screened Interval: 240-290 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\14S_03E-30G08.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-08H01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

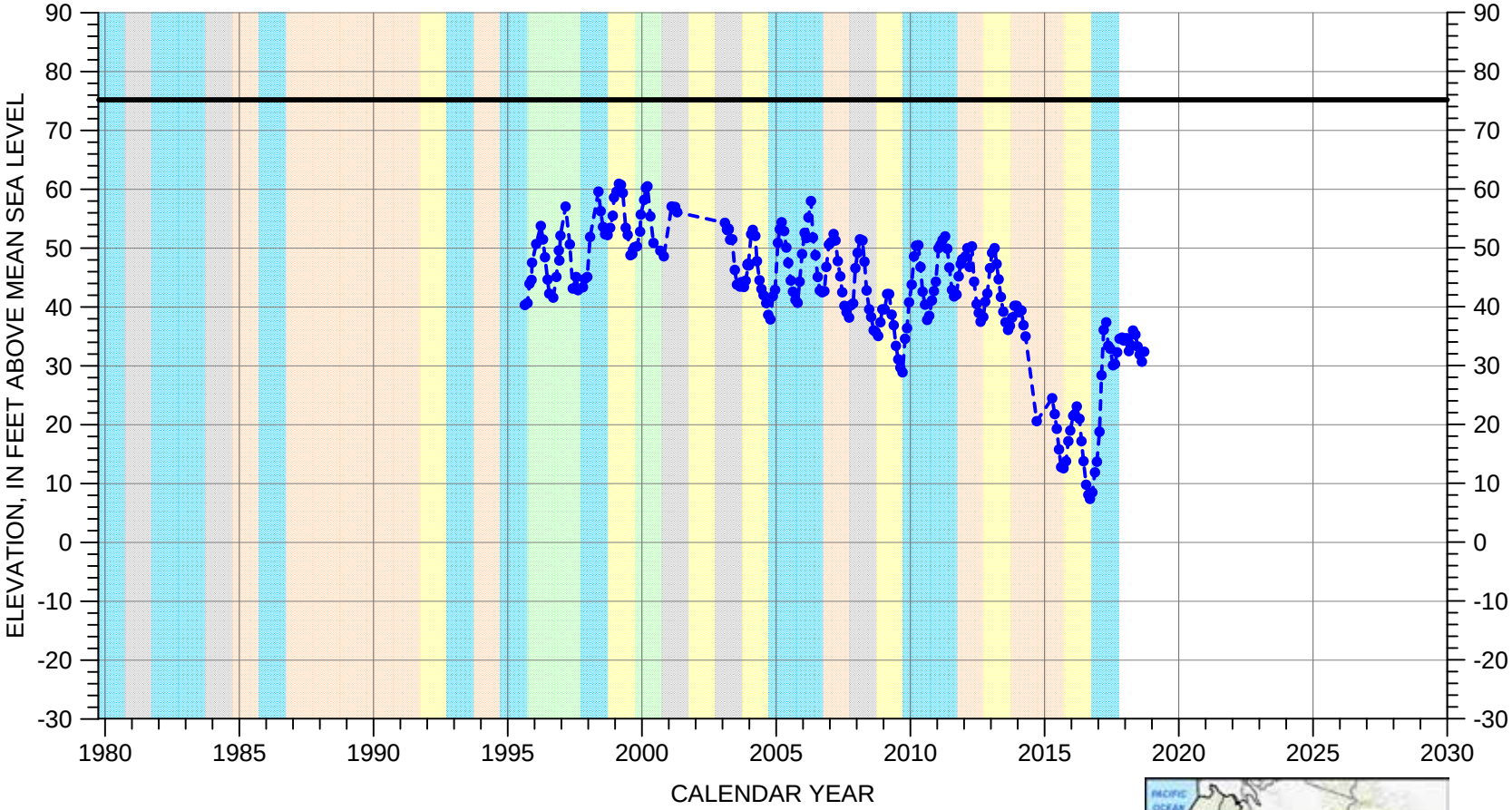
Well Depth: 130 feet

Screened Interval: 75-125 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\16S_04E-08H01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-08H02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

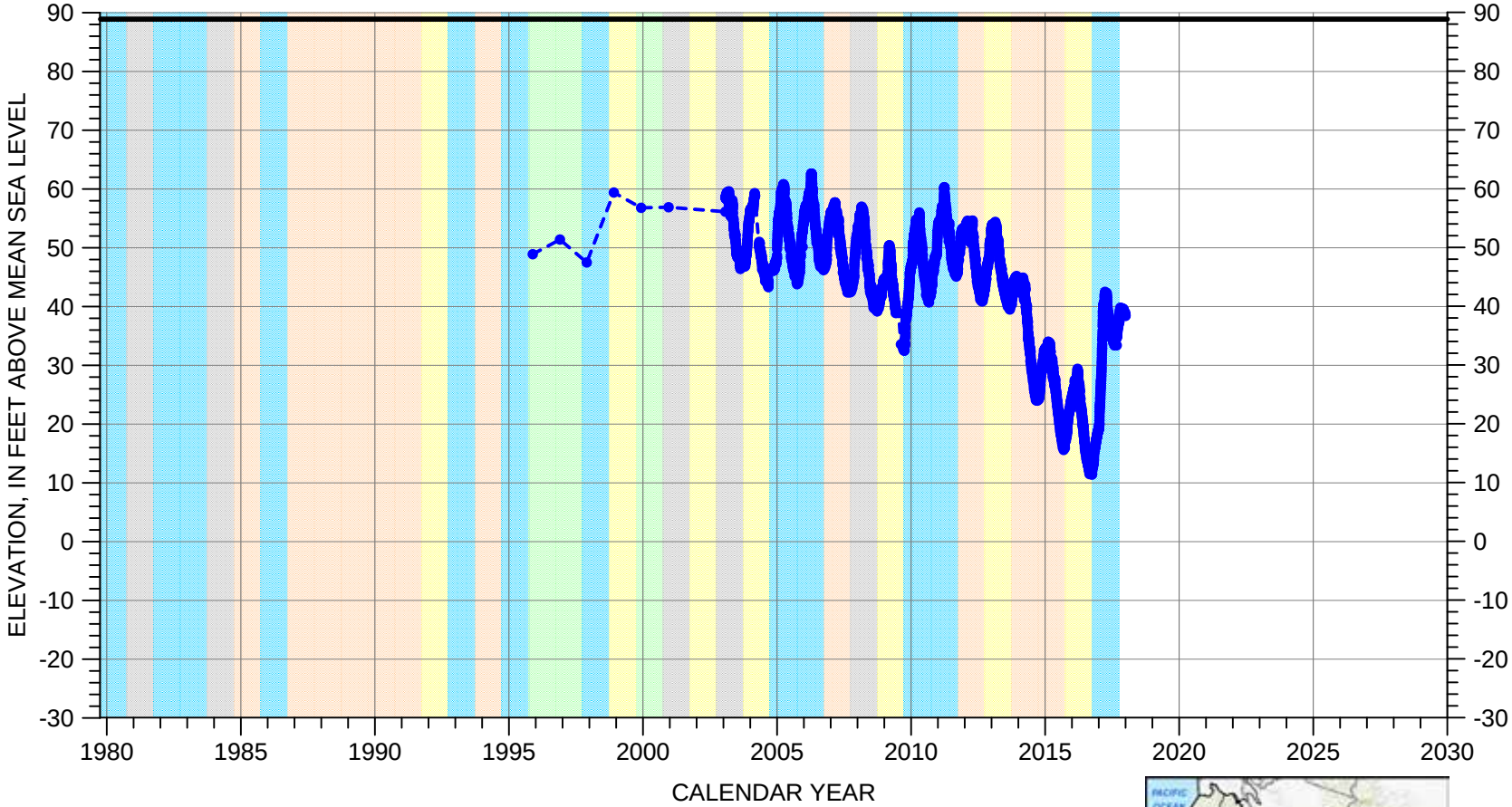
Well Depth: 295 feet

Screened Interval: 240-290 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\16S_04E-08H02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-08H03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

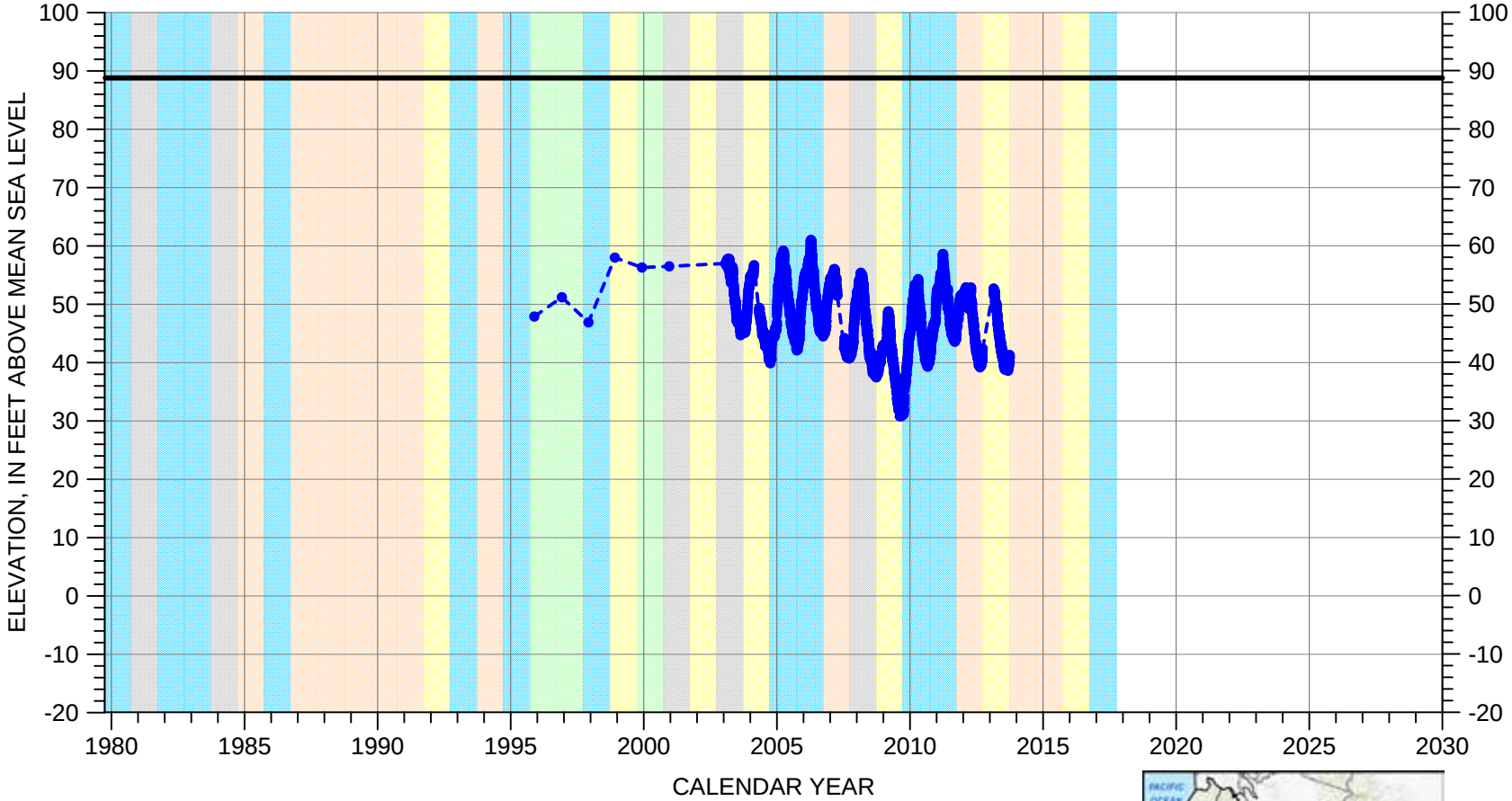
Well Depth: 295 feet

Screened Interval: 240-290 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\16S_04E-08H03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-08H04

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

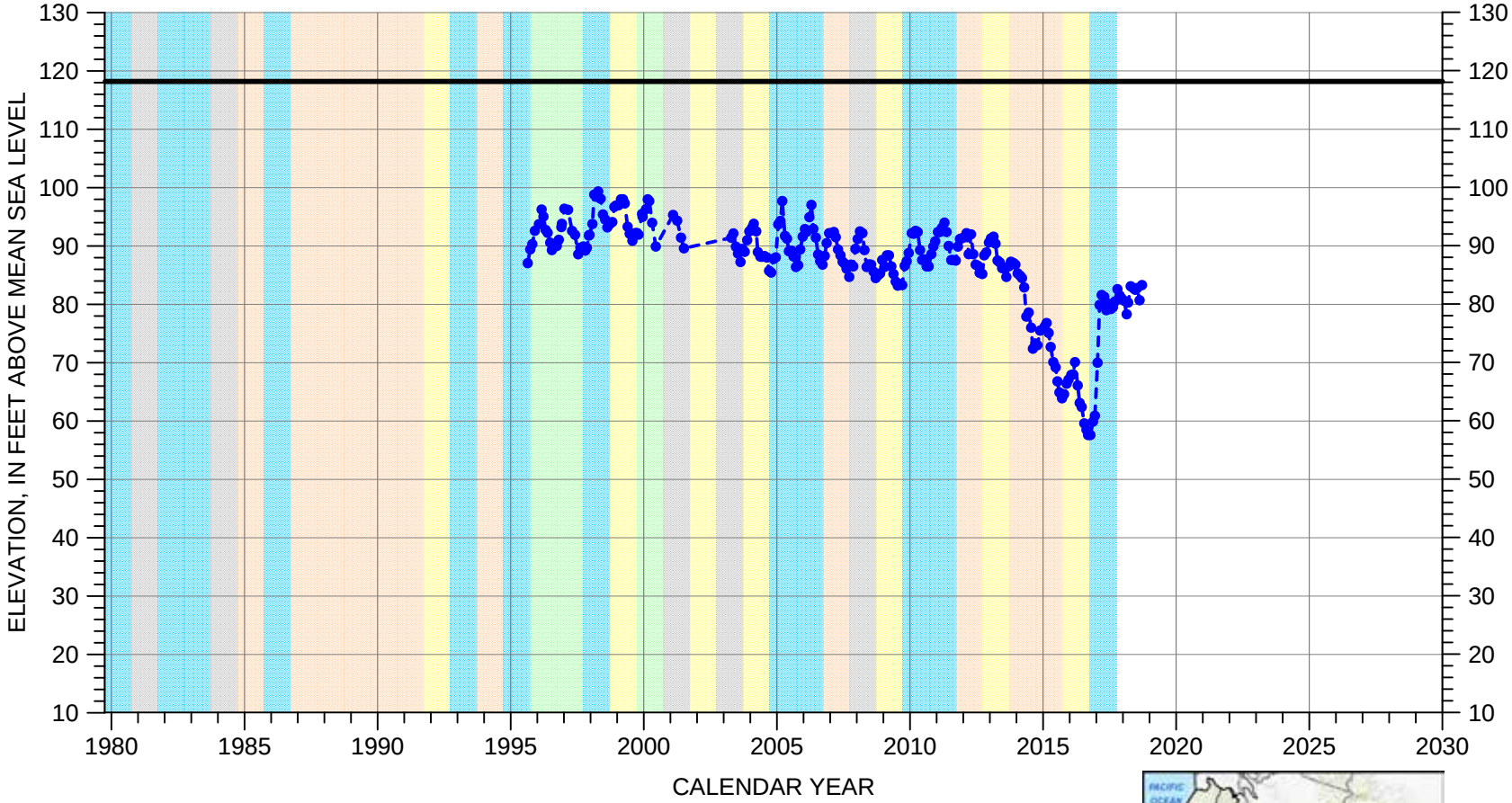
Well Depth: 140 feet

Screened Interval: 85-135 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\16S_04E-08H04.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/05E-31P01

180/400-Foot Aquifer Subbasin



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

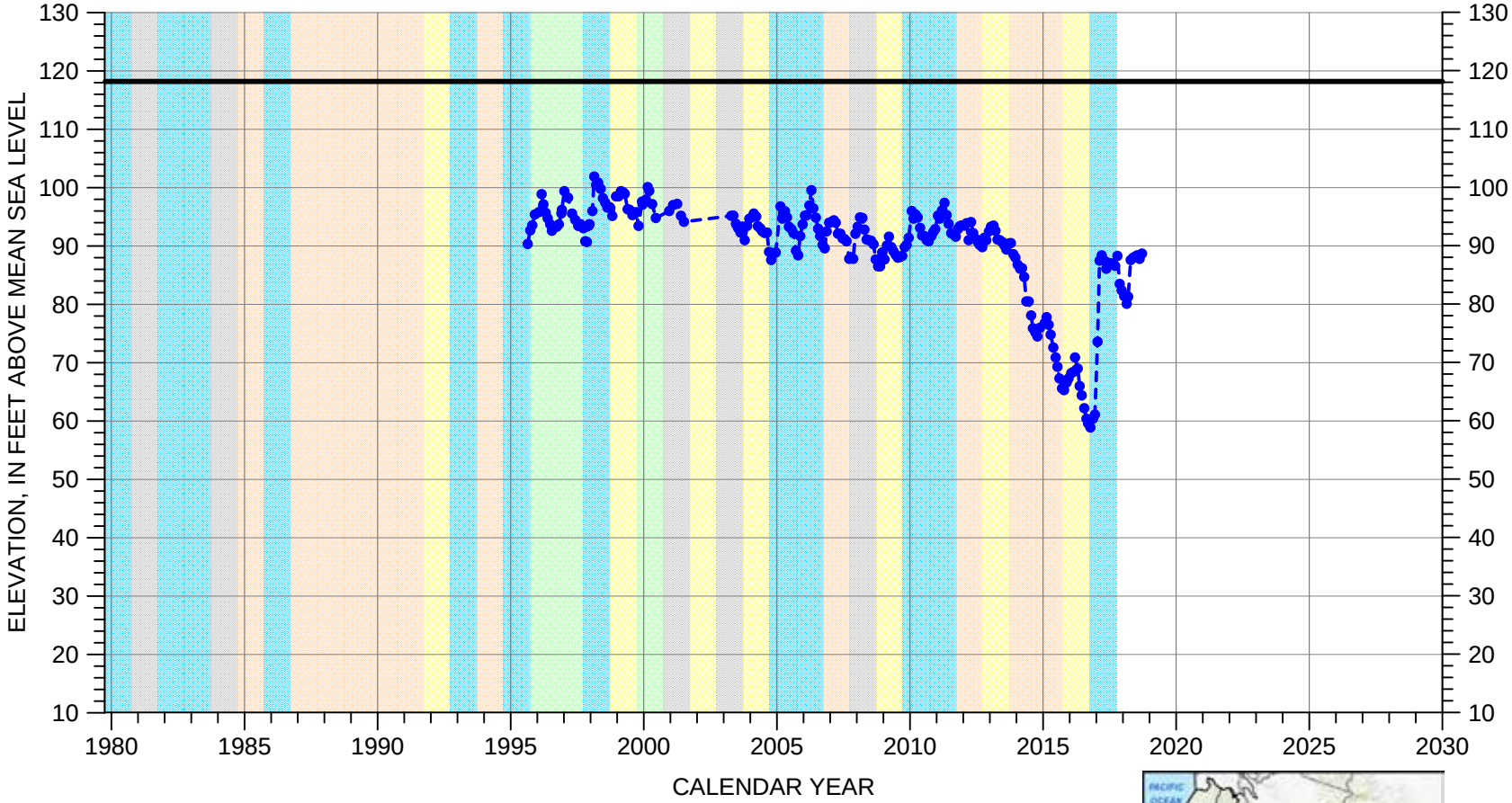
Well Depth: 300 feet

Screened Interval: 255-295 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\16S_05E-31P01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/05E-31P02

180/400-Foot Aquifer Subbasin



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

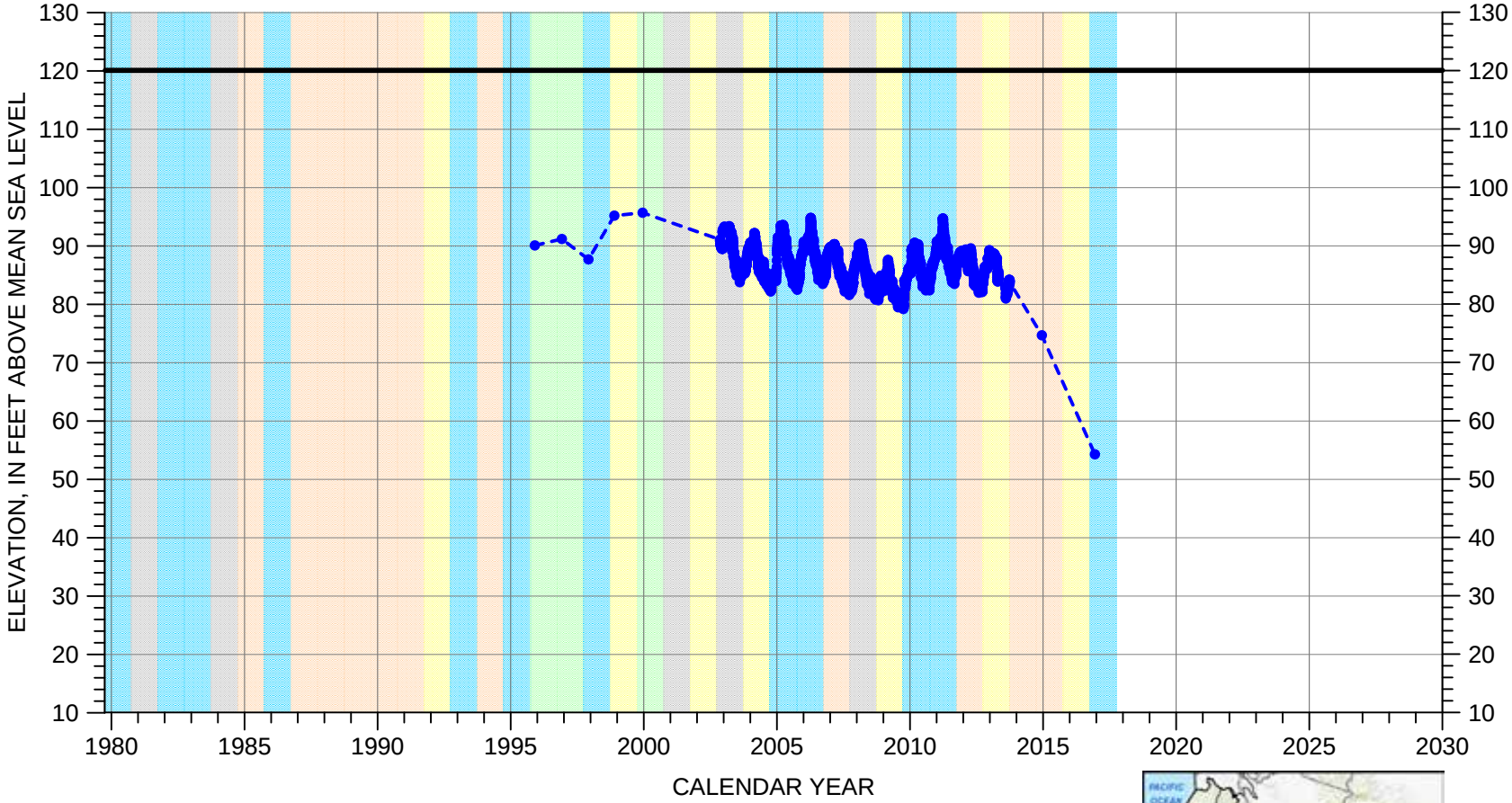
Well Depth: 115 feet

Screened Interval: 60-110 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\16S_05E-31P02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 17S/05E-06C01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

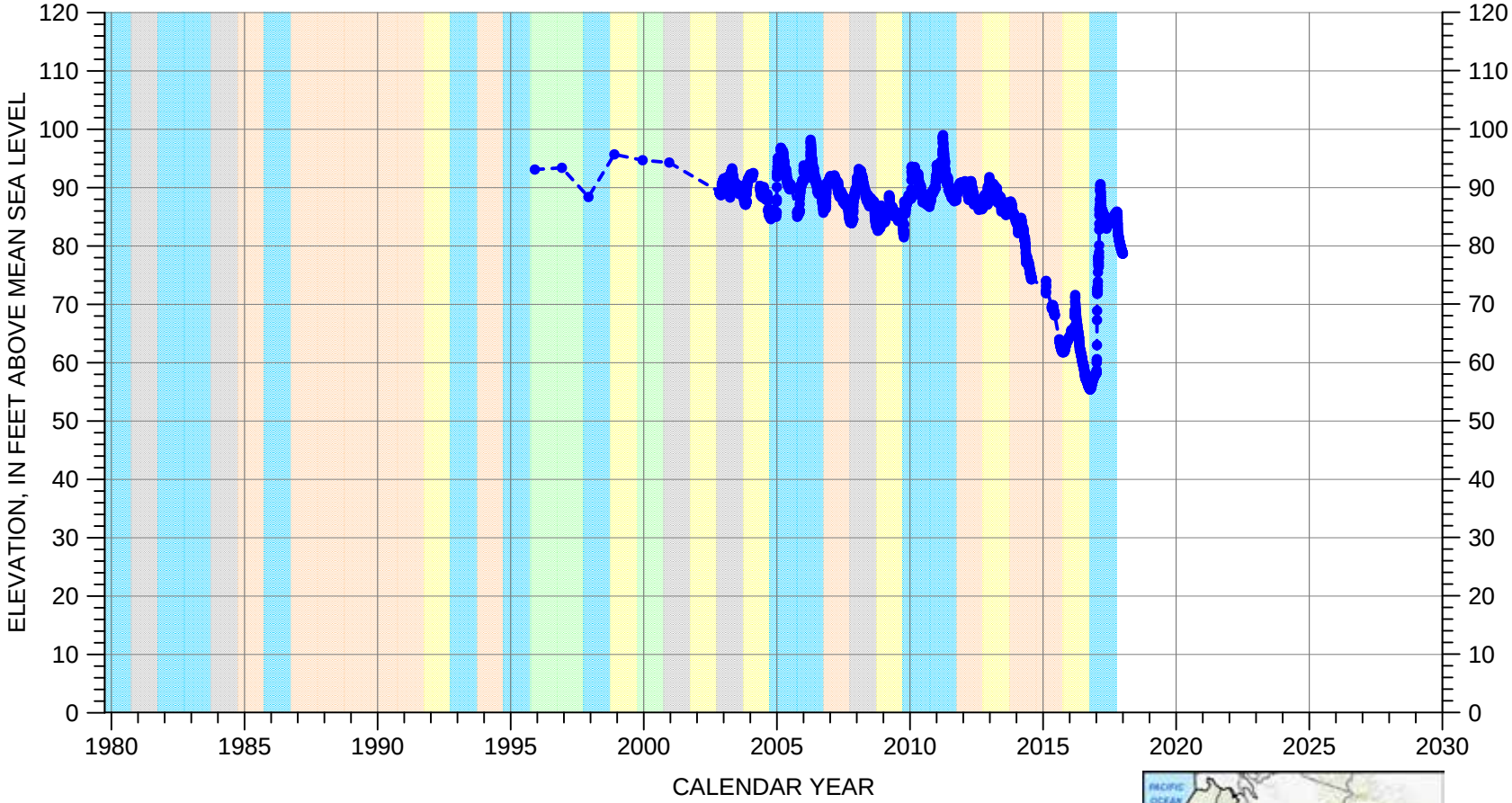
Well Depth: 290 feet

Screened Interval: 250-290 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\SalinasHydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\17S_05E-06C01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 17S/05E-06C02

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (120.1 FT MSL)

WATER YEAR TYPE DESIGNATION (MCWRA)

DRY | DRY - NORMAL | NORMAL | WET - NORMAL | WET

Well Depth: 110 feet

Screened Interval: 60-110 feet below land surface

C:\Users\jreeves\Desktop\forFieldWork\Salinas\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch5_MCWRA_WY\17S_05E-06C02.grf

APPENDIX 6A

Tabulated Annual Values of Components for Historical and Current Water Budgets

Year	SURFACE WATER BUDGET									
	SURFACE WATER INFLOW					SURFACE WATER OUTFLOW				
	Runoff from Precipitation (AF/yr.)	Salinas River Inflow from Forebay Subbasin (AF/yr.)	Tributary Inflows from East Side Subbasin (AF/yr.)	Irrigation Return Flow to Agricultural Drains (AF/yr.)	Total Inflow (AF/yr.)	Salinas River Direct Diversions (AF/yr.)	Salinas River Outflow to Monterey Bay (AF/yr.)	Other Outflows to Monterey Bay (AF/yr.)	Net Percolation of Streamflow to Groundwater (AF/yr.)	Total Outflow (AF/yr.)
1995	3,500	950,800	7,600	10,000	971,900	8,000	817,500	10,000	90,000	925,500
1996	600	394,600	1,800	10,000	406,900	8,000	274,400	10,000	90,000	382,400
1997	3,000	804,400	3,700	10,000	821,100	8,000	622,400	10,000	90,000	730,500
1998	9,400	1,155,600	11,800	10,000	1,186,800	8,000	1,251,400	10,000	90,000	1,359,400
1999	0	123,300	1,200	10,000	134,600	8,000	68,500	10,000	80,000	166,500
2000	1,100	269,700	2,800	10,000	283,600	8,000	209,700	10,000	80,000	307,700
2001	0	203,600	1,900	10,000	215,500	8,000	119,900	10,000	80,000	217,900
2002	200	82,900	500	10,000	93,600	8,000	0	10,000	80,000	98,000
2003	700	80,700	900	7,800	90,100	8,000	6,000	7,800	80,000	101,800
2004	200	76,400	200	9,100	85,900	8,000	3,300	9,100	76,400	96,800
2005	200	549,600	3,900	16,400	570,200	8,000	477,500	16,400	90,000	591,900
2006	200	415,700	1,800	14,900	432,600	8,000	338,000	14,900	90,000	450,900
2007	0	62,000	200	7,100	69,300	8,000	0	7,100	62,000	77,100
2008	400	139,800	1,000	8,200	149,500	8,000	57,600	8,200	80,000	153,800
2009	100	52,100	400	8,600	61,200	8,000	0	8,600	52,100	68,700
2010	300	266,100	1,500	13,400	281,400	8,000	181,500	13,400	80,000	282,900
2011	1,800	459,200	4,500	14,300	479,900	6,500	384,500	14,300	90,000	495,300
2012	0	70,500	300	7,300	78,100	7,200	0	7,300	70,500	85,100
2013	900	79,600	200	8,000	88,700	9,200	4,500	8,000	79,600	101,200
2014	0	5,000	0	5,000	10,100	8,900	0	5,000	5,000	18,900
2015	1,700	3,300	0	8,700	13,700	8,300	0	8,700	3,300	20,300
2016	3,200	10,000	100	14,400	27,700	7,600	0	14,400	10,000	32,000
2017	200	477,900	2,600	30,800	511,400	7,800	310,300	30,800	90,000	438,900

Historical Average (1995-2014)	**1,100**	**312,100**	**2,300**	**10,000**	**325,500**	**8,000**	**240,800**	**10,000**	**76,800**	**335,600**
Current Average (2015-2017)	**1,700**	**163,700**	**900**	**18,000**	**184,300**	**7,900**	**103,400**	**18,000**	**34,400**	**163,700**

Note: AF/yr. = Acre-feet per year

Year	GROUNDWATER BUDGET											Change in Storage (AF/yr.)	Seawater Intrusion (AF/yr.)
	GROUNDWATER INFLOW				GROUNDWATER OUTFLOW								
	Percolation of Streamflow (AF/yr.)	Deep Percolation of Precipitation and Excess Irrigation (AF/yr.)	Subsurface Inflows from Adjacent Subbasins (AF/yr.)	Total Inflow (AF/yr.)	Agriculture Pumping (AF/yr.)	Urban Pumping (AF/yr.)	Rural Domestic Pumping (AF/yr.)	Total Pumping (AF/yr.)	Riparian Evapo-transpiration (AF/yr.)	Subsurface Outflows to Adjacent Subbasins / Basins (AF/yr.)	Total Outflow (AF/yr.)		
1995	90,000	27,800	20,000	137,800	94,600	27,500	200	122,300	12,000	9,500	143,800	-6,100	10,500
1996	90,000	21,100	20,000	131,100	108,000	18,600	200	126,800	12,000	9,500	148,300	-17,200	10,500
1997	90,000	33,500	20,000	143,500	110,800	19,800	200	130,800	12,000	9,500	152,300	-8,900	10,500
1998	90,000	69,400	20,000	179,400	76,200	17,700	200	94,100	12,000	9,500	115,600	63,800	10,500
1999	80,000	13,100	20,000	113,100	87,600	18,800	200	106,600	12,000	9,500	128,100	-15,000	10,500
2000	80,000	19,900	20,000	119,900	84,300	20,700	200	105,200	12,000	9,500	126,700	-6,800	10,500
2001	80,000	11,700	20,000	111,700	78,900	18,400	200	97,500	12,000	9,500	119,000	-7,200	10,500
2002	80,000	14,800	20,000	114,800	89,900	20,500	200	110,500	12,000	9,500	132,000	-17,200	10,500
2003	80,000	17,500	20,000	117,500	87,700	20,800	200	108,700	12,000	9,500	130,200	-12,700	10,500
2004	76,400	19,100	20,000	115,500	91,400	20,900	200	112,500	12,000	9,500	134,000	-18,500	10,500
2005	90,000	15,600	20,000	125,600	86,800	19,100	200	106,100	12,000	9,500	127,600	-2,000	10,500
2006	90,000	12,800	20,000	122,800	82,200	18,500	200	100,900	12,000	9,500	122,400	300	10,500
2007	62,000	16,200	20,000	98,200	92,900	19,500	200	112,600	12,000	9,500	134,100	-35,900	10,500
2008	80,000	19,400	20,000	119,400	97,000	19,500	200	116,700	12,000	9,500	138,200	-18,800	10,500
2009	52,100	15,500	20,000	87,600	90,400	18,100	200	108,600	12,000	9,500	130,100	-42,500	10,500
2010	80,000	12,600	20,000	112,600	78,700	14,000	200	92,900	12,000	9,500	114,400	-1,700	10,500
2011	90,000	9,700	20,000	119,700	78,100	16,000	200	94,300	12,000	9,500	115,800	3,800	10,500
2012	70,500	13,800	20,000	104,400	85,800	16,200	200	102,200	12,000	9,500	123,700	-19,300	10,500
2013	79,600	16,500	20,000	116,100	87,800	17,100	200	105,100	12,000	9,500	126,600	-10,600	10,500
2014	5,000	18,300	20,000	43,300	90,800	17,400	200	108,400	12,000	9,500	129,900	-86,600	10,500
2015	3,300	18,900	20,000	42,200	97,700	12,900	200	110,900	12,000	9,500	132,400	-90,200	10,500
2016	10,000	18,800	20,000	48,800	89,000	19,000	200	108,200	12,000	9,500	129,700	-80,900	10,500
2017	90,000	-6,400	20,000	103,600	89,000	19,000	200	108,200	12,000	9,500	129,700	-26,100	10,500
Historical Average (1995-2014)	**76,800**	**19,900**	**20,000**	**116,700**	**89,000**	**19,000**	**200**	**108,100**	**12,000**	**9,500**	**129,600**	**-12,900**	**10,500**
Current Average (2015-2017)	**34,400**	**10,400**	**20,000**	**64,800**	**91,900**	**17,000**	**200**	**109,100**	**12,000**	**9,500**	**130,600**	**-65,800**	**10,500**

Note: AF/yr. = Acre-feet per year

2017 Deep percolation of precipitation and excess irrigation is negative due to anamalously high flows observed in agricultural drains. The flows and preciptiations are correct for this year.

Year	WATER BUDGET COMPONENTS USED TO CALCULATE DEEP PERCOLATION TO GROUNDWATER											
	PRECIPITATION				AGRICULTURAL IRRIGATION							Deep Percolation from Precipitation and Excess Irrigation (AF/yr.)
	Precipitation (inches/year)	Precipitation (AF/yr.)	Runoff from Precipitation (AF/yr.)	Precipitation Percolation to Groundwater (AF/yr.)	Agricultural Pumping (AF/yr.)	Salinas River Diversions	Recycled Water from CSIP (AF/yr.)	Total Applied Water AF/yr.	Crop Use and ET (AF/yr.)	Irrigation Return Flow to Agricultural Drains (AF/yr.)	Deep Percolation of Excess Irrigation (AF/yr.)	
1995	20.87	173,900	3,500	17,200	94,600	8,000	0	102,600	82,100	10,000	10,500	27,800
1996	12.57	118,400	600	7,900	108,000	8,000	0	116,000	92,800	10,000	13,200	21,100
1997	13.94	127,600	3,000	19,700	110,800	8,000	0	118,800	95,100	10,000	13,800	33,500
1998	29.61	246,800	9,400	61,900	76,200	8,000	3,200	87,500	70,000	10,000	7,500	69,400
1999	12.66	100,100	0	2,100	87,600	8,000	9,400	105,000	84,000	10,000	11,000	13,100
2000	14.65	114,200	1,100	9,400	84,300	8,000	10,600	102,800	82,300	10,000	10,600	19,900
2001	15.19	104,500	0	2,100	78,900	8,000	11,200	98,200	78,500	10,000	9,600	11,700
2002	3.59	80,200	200	2,600	89,900	8,000	13,100	111,000	88,800	10,000	12,200	14,800
2003	7.11	107,500	700	3,500	87,700	8,000	13,200	108,800	87,100	7,800	14,000	17,500
2004	9.99	90,200	200	5,500	91,400	8,000	14,100	113,500	90,800	9,100	13,600	19,100
2005	19.68	163,100	200	11,000	86,800	8,000	10,600	105,500	84,400	16,400	4,700	15,600
2006	15.30	135,800	200	7,400	82,200	8,000	11,100	101,300	81,000	14,900	5,300	12,800
2007	8.89	67,100	0	300	92,900	8,000	14,000	114,900	91,900	7,100	15,900	16,200
2008	8.88	82,600	400	3,800	97,000	8,000	14,000	118,900	95,100	8,200	15,500	19,400
2009	11.36	91,100	100	1,700	90,400	8,000	13,600	112,000	89,600	8,600	13,800	15,500
2010	16.93	143,800	300	6,600	78,700	8,000	10,500	97,200	77,800	13,400	6,000	12,600
2011	15.55	132,700	1,800	4,500	78,100	6,500	12,700	97,300	77,800	14,300	5,100	9,700
2012	10.36	76,400	0	0	85,800	7,200	12,900	105,800	84,700	7,300	13,800	13,800
2013	9.03	71,700	900	2,200	87,800	9,200	14,600	111,600	89,300	8,000	14,400	16,500
2014	11.68	53,700	0	0	90,800	8,900	16,500	116,200	93,000	5,000	18,300	18,300
2015	3.54	89,500	1,700	3,500	97,700	8,300	14,400	120,400	96,300	8,700	15,400	18,900
2016	10.75	139,700	3,200	11,400	89,000	7,600	12,300	108,900	87,200	14,400	7,400	18,800
2017	12.77	90,800	200	2,900	89,000	7,800	10,300	107,100	85,700	30,800	-9,400	-6,400
Historical Average (1995-2014)	**13.39**	**114,100**	**1,100**	**8,500**	**89,000**	**8,000**	**10,300**	**107,200**	**85,800**	**10,000**	**11,400**	**19,900**
Current Average (2015-2017)	**9.02**	**106,600**	**1,700**	**6,000**	**91,900**	**7,900**	**12,300**	**112,100**	**89,700**	**18,000**	**4,500**	**10,400**

Note: AF/yr. = Acre-feet per year

Year	URBAN AND DOMESTIC GROUNDWATER CONSUMPTION						GROUNDWATER INFLOW/OUTFLOW COMPONENTS				
	Rural Domestic Pumping (AF/yr.)	Urban Pumping (AF/yr.)	Urban Conveyance Loss to Groundwater (AF/yr.)	Consumption (AF/yr.)	Recycled Water to CSIP (AF/yr.)	Net Domestic and Urban Consumption (AF/yr.)	Forebay Subbasin (AF/yr.)	Monterey Subbasin (AF/yr.)	East Side/Langley Subbasin (AF/yr.)	Pajaro Valley Basin (AF/yr.)	Total Inflow Across Inland Boundaries (AF/yr.)
1995	200	27,500	2,800	24,800	0	24,900	17,000	3,000	-8,000	-1,500	10,500
1996	200	18,600	1,900	16,800	0	16,900	17,000	3,000	-8,000	-1,500	10,500
1997	200	19,800	2,000	17,900	0	18,100	17,000	3,000	-8,000	-1,500	10,500
1998	200	17,700	1,800	15,900	3,200	16,100	17,000	3,000	-8,000	-1,500	10,500
1999	200	18,800	1,900	16,900	9,400	17,100	17,000	3,000	-8,000	-1,500	10,500
2000	200	20,700	2,100	18,700	10,600	18,900	17,000	3,000	-8,000	-1,500	10,500
2001	200	18,400	1,800	16,500	11,200	16,700	17,000	3,000	-8,000	-1,500	10,500
2002	200	20,500	2,000	18,400	13,100	18,600	17,000	3,000	-8,000	-1,500	10,500
2003	200	20,800	2,100	18,700	13,200	18,900	17,000	3,000	-8,000	-1,500	10,500
2004	200	20,900	2,100	18,800	14,100	19,000	17,000	3,000	-8,000	-1,500	10,500
2005	200	19,100	1,900	17,200	10,600	17,400	17,000	3,000	-8,000	-1,500	10,500
2006	200	18,500	1,900	16,700	11,100	16,900	17,000	3,000	-8,000	-1,500	10,500
2007	200	19,500	2,000	17,600	14,000	17,800	17,000	3,000	-8,000	-1,500	10,500
2008	200	19,500	2,000	17,600	14,000	17,800	17,000	3,000	-8,000	-1,500	10,500
2009	200	18,100	1,800	16,300	13,600	16,500	17,000	3,000	-8,000	-1,500	10,500
2010	200	14,000	1,400	12,600	10,500	12,800	17,000	3,000	-8,000	-1,500	10,500
2011	200	16,000	1,600	14,400	12,700	14,600	17,000	3,000	-8,000	-1,500	10,500
2012	200	16,200	1,600	14,600	12,900	14,800	17,000	3,000	-8,000	-1,500	10,500
2013	200	17,100	1,700	15,400	14,600	15,600	17,000	3,000	-8,000	-1,500	10,500
2014	200	17,400	1,700	15,600	16,500	15,900	17,000	3,000	-8,000	-1,500	10,500
2015	200	12,900	1,300	11,600	14,400	11,900	17,000	3,000	-8,000	-1,500	10,500
2016	200	19,000	1,900	17,100	12,300	17,300	17,000	3,000	-8,000	-1,500	10,500
2017	200	19,000	1,900	17,100	10,300	17,300	17,000	3,000	-8,000	-1,500	10,500
Historical Average (1995-2014)	**200**	**19,000**	**1,900**	**17,100**	**10,300**	**17,300**	**17,000**	**3,000**	**-8,000**	**-1,500**	**10,500**
Current Average (2015-2017)	**200**	**17,000**	**1,700**	**15,300**	**12,300**	**15,500**	**17,000**	**3,000**	**-8,000**	**-1,500**	**10,500**

Note: AF/yr. = Acre-feet per year

APPENDIX 6B

Tabulated Annual Values of Components for Projected Water Budgets

Model Water Year	Net Groundwater Extraction	Net Drain Flow	Net Stream Exchange	Net Deep Percolation	Net Seawater Intrusion	Net flow from Monterey	Net flow to Eastside	Net flow from Forebay	Net flow from Langley	Net mountain front recharge	Net flow to Pajaro	Net Storage Change	Total In	Total Out	In-Out	Percent Error
1	-126,500	-3,600	72,700	-1,800	1,700	6,100	-2,900	5,000	1,500	1,700	-300	-46,600	249,300	249,000	200	0.09%
2	-116,900	-18,700	75,200	93,600	1,000	5,500	-2,000	5,100	1,500	1,600	-500	45,200	358,200	358,200	0	0.01%
3	-122,300	-9,900	78,000	19,400	1,300	6,000	-1,100	5,100	1,500	2,000	-500	-20,700	292,000	291,700	300	0.10%
4	-121,800	-10,100	80,300	28,600	1,300	6,400	-1,600	5,100	1,500	1,700	-600	-10,100	294,900	294,000	900	0.31%
5	-141,200	-4,100	53,500	6,900	2,300	8,400	-2,000	5,100	1,500	1,600	-600	-68,900	280,000	279,700	300	0.11%
6	-122,100	-12,400	88,700	77,900	1,600	7,500	-800	5,200	1,500	1,700	-600	46,900	348,000	346,600	1,400	0.39%
7	-112,500	-14,300	77,500	57,200	1,300	6,500	-1,500	5,100	1,500	1,800	-600	19,600	318,500	316,000	2,500	0.79%
8	-114,000	-6,800	75,900	20,400	1,800	7,100	-2,200	5,100	1,500	1,800	-700	-12,200	288,200	286,100	2,200	0.76%
9	-118,500	-2,200	68,100	-13,400	2,800	8,000	-2,800	5,200	1,600	1,600	-800	-53,100	246,700	244,100	2,600	1.06%
10	-141,900	-1,400	5,100	20,300	3,700	8,400	-1,400	5,100	1,600	1,700	-900	-99,200	219,200	219,600	-400	-0.18%
11	-133,400	-8,800	101,700	95,200	3,200	8,300	-300	5,300	1,600	1,500	-900	71,900	377,800	376,400	1,400	0.38%
12	-137,200	-7,400	86,600	32,000	3,100	8,600	-2,200	5,200	1,600	1,600	-800	-10,400	322,400	320,900	1,500	0.47%
13	-125,400	-7,800	82,800	46,300	3,000	8,200	-3,100	5,100	1,600	1,700	-800	11,200	318,700	318,200	600	0.18%
14	-137,200	-5,100	85,600	17,200	3,400	8,800	-3,200	5,100	1,600	1,800	-800	-26,100	304,900	301,700	3,300	1.08%
15	-107,000	-10,200	81,300	57,300	2,600	6,900	-4,000	5,000	1,600	1,700	-800	31,500	313,600	310,600	3,000	0.97%
16	-111,500	-20,500	73,800	99,400	2,100	6,100	-3,600	5,000	1,600	2,000	-700	51,800	369,600	367,700	1,800	0.50%
17	-145,000	-7,700	80,600	11,800	3,000	8,300	-2,600	5,100	1,600	2,300	-800	-44,800	311,200	309,600	1,600	0.50%
18	-125,700	-4,200	81,200	8,100	3,300	6,700	-3,200	5,100	1,600	1,800	-900	-27,100	288,400	287,500	800	0.29%
19	-118,800	-6,600	78,900	45,700	2,800	5,500	-3,900	5,000	1,600	1,700	-1,000	10,600	312,500	312,100	400	0.12%
20	-136,200	-2,700	76,100	1,300	3,200	5,700	-4,100	5,000	1,700	1,800	-1,000	-49,100	273,200	273,400	-100	-0.05%
21	-158,000	-2,100	32,200	23,700	4,000	6,400	-3,400	5,000	1,800	1,600	-900	-93,600	293,800	290,000	3,800	1.31%
22	-154,400	-1,600	10,100	42,000	4,800	6,800	100	5,000	1,900	1,900	-1,000	-84,400	265,900	265,900	0	0.00%
23	-147,300	-700	6,300	36,300	5,400	5,700	1,400	4,900	1,900	1,800	-1,100	-85,400	228,600	228,600	0	0.01%
24	-147,200	-1,300	51,900	61,000	5,700	6,600	100	4,700	1,900	1,500	-1,200	-19,100	321,100	318,300	2,700	0.85%
25	-150,100	-1,900	75,000	61,100	5,600	6,600	-2,700	4,600	1,900	1,400	-1,200	-3,300	342,000	338,500	3,500	1.04%
26	-134,200	-6,400	115,900	93,000	4,800	6,100	-5,800	4,700	1,800	1,500	-900	79,300	394,600	393,400	1,200	0.31%
27	-127,200	-1,800	74,400	19,300	4,800	4,800	-8,700	4,600	1,800	1,600	-800	-39,500	303,700	291,400	12,400	4.15%
28	-121,400	-8,000	99,600	100,000	4,000	4,900	-8,900	4,900	1,800	1,700	-800	77,000	385,800	384,900	800	0.22%
29	-129,400	-5,800	92,100	47,400	3,900	5,500	-10,400	5,000	1,700	1,800	-800	9,900	332,400	331,400	1,000	0.31%
30	-140,800	-6,800	93,600	49,800	3,900	6,400	-11,400	5,000	1,800	1,900	-800	1,800	346,600	345,900	600	0.19%
31	-99,500	-11,700	85,400	78,700	3,000	5,200	-12,700	5,000	1,700	1,900	-900	54,800	347,900	346,700	1,200	0.35%
32	-99,800	-4,500	82,200	11,800	2,700	4,700	-12,900	4,900	1,700	2,100	-800	-9,000	269,700	268,700	1,000	0.38%
33	-86,900	-8,100	77,800	54,700	2,200	3,700	-13,800	5,000	1,600	1,800	-800	36,000	299,700	298,400	1,300	0.44%
34	-75,600	-6,600	73,500	33,600	2,000	2,800	-13,700	4,600	1,600	1,700	-800	21,300	263,300	261,500	1,800	0.67%
35	-88,500	-4,600	77,300	10,300	2,100	3,000	-14,300	4,800	1,600	1,700	-800	-8,800	241,900	240,600	1,300	0.54%
36	-86,600	-5,200	65,800	21,600	2,100	2,700	-15,800	4,900	1,600	1,600	-800	-9,800	249,000	247,400	1,600	0.63%
37	-106,300	-5,600	38,700	44,600	2,200	4,400	-13,600	4,800	1,600	1,800	-900	-29,100	277,000	276,000	1,000	0.36%
38	-75,100	-9,100	86,000	69,500	1,800	3,100	-13,300	5,000	1,600	1,600	-900	66,800	289,600	286,200	3,300	1.15%
39	-75,200	-11,600	66,400	66,200	1,300	1,600	-14,500	4,900	1,600	1,600	-800	40,500	280,900	279,900	1,000	0.35%
40	-88,600	-5,600	67,800	10,700	1,500	2,000	-14,300	4,900	1,600	1,600	-800	-19,300	239,700	239,700	0	-0.01%
41	-93,600	-6,000	70,000	31,400	1,500	2,700	-14,800	4,900	1,600	1,500	-900	-2,300	266,800	266,200	600	0.23%
42	-94,200	-6,100	19,700	41,100	1,500	3,200	-12,800	4,800	1,600	1,800	-900	-40,200	243,800	243,900	-100	-0.06%
43	-69,800	-12,200	81,100	66,300	1,000	2,200	-13,600	4,900	1,500	1,600	-800	59,800	278,100	275,800	2,300	0.84%
44	-75,500	-14,000	67,500	61,600	600	1,800	-15,100	4,800	1,500	1,500	-800	32,900	275,200	274,100	1,100	0.40%
45	-87,200	-8,600	67,600	22,600	900	2,700	-14,800	4,800	1,500	1,700	-800	-10,800	259,300	258,200	1,100	0.41%
46	-88,500	-5,700	70,500	10,000	1,000	4,300	-15,400	4,800	1,500	1,700	-800	-17,800	240,100	239,100	1,000	0.41%
47	-105,600	-7,500	24,200	45,200	1,200	5,700	-14,300	4,800	1,500	1,800	-900	-43,700	272,500	272,700	-200	-0.06%
Average	**-115,300**	**-7,100**	**69,700**	**41,200**	**2,600**	**5,500**	**-7,200**	**5,000**	**1,600**	**1,700**	**-800**	**-4,600**	**295,700**	**294,200**	**1,500**	**0.50%**

Model Water Year	2030 INFLOWS											
	Groundwater Extraction	Drain Return Flow	Flow from streams	Deep Percolation	Seawater Intrusion	Underflow from Monterey	Underflow from Eastside	Underflow from Forebay	Underflo w from Langley	Mountain front recharge	Underflow from Pajaro	From Storage
1	9,700	0	74,200	42,300	2,400	9,200	10,800	5,200	1,600	2,500	200	91,100
2	12,700	0	78,100	140,600	2,300	9,100	11,400	5,400	1,600	2,600	200	94,300
3	12,800	0	80,000	68,900	2,300	9,400	11,900	5,500	1,600	2,800	200	96,600
4	13,200	0	82,300	76,300	2,400	9,700	11,800	5,400	1,600	2,600	100	89,500
5	13,800	0	55,200	49,800	3,000	11,700	12,100	5,500	1,600	2,400	100	124,900
6	16,100	0	90,400	119,600	2,700	11,100	12,200	5,500	1,600	2,700	100	85,800
7	17,700	0	79,800	100,400	2,500	10,400	11,600	5,400	1,600	2,700	200	86,100
8	16,900	0	77,900	65,000	2,700	10,700	11,200	5,400	1,700	2,600	200	94,100
9	14,100	0	69,800	27,700	3,300	11,200	11,100	5,400	1,700	2,400	100	99,900
10	12,400	0	5,800	37,900	4,100	11,400	11,700	5,400	1,700	2,500	100	126,100
11	16,200	0	103,100	131,500	4,100	12,400	12,600	5,600	1,700	2,700	100	87,800
12	18,800	0	88,300	76,800	4,000	12,800	12,200	5,600	1,700	2,600	100	99,500
13	19,200	0	84,700	88,100	3,900	12,400	11,600	5,400	1,700	2,700	100	88,900
14	18,100	0	87,200	62,000	4,200	13,100	11,800	5,500	1,700	2,600	100	98,700
15	20,400	0	83,100	94,600	3,600	11,400	10,900	5,300	1,700	2,600	100	79,900
16	21,400	0	77,100	143,400	3,400	11,000	10,900	5,300	1,700	3,000	100	92,400
17	19,400	0	82,600	63,300	3,900	12,700	11,900	5,400	1,700	3,100	100	107,100
18	20,300	0	83,000	50,900	3,900	11,600	11,500	5,400	1,800	2,600	100	97,200
19	21,500	0	80,800	85,300	3,500	11,000	11,000	5,300	1,700	2,700	100	89,600
20	19,500	0	77,800	42,800	3,700	11,300	11,100	5,400	1,800	2,600	100	97,000
21	20,900	0	33,800	50,900	4,400	11,800	11,800	5,300	1,900	2,500	100	150,400
22	20,800	0	10,800	51,000	5,200	12,200	13,000	5,300	2,000	2,800	100	142,700
23	17,900	0	6,700	40,200	5,700	11,700	13,100	5,200	2,000	2,600	100	123,500
24	18,900	0	52,600	73,200	6,100	13,000	12,900	5,200	2,000	2,500	100	134,700
25	20,900	0	75,900	80,800	6,100	13,600	12,400	5,100	2,000	2,500	100	122,700
26	23,000	0	117,400	127,300	5,700	13,700	11,300	5,200	1,900	2,700	100	86,300
27	22,300	0	76,100	50,500	5,300	12,100	9,700	5,000	1,900	2,500	100	118,100
28	24,100	0	101,300	135,800	5,000	12,300	9,700	5,200	1,900	2,700	100	87,600
29	25,100	0	93,900	88,800	4,700	12,800	9,500	5,400	1,900	2,700	100	87,500
30	26,100	0	95,600	94,400	4,800	13,500	9,600	5,400	1,900	2,700	100	92,400
31	26,200	0	87,900	117,600	4,000	11,800	8,400	5,300	1,800	2,900	100	81,900
32	25,000	0	84,100	50,600	3,500	11,100	7,900	5,300	1,800	2,900	200	77,400
33	24,300	0	80,100	90,600	3,200	10,400	7,100	5,200	1,800	2,700	200	74,200
34	24,100	0	75,600	66,100	2,900	9,400	6,700	4,900	1,700	2,600	100	69,100
35	21,700	0	79,200	44,700	2,800	9,500	6,600	5,000	1,700	2,500	200	67,900
36	22,100	0	67,800	54,800	2,800	9,300	6,200	5,100	1,700	2,400	200	76,600
37	22,500	0	40,400	72,100	3,000	10,400	6,900	5,100	1,800	2,600	100	112,100
38	24,100	0	88,000	95,400	2,800	9,200	6,500	5,200	1,700	2,600	100	54,000
39	24,900	0	68,700	96,000	2,400	8,600	6,200	5,100	1,700	2,500	200	64,500
40	23,000	0	69,800	45,900	2,300	8,700	6,400	5,100	1,700	2,400	200	74,200
41	22,600	0	72,000	68,500	2,300	9,000	6,600	5,100	1,700	2,300	200	76,500
42	23,000	0	21,700	64,700	2,300	8,700	6,800	5,000	1,700	2,500	100	107,200
43	24,800	0	83,000	90,800	2,200	8,200	6,800	5,100	1,700	2,600	200	52,800
44	25,300	0	70,100	92,500	1,900	8,100	6,500	5,000	1,700	2,400	200	61,700
45	24,400	0	69,800	59,700	1,900	8,500	6,600	5,000	1,700	2,500	200	79,200
46	23,400	0	72,600	44,400	1,800	9,000	6,700	5,000	1,700	2,400	200	72,800
47	23,400	0	26,400	73,400	2,100	10,000	7,400	5,000	1,700	2,600	100	120,400
Average	20,400	0	71,500	76,300	3,500	10,900	9,800	5,300	1,800	2,600	100	93,500

Model Water Year	2030 OUTFLOWS											
	Pumping	Drain Flows	Flow to Streams	Groundwater Evapotranspiration	Underflow to Ocean	Underflow to Monterey	Underflow to Eastside	Underflow to Forebay	Underflow to Langley	Underflow to Upland Areas	Underflow to Pajaro	To Storage
1	136,200	3,600	1,400	44,100	700	3,100	13,600	300	100	800	600	44,500
2	129,700	18,700	2,900	47,000	1,300	3,500	13,400	300	100	1,000	700	139,600
3	135,100	9,900	2,000	49,500	1,000	3,400	13,000	300	100	800	700	75,900
4	135,000	10,100	2,000	47,700	1,100	3,400	13,400	300	100	800	700	79,400
5	155,000	4,100	1,700	42,900	700	3,300	14,200	300	100	800	800	56,000
6	138,300	12,400	1,700	41,700	1,100	3,700	13,000	300	100	1,000	800	132,700
7	130,200	14,300	2,300	43,300	1,200	3,900	13,100	300	100	900	700	105,700
8	131,000	6,800	2,000	44,600	800	3,600	13,400	300	100	800	800	81,800
9	132,500	2,200	1,700	41,100	500	3,300	13,900	300	100	800	1,000	46,800
10	154,300	1,400	700	17,600	300	3,100	13,100	200	100	800	1,000	26,900
11	149,600	8,800	1,400	36,300	900	4,000	13,000	300	100	1,200	1,000	159,700
12	156,000	7,400	1,700	44,800	900	4,200	14,400	300	100	1,000	900	89,100
13	144,500	7,800	1,900	41,700	900	4,200	14,600	300	100	900	900	100,200
14	155,400	5,100	1,600	44,800	700	4,200	15,100	300	100	900	900	72,600
15	127,300	10,200	1,800	37,300	1,000	4,500	14,800	300	100	900	900	111,400
16	132,900	20,500	3,200	44,000	1,300	4,800	14,400	300	100	1,000	900	144,200
17	164,400	7,700	2,000	51,400	900	4,400	14,400	300	100	900	900	62,200
18	146,100	4,200	1,800	42,800	700	5,000	14,700	300	100	800	1,000	70,100
19	140,300	6,600	1,900	39,600	800	5,400	14,900	300	100	900	1,100	100,200
20	155,800	2,700	1,700	41,600	500	5,500	15,200	400	100	900	1,100	48,000
21	178,900	2,100	1,600	27,200	400	5,400	15,200	400	100	800	1,000	56,900
22	175,300	1,600	700	9,000	400	5,500	12,800	300	100	800	1,100	58,300
23	165,200	700	400	3,900	200	5,900	11,700	400	100	800	1,100	38,100
24	166,100	1,300	600	12,200	400	6,400	12,900	400	100	1,000	1,300	115,600
25	171,000	1,900	900	19,800	500	7,000	15,100	500	100	1,100	1,300	119,400
26	157,200	6,400	1,500	34,200	900	7,600	17,100	500	100	1,200	1,000	165,700
27	149,600	1,800	1,700	31,300	500	7,300	18,400	400	100	900	900	78,600
28	145,400	8,000	1,700	35,800	1,000	7,400	18,600	300	100	1,000	1,000	164,600
29	154,500	5,800	1,900	41,400	800	7,300	19,900	400	100	900	1,000	97,500
30	166,900	6,800	2,000	44,600	900	7,100	20,900	500	100	900	1,000	94,200
31	125,700	11,700	2,500	38,900	1,100	6,600	21,100	400	100	900	1,000	136,700
32	124,800	4,500	1,900	38,800	700	6,400	20,800	400	100	800	1,000	68,300
33	111,100	8,100	2,300	36,000	1,000	6,700	20,900	300	100	800	900	110,100
34	99,700	6,600	2,200	32,500	900	6,600	20,300	300	100	800	1,000	90,400
35	110,200	4,600	2,000	34,400	700	6,500	20,800	300	100	800	1,000	59,100
36	108,700	5,200	1,900	33,200	800	6,700	22,000	300	100	800	1,000	66,800
37	128,800	5,600	1,700	27,500	800	6,000	20,500	300	100	800	1,000	82,900
38	99,200	9,100	2,000	25,900	1,000	6,100	19,800	200	100	900	1,000	120,800
39	100,100	11,600	2,400	29,800	1,100	7,000	20,700	200	200	900	1,000	105,100
40	111,600	5,600	2,100	35,200	800	6,800	20,700	200	200	800	1,000	54,900
41	116,200	6,000	2,000	37,100	800	6,300	21,300	300	200	800	1,000	74,200
42	117,100	6,100	2,000	23,500	800	5,600	19,600	200	200	800	1,000	66,900
43	94,600	12,200	1,900	24,500	1,200	6,000	20,400	200	200	1,000	1,000	112,700
44	100,800	14,000	2,500	30,900	1,300	6,200	21,500	200	200	900	1,000	94,700
45	111,600	8,600	2,100	37,100	1,000	5,800	21,400	200	200	800	1,000	68,400
46	111,900	5,700	2,100	34,400	800	4,700	22,200	200	200	800	1,000	55,100
47	129,000	7,500	2,100	28,200	900	4,300	21,700	200	200	800	1,000	76,800
Average	135,800	7,100	1,800	35,100	800	5,400	17,000	300	100	900	1,000	88,900

Model Water Year	Net Groundwater Extraction	Net Drain Flow	Net Stream Exchange	Net Deep Percolation	Net Seawater Intrusion	Net flow from Monterey	Net flow to Eastside	Net flow from Forebay	Net flow from Langley	Net mountain front recharge	Net flow to Pajaro	Net Storage Change	Total In	Total Out	In-Out	Percent Error
1	-131,400	-3,500	74,200	-2,400	2,200	6,300	-2,500	5,000	1,500	1,700	-300	-49,800	255,700	255,200	500	0.20%
2	-121,600	-19,800	75,000	99,500	1,500	5,900	-1,500	5,100	1,500	1,600	-500	47,100	374,100	374,600	-500	-0.14%
3	-126,700	-11,500	78,500	25,800	1,800	6,400	-400	5,200	1,500	2,000	-500	-18,500	308,500	308,000	500	0.16%
4	-128,200	-10,700	81,800	28,600	1,900	6,800	-900	5,200	1,500	1,700	-600	-13,800	305,600	304,700	900	0.31%
5	-147,600	-4,000	50,000	8,000	2,900	9,000	-1,100	5,200	1,500	1,600	-600	-76,500	287,100	285,600	1,500	0.52%
6	-127,100	-14,000	90,500	88,300	2,200	8,000	200	5,300	1,500	1,800	-600	54,800	367,600	366,400	1,200	0.33%
7	-117,700	-15,700	77,800	61,600	1,800	7,100	-600	5,100	1,500	1,800	-600	20,300	331,400	329,700	1,700	0.53%
8	-120,200	-7,400	78,000	22,200	2,400	7,700	-1,300	5,100	1,500	1,800	-700	-13,800	300,700	297,700	2,900	0.98%
9	-128,000	-2,300	68,800	-13,400	3,500	8,800	-1,800	5,300	1,600	1,600	-800	-59,700	258,000	255,100	2,900	1.14%
10	-148,500	-1,400	5,200	22,400	4,500	9,100	-300	5,200	1,600	1,800	-900	-101,100	225,800	226,000	-300	-0.12%
11	-137,900	-10,500	102,800	105,300	3,700	8,800	600	5,400	1,600	1,500	-900	79,000	396,800	395,500	1,300	0.32%
12	-141,400	-8,500	87,200	36,900	3,600	9,100	-1,200	5,200	1,600	1,700	-900	-7,900	338,000	336,700	1,300	0.40%
13	-132,400	-9,000	83,600	51,900	3,600	8,900	-2,000	5,200	1,600	1,800	-800	12,100	336,900	336,700	200	0.06%
14	-141,900	-6,500	86,200	22,700	3,900	9,500	-2,200	5,200	1,600	1,800	-800	-23,500	321,000	318,000	3,000	0.94%
15	-110,400	-11,800	80,300	61,700	3,100	7,500	-2,800	5,000	1,600	1,800	-800	33,600	326,200	324,600	1,600	0.50%
16	-116,300	-23,800	72,100	111,200	2,500	6,700	-2,300	5,000	1,600	2,100	-800	56,700	392,600	391,300	1,300	0.34%
17	-151,300	-8,500	81,700	10,700	3,500	9,100	-1,200	5,100	1,600	2,300	-800	-48,800	321,600	320,500	1,100	0.33%
18	-131,200	-4,400	81,700	7,200	3,900	7,500	-1,800	5,100	1,700	1,800	-900	-30,900	295,300	294,000	1,300	0.43%
19	-123,800	-7,400	79,900	48,000	3,300	6,300	-2,700	5,100	1,700	1,700	-1,100	10,700	323,500	323,000	500	0.15%
20	-140,700	-3,100	77,900	3,300	3,700	6,400	-3,000	5,100	1,700	1,800	-1,000	-47,900	283,000	283,000	0	-0.01%
21	-171,300	-2,100	14,800	30,500	4,700	7,500	-1,100	5,000	1,800	1,900	-900	-110,600	290,700	289,400	1,300	0.46%
22	-159,900	-1,600	9,900	43,800	5,500	7,600	2,000	5,100	1,900	1,900	-1,000	-84,900	271,800	271,700	0	0.01%
23	-155,200	-800	7,400	40,300	6,100	6,600	2,800	4,900	1,900	1,800	-1,100	-85,300	239,900	239,800	100	0.03%
24	-152,800	-1,600	54,100	65,700	6,200	7,400	1,300	4,800	1,900	1,500	-1,200	-15,700	335,300	332,200	3,100	0.93%
25	-155,900	-2,400	76,900	66,300	6,100	7,400	-1,800	4,700	1,900	1,400	-1,200	2,000	354,200	352,600	1,500	0.43%
26	-139,800	-8,000	116,000	102,400	5,300	6,800	-4,900	4,700	1,900	1,500	-900	84,100	413,800	412,900	800	0.20%
27	-133,300	-2,100	80,000	21,800	5,300	5,500	-7,800	4,700	1,800	1,700	-800	-39,900	321,400	304,600	16,800	5.36%
28	-127,200	-9,400	99,400	105,600	4,600	5,700	-8,000	4,900	1,800	1,700	-900	77,600	402,800	402,100	600	0.15%
29	-134,800	-7,100	94,300	53,700	4,400	6,200	-9,500	5,000	1,800	1,900	-900	13,000	351,600	349,600	2,000	0.56%
30	-147,200	-7,700	94,100	52,500	4,500	7,200	-10,400	5,000	1,800	1,900	-900	200	361,500	360,900	600	0.16%
31	-103,600	-13,800	85,600	87,400	3,400	6,000	-11,800	5,000	1,700	2,000	-900	58,800	368,700	366,600	2,100	0.56%
32	-104,700	-5,000	83,200	12,100	3,200	5,500	-12,000	4,900	1,700	2,100	-900	-10,800	281,500	280,600	900	0.33%
33	-91,300	-10,300	78,100	64,700	2,600	4,500	-12,900	5,000	1,700	1,900	-800	41,400	321,800	320,200	1,600	0.50%
34	-79,800	-7,800	72,300	37,700	2,400	3,500	-12,900	4,600	1,600	1,800	-900	22,000	276,800	276,100	700	0.25%
35	-92,700	-4,800	76,600	8,200	2,500	3,800	-13,400	4,800	1,600	1,800	-900	-13,200	247,500	246,900	600	0.26%
36	-91,900	-5,300	61,200	21,300	2,600	3,600	-14,700	4,900	1,600	1,700	-900	-17,700	259,200	257,600	1,600	0.62%
37	-110,500	-5,800	39,800	46,800	2,800	5,200	-12,800	4,900	1,700	1,900	-900	-27,800	286,100	285,300	700	0.26%
38	-78,900	-10,800	87,900	77,400	2,200	3,900	-12,700	5,000	1,600	1,700	-900	71,400	307,300	302,400	4,900	1.61%
39	-78,300	-13,100	66,700	71,000	1,700	2,300	-14,000	4,900	1,600	1,700	-900	42,800	293,300	292,400	900	0.32%
40	-92,200	-5,900	68,900	10,000	1,900	2,700	-13,800	4,900	1,600	1,700	-900	-21,100	247,500	247,400	0	0.01%
41	-97,900	-7,500	65,900	38,300	1,900	3,500	-14,200	4,800	1,600	1,600	-900	-4,100	283,000	281,900	1,200	0.41%
42	-98,600	-6,800	20,500	43,400	2,000	3,900	-12,000	4,800	1,600	1,900	-900	-40,200	253,200	253,100	100	0.03%
43	-73,200	-14,500	81,500	73,400	1,400	2,900	-12,900	4,900	1,600	1,700	-900	64,000	293,900	292,200	1,700	0.58%
44	-78,800	-15,000	68,000	63,600	1,100	2,500	-14,500	4,800	1,500	1,600	-900	33,100	285,200	284,400	800	0.28%
45	-91,600	-10,100	69,300	27,100	1,300	3,400	-14,300	4,800	1,600	1,700	-900	-9,400	275,800	274,100	1,700	0.63%
46	-94,300	-6,000	65,400	8,700	1,400	5,100	-14,900	4,800	1,500	1,700	-900	-29,600	247,300	245,000	2,200	0.91%
47	-110,000	-8,000	29,000	47,700	1,700	6,600	-13,500	4,800	1,600	1,900	-900	-40,800	285,000	283,300	1,800	0.62%
Average	-8,000	69,800	45,100	3,200	6,200	-6,200	5,000	1,600	1,800	-800	-4,700	0	308,600	307,100	1,600	0.51%

Model Water Year	Groundwater Extraction	Drain Return Flow	Flow from streams	Deep Percolation	Seawater Intrusion	Underflow from Monterey	Underflow from Eastside	Underflow from Forebay	Underflow from Langley	Mountain front recharge	Underflow from Pajaro	From Storage
1	9,700	0	75,600	43,200	2,700	9,400	11,100	5,300	1,600	2,500	200	94,400
2	12,800	0	78,000	149,100	2,700	9,400	11,800	5,400	1,600	2,600	200	100,500
3	13,100	0	80,700	77,700	2,700	9,700	12,400	5,500	1,600	2,900	200	102,000
4	13,400	0	83,800	78,800	2,800	10,200	12,300	5,500	1,600	2,600	100	94,500
5	13,900	0	51,700	50,100	3,400	12,200	12,700	5,500	1,600	2,500	100	133,300
6	16,400	0	92,300	131,600	3,200	11,600	12,900	5,600	1,600	2,800	100	89,500
7	17,900	0	80,200	107,200	2,800	10,900	12,200	5,500	1,600	2,700	200	90,200
8	17,300	0	80,100	69,200	3,100	11,200	11,800	5,400	1,700	2,700	200	98,100
9	14,300	0	70,500	29,900	3,900	12,000	11,800	5,500	1,700	2,500	100	105,800
10	12,600	0	5,900	39,600	4,700	12,100	12,400	5,500	1,700	2,600	100	128,600
11	16,800	0	104,200	143,300	4,500	12,900	13,300	5,700	1,700	2,700	100	91,600
12	19,100	0	89,100	83,800	4,400	13,300	12,900	5,600	1,700	2,700	100	105,400
13	19,600	0	85,600	96,400	4,300	13,100	12,300	5,500	1,700	2,700	100	95,600
14	18,900	0	87,900	69,800	4,600	13,700	12,500	5,500	1,700	2,700	100	103,700
15	21,000	0	82,300	101,100	4,000	11,900	11,500	5,300	1,700	2,700	100	84,700
16	22,100	0	75,900	158,300	3,700	11,400	11,500	5,300	1,700	3,100	100	99,400
17	20,000	0	83,800	65,200	4,200	13,400	12,600	5,500	1,800	3,200	100	111,800
18	20,800	0	83,500	51,600	4,400	12,300	12,200	5,400	1,800	2,700	100	100,500
19	22,100	0	81,900	89,400	3,900	11,600	11,700	5,400	1,800	2,700	100	92,900
20	20,200	0	79,600	46,500	4,100	11,800	11,700	5,400	1,800	2,700	100	99,100
21	21,400	0	16,200	53,200	5,000	12,800	13,000	5,400	2,000	2,700	100	159,000
22	21,300	0	10,600	51,700	5,800	13,000	14,000	5,400	2,000	2,800	100	145,100
23	18,500	0	7,800	44,300	6,300	12,500	14,100	5,300	2,000	2,600	100	126,400
24	19,600	0	54,800	78,300	6,600	13,800	13,800	5,200	2,000	2,500	100	138,500
25	21,700	0	77,800	87,400	6,600	14,400	13,100	5,200	2,000	2,600	100	123,300
26	24,200	0	117,700	138,400	6,100	14,400	11,900	5,200	2,000	2,700	100	91,100
27	23,200	0	81,800	54,900	5,700	12,800	10,300	5,100	1,900	2,600	100	122,900
28	24,900	0	101,200	143,400	5,400	13,000	10,200	5,300	1,900	2,800	100	94,500
29	26,200	0	96,300	97,300	5,100	13,400	10,000	5,400	1,900	2,800	100	92,900
30	27,100	0	96,300	99,600	5,200	14,200	10,100	5,500	1,900	2,800	100	98,700
31	27,300	0	88,300	128,600	4,400	12,400	8,900	5,400	1,900	2,900	100	88,500
32	25,900	0	85,300	53,300	3,800	11,800	8,400	5,300	1,800	3,000	200	82,900
33	25,300	0	80,600	103,200	3,500	11,100	7,600	5,300	1,800	2,700	100	80,700
34	25,000	0	74,600	72,600	3,200	10,000	7,100	4,900	1,800	2,700	100	74,900
35	22,200	0	78,600	44,300	3,100	10,100	6,900	5,100	1,800	2,600	100	72,800
36	22,300	0	63,300	55,200	3,200	10,000	6,600	5,100	1,800	2,500	200	89,100
37	23,000	0	41,500	74,800	3,400	11,100	7,300	5,100	1,800	2,700	100	115,300
38	24,700	0	90,000	104,800	3,100	9,800	6,900	5,200	1,800	2,700	100	58,400
39	25,700	0	69,200	102,400	2,700	9,100	6,500	5,100	1,700	2,600	100	68,100
40	23,600	0	71,000	46,900	2,600	9,300	6,700	5,100	1,800	2,500	200	77,900
41	23,200	0	68,000	77,400	2,600	9,600	6,900	5,100	1,800	2,400	100	85,900
42	23,600	0	22,400	67,100	2,600	9,400	7,200	5,000	1,800	2,700	100	111,300
43	25,400	0	83,500	99,400	2,400	8,700	7,200	5,100	1,700	2,700	100	57,500
44	25,900	0	70,700	96,200	2,100	8,500	6,800	5,000	1,700	2,500	200	65,600
45	25,000	0	71,600	66,700	2,200	9,000	6,900	5,000	1,700	2,600	200	85,100
46	23,800	0	67,600	44,600	2,100	9,700	7,100	5,000	1,700	2,500	200	83,100
47	23,800	0	31,000	75,800	2,500	10,700	7,800	5,100	1,800	2,700	100	123,800
Average	21,000	0	71,700	81,800	3,900	11,500	10,400	5,300	1,800	2,700	100	98,600

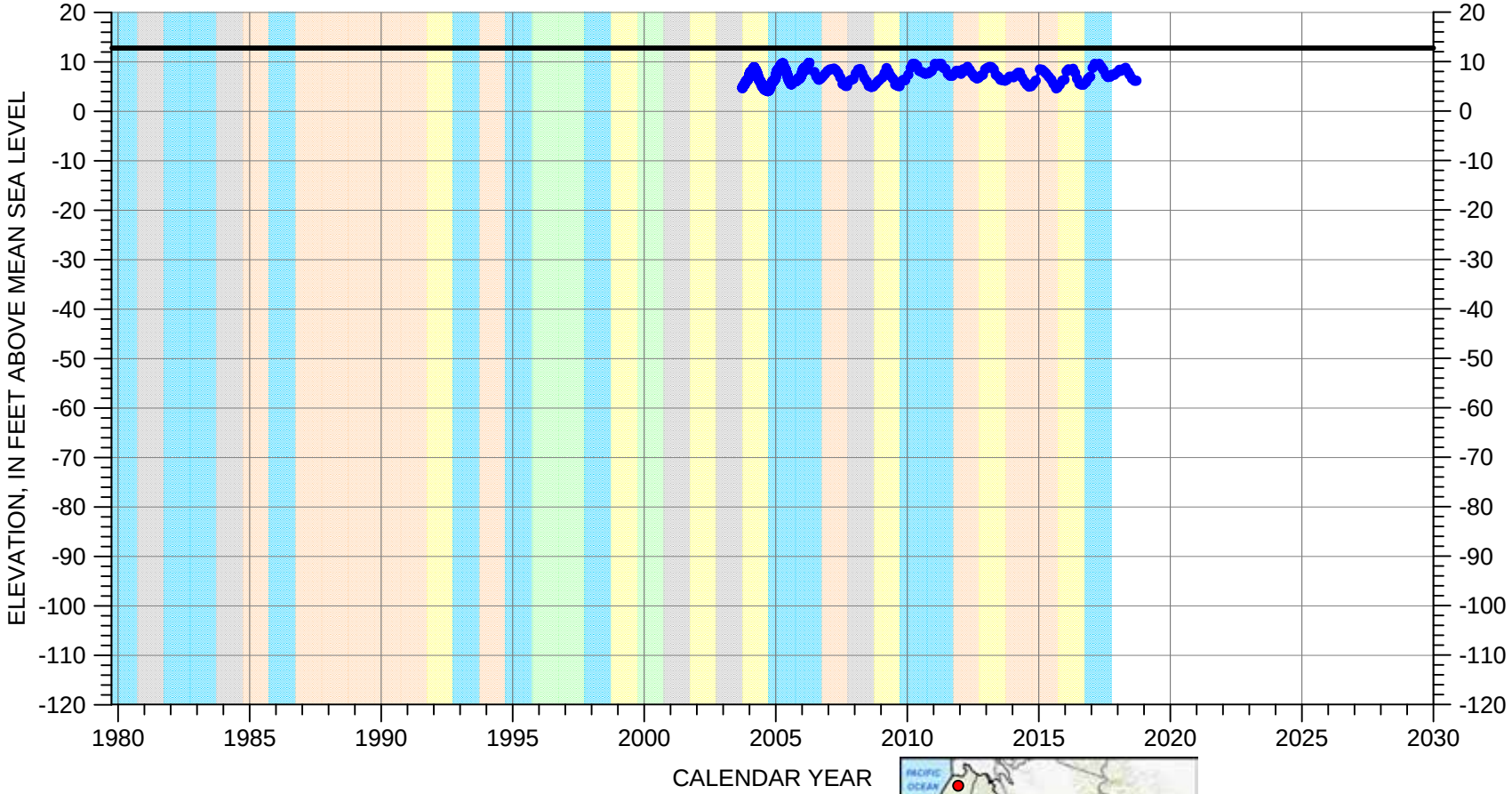
	2070 OUTFLOWS											
Model Water Year	Pumping	Drain Flows	Flow to Streams	Groundwater Evapotranspiration	Underflow to Ocean	Underflow to Monterey	Underflow to Eastside	Underflow to Forebay	Underflow to Langley	Underflow to Upland Areas	Underflow to Pajaro	To Storage
1	141,100	3,500	1,400	45,700	500	3,100	13,600	300	100	800	600	44,600
2	134,500	19,800	3,100	49,500	1,100	3,500	13,300	300	100	1,000	700	147,600
3	139,800	11,500	2,200	52,000	900	3,300	12,800	300	100	900	700	83,500
4	141,700	10,700	2,000	50,200	900	3,300	13,200	300	100	900	700	80,700
5	161,500	4,000	1,700	42,100	500	3,200	13,800	300	100	800	800	56,900
6	143,500	14,000	1,800	43,300	900	3,700	12,700	300	100	1,000	800	144,400
7	135,600	15,700	2,400	45,600	1,000	3,800	12,900	300	100	900	700	110,500
8	137,500	7,400	2,000	47,000	700	3,500	13,100	300	100	900	800	84,400
9	142,200	2,300	1,700	43,300	400	3,200	13,600	300	100	800	1,000	46,200
10	161,000	1,400	700	17,300	200	3,000	12,700	300	100	800	1,000	27,500
11	154,700	10,500	1,500	38,000	800	4,100	12,700	300	100	1,300	1,000	170,500
12	160,600	8,500	1,900	46,900	800	4,200	14,100	300	100	1,000	1,000	97,400
13	151,900	9,000	2,000	44,600	700	4,200	14,200	300	100	1,000	1,000	107,700
14	160,800	6,500	1,700	47,100	600	4,200	14,600	300	100	900	900	80,200
15	131,300	11,800	2,000	39,400	900	4,400	14,300	300	100	900	900	118,300
16	138,400	23,800	3,800	47,100	1,200	4,700	13,800	300	100	1,000	900	156,100
17	171,300	8,500	2,100	54,500	700	4,300	13,900	300	100	900	900	63,000
18	152,000	4,400	1,900	44,400	500	4,800	14,100	300	100	900	1,000	69,600
19	145,900	7,400	2,000	41,300	600	5,300	14,300	300	100	1,000	1,200	103,600
20	160,900	3,100	1,700	43,200	400	5,400	14,700	400	100	900	1,100	51,100
21	192,800	2,100	1,400	22,700	300	5,300	14,000	400	100	800	1,000	48,400
22	181,200	1,600	600	7,900	300	5,400	12,100	300	100	900	1,100	60,200
23	173,700	800	400	4,000	200	5,900	11,200	400	100	800	1,200	41,000
24	172,400	1,600	700	12,600	400	6,400	12,500	400	100	1,000	1,300	122,800
25	177,600	2,400	900	21,100	400	7,000	14,900	500	100	1,200	1,300	125,300
26	164,000	8,000	1,600	36,100	800	7,600	16,800	500	100	1,200	1,000	175,100
27	156,500	2,100	1,800	33,100	400	7,300	18,100	400	100	900	900	83,000
28	152,200	9,400	1,800	37,800	900	7,300	18,200	400	100	1,000	1,000	172,100
29	161,000	7,100	2,000	43,600	700	7,300	19,600	400	100	900	1,000	105,900
30	174,300	7,700	2,100	47,000	700	7,000	20,500	500	100	900	1,000	99,000
31	130,900	13,800	2,700	41,200	1,000	6,500	20,700	400	100	1,000	1,100	147,400
32	130,600	5,000	2,000	41,200	600	6,300	20,400	400	100	800	1,000	72,100
33	116,500	10,300	2,500	38,500	900	6,600	20,500	300	100	900	1,000	122,100
34	104,800	7,800	2,300	34,900	800	6,500	19,900	300	100	800	1,000	96,900
35	114,900	4,800	2,100	36,100	600	6,300	20,400	300	200	800	1,000	59,500
36	114,300	5,300	2,100	33,900	600	6,300	21,400	300	100	800	1,000	71,400
37	133,500	5,800	1,700	27,900	600	5,900	20,100	300	200	800	1,000	87,500
38	103,600	10,800	2,100	27,400	900	5,900	19,600	200	200	1,000	1,000	129,800
39	104,000	13,100	2,500	31,400	900	6,800	20,500	200	200	900	1,000	110,800
40	115,800	5,900	2,100	36,900	600	6,600	20,500	300	200	800	1,000	56,700
41	121,100	7,500	2,200	39,000	700	6,100	21,200	300	200	800	1,000	81,800
42	122,200	6,800	2,000	23,700	700	5,400	19,200	200	200	800	1,000	71,100
43	98,700	14,500	2,000	26,000	1,000	5,900	20,100	200	200	1,000	1,000	121,600
44	104,700	15,000	2,700	32,600	1,000	6,000	21,300	200	200	900	1,000	98,800
45	116,500	10,100	2,300	39,500	900	5,600	21,200	300	200	800	1,000	75,700
46	118,100	6,000	2,200	35,900	600	4,500	22,000	300	200	800	1,000	53,500
47	133,800	8,000	2,000	28,100	700	4,100	21,300	200	200	800	1,000	83,000
Average	141,600	8,000	1,900	36,700	700	5,300	16,600	300	100	900	1,000	94,000

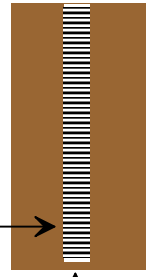
APPENDIX 7A

HYDROGRAPHS

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-21Q01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)





Perforated from
-92.2 to -142.2 feet msl

Well Bottom
-144.2 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

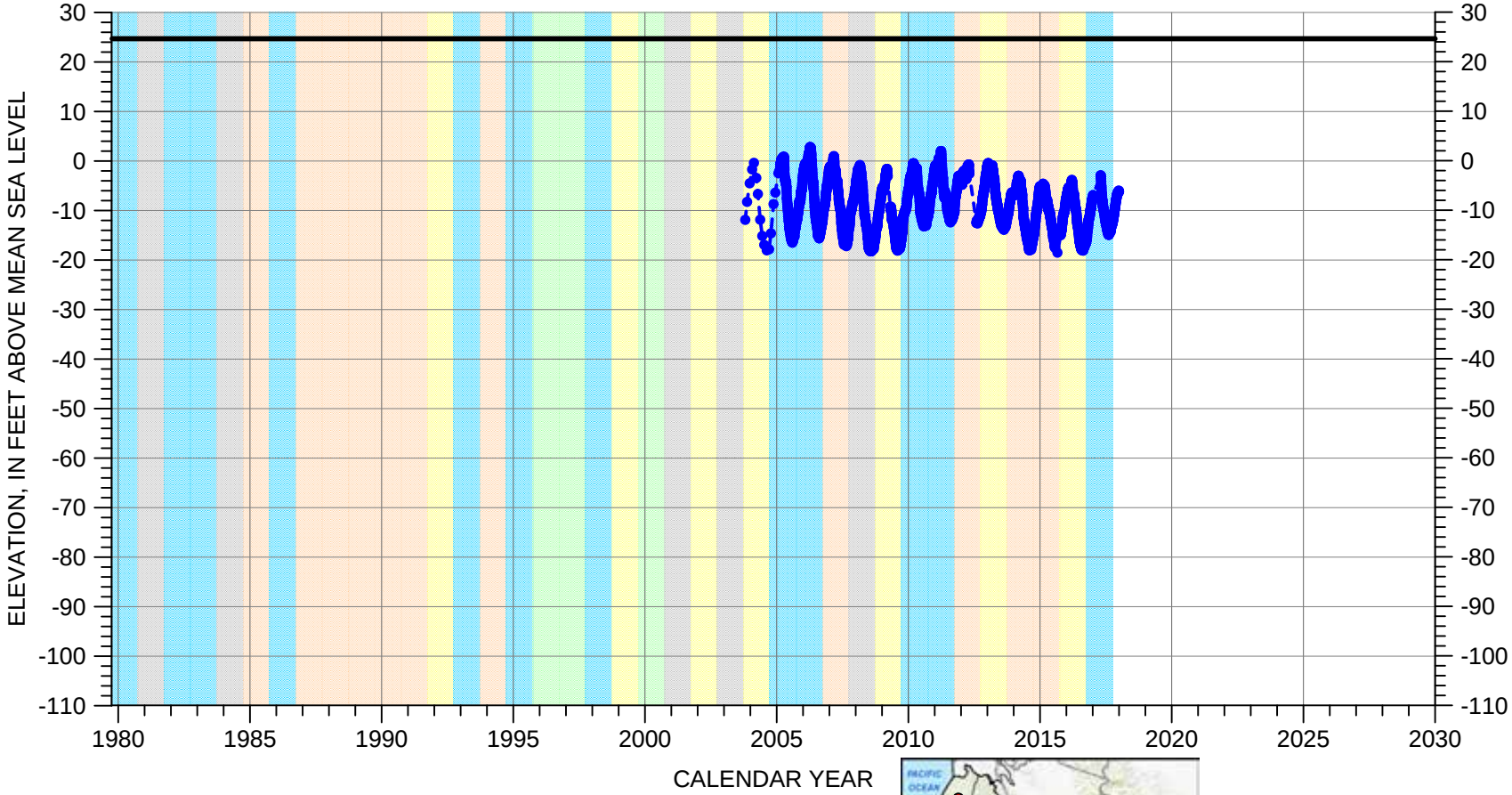
WATER YEAR TYPE DESIGNATION (MCWRA)

- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\13S_02E-21Q01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-03F04

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY14S_02E-03F04.grf

EXPLANATION

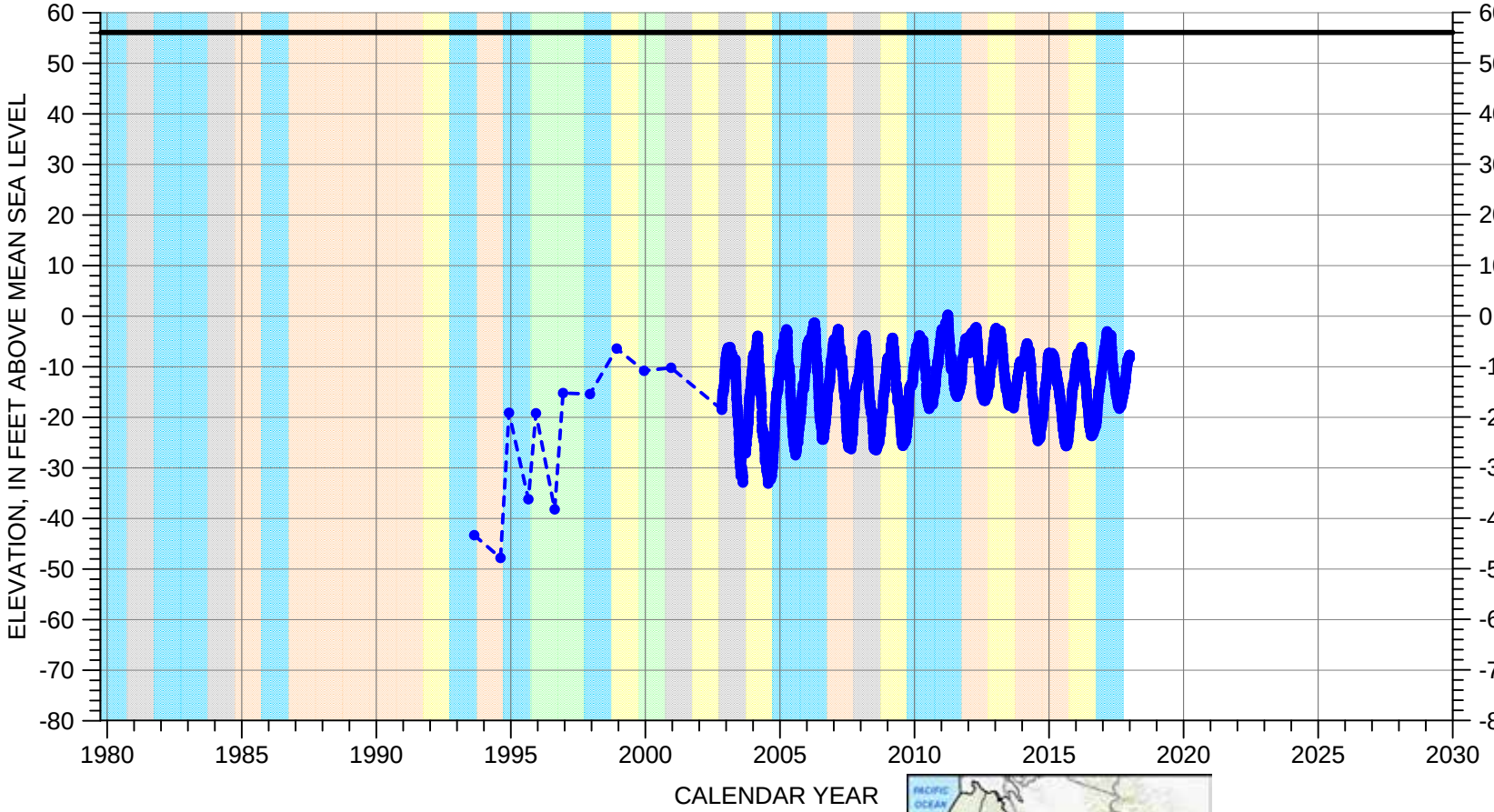
- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-12B02

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



Perforated from
-153.9 to -203.9 feet msl

Well Bottom
-208.9 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

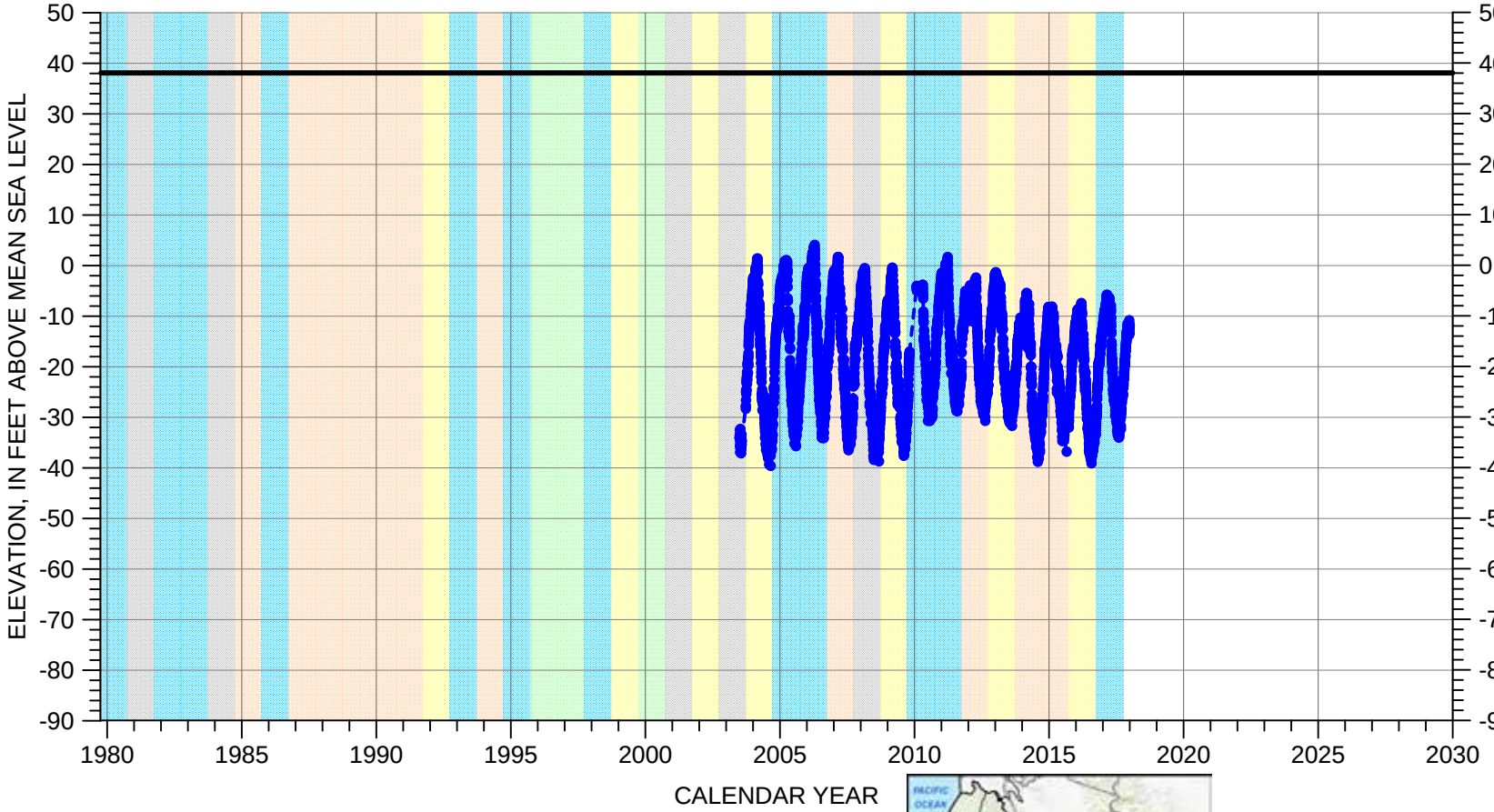
WATER YEAR TYPE DESIGNATION (MCWRA)

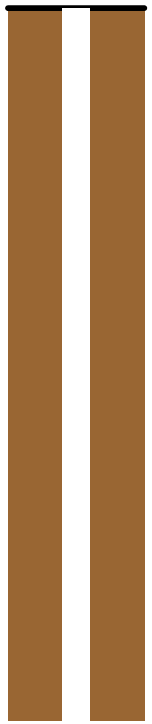
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\14S_02E-12B02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-26H01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)





Perforated from
-248.9 to -298.9 feet msl

Well Bottom
-300.9 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

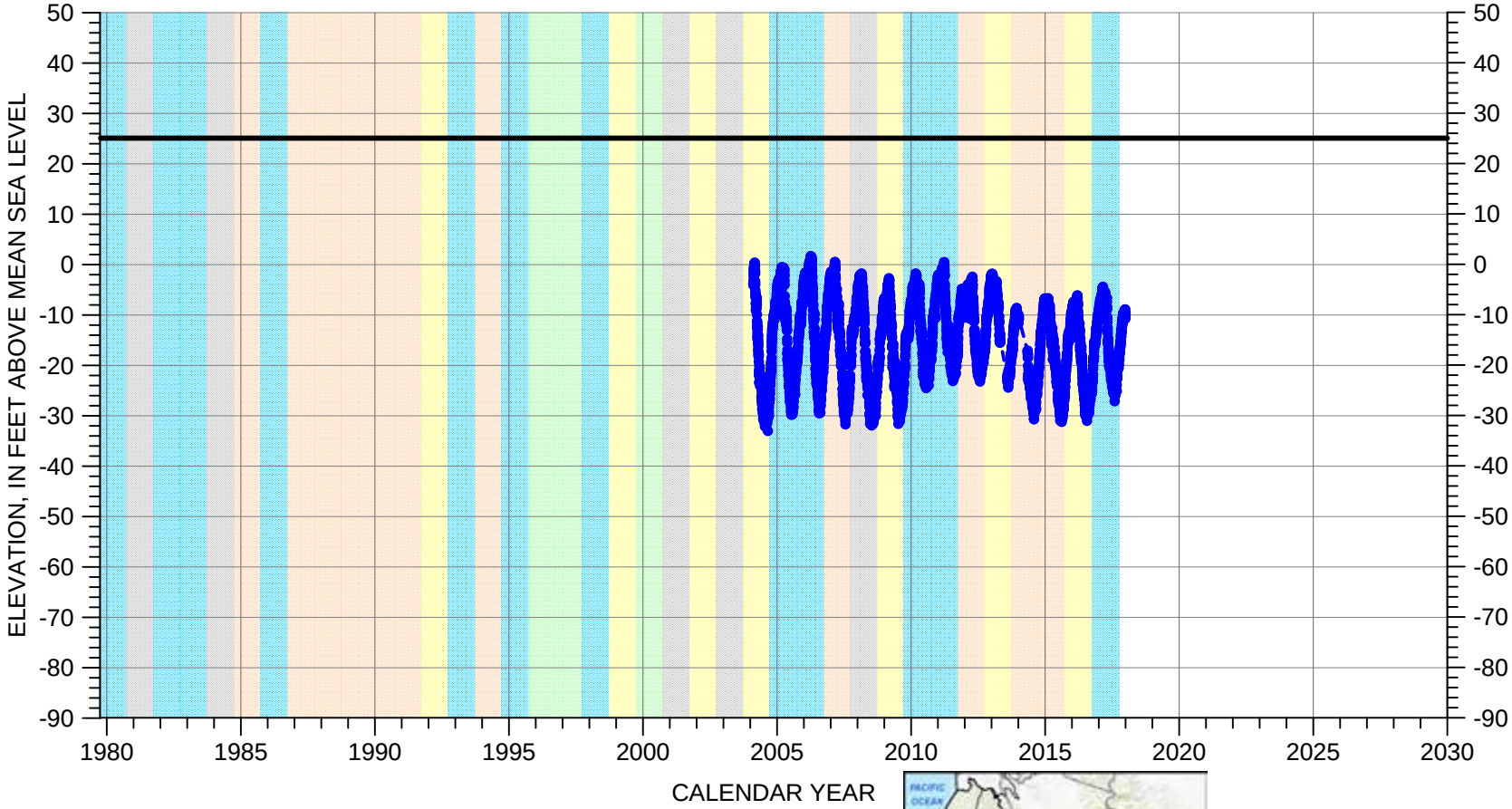
WATER YEAR TYPE DESIGNATION (MCWRA)

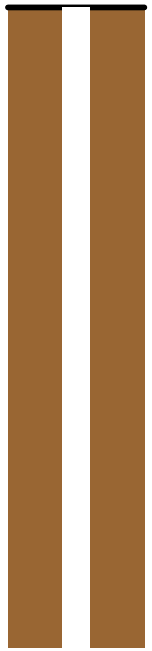
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\14S_02E-26H01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-27A01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)





Perforated from
-214.9 to -264.9 feet msl

Well Bottom
-267.9 feet msl

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY14S_02E-27A01.grf

EXPLANATION

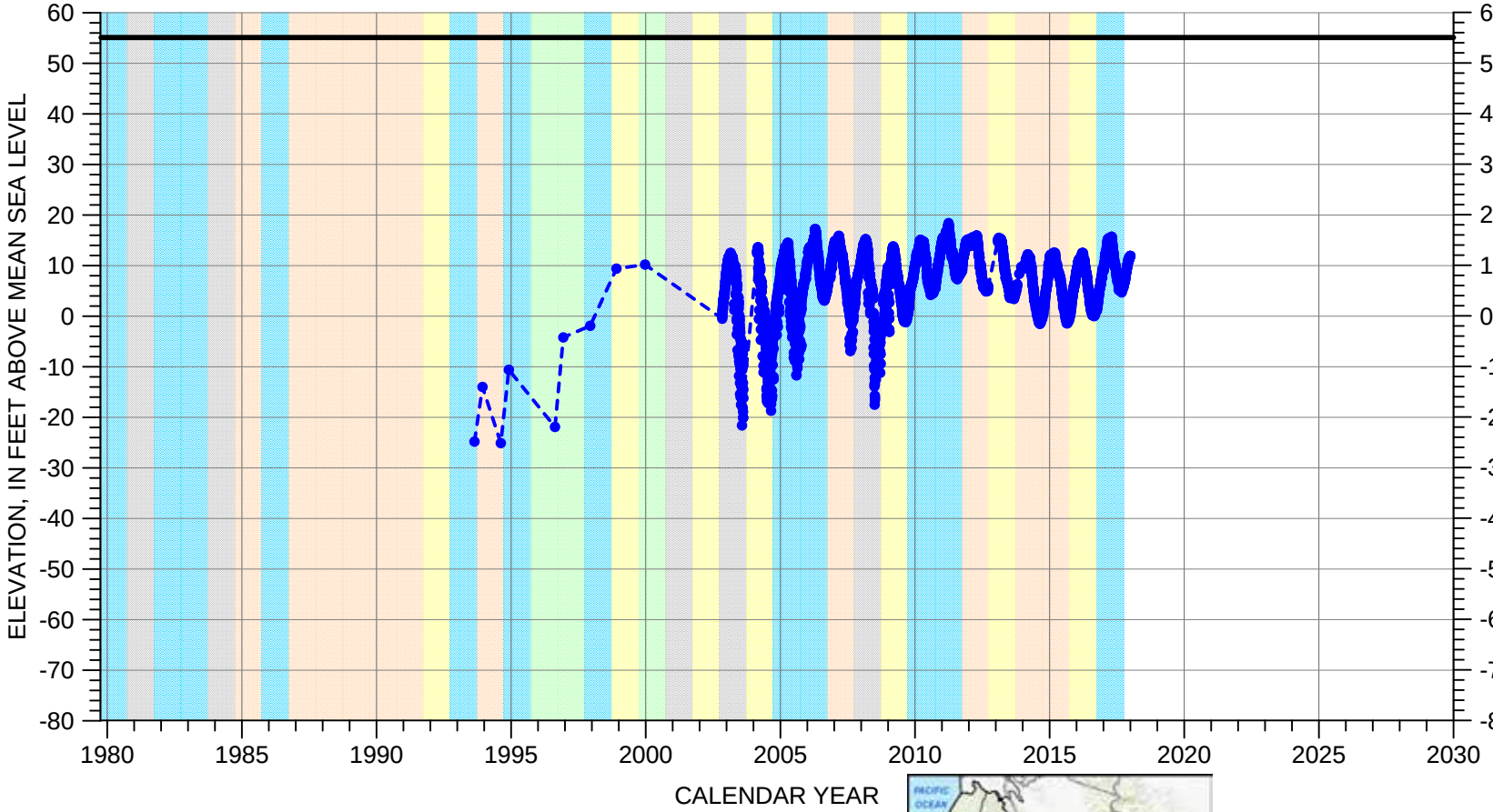
- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

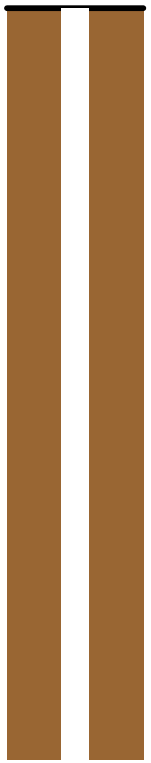
WATER YEAR TYPE DESIGNATION (MCWRA)

- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-18C01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)





Perforated from
-109.9 to -159.9 feet msl

Well Bottom
-169.9 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

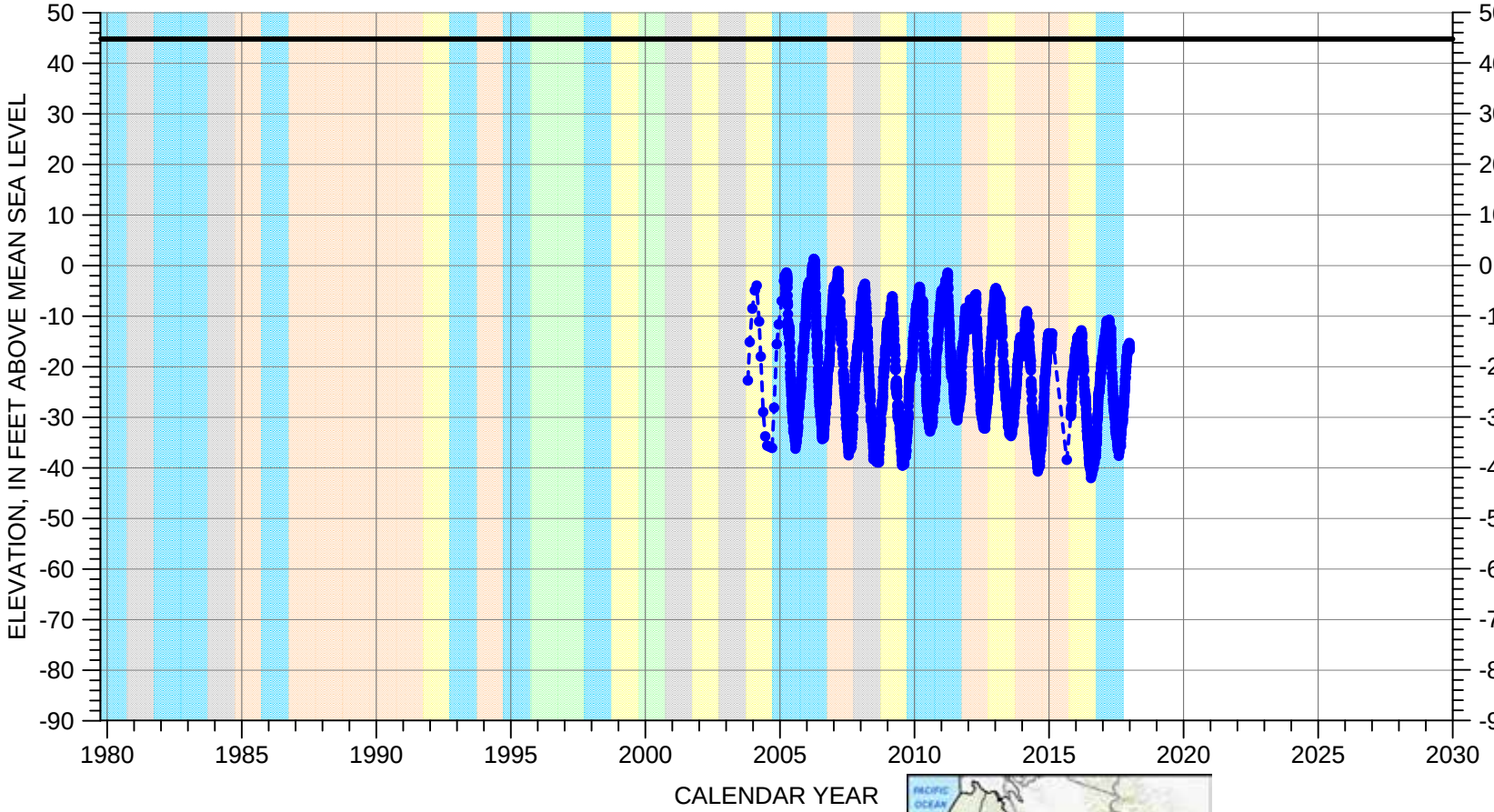
WATER YEAR TYPE DESIGNATION (MCWRA)

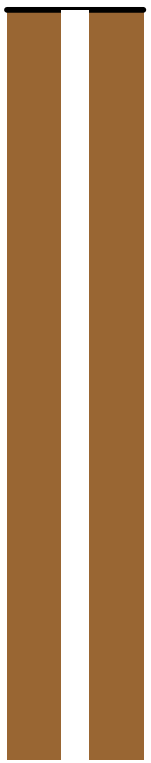
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY14S_03E-18C01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-30G08

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)





Perforated from
-195.2 to -245.2 feet msl

Well Bottom
-248.2 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

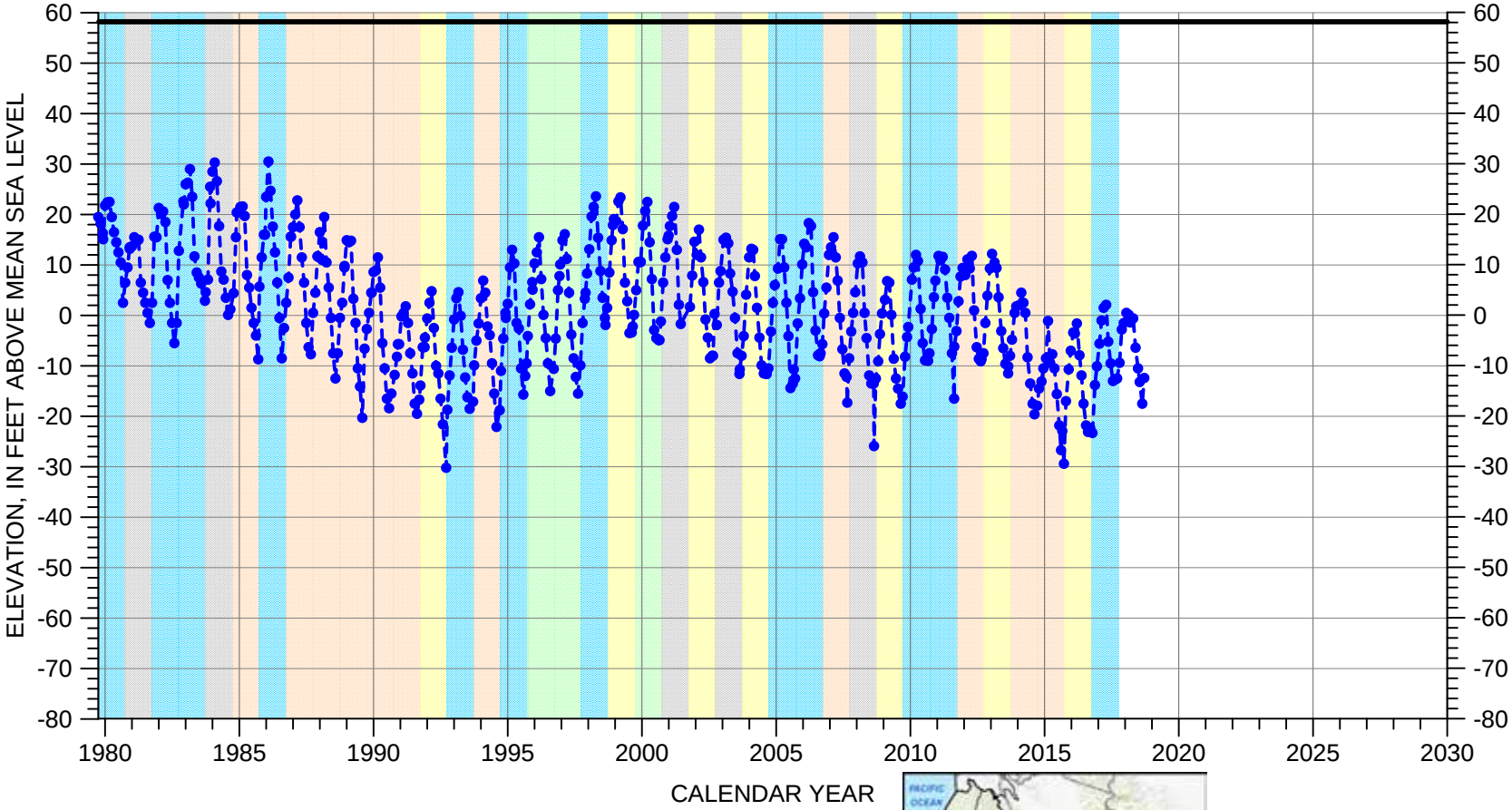
WATER YEAR TYPE DESIGNATION (MCWRA)

- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\14S_03E-30G08.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 15S/03E-16M01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

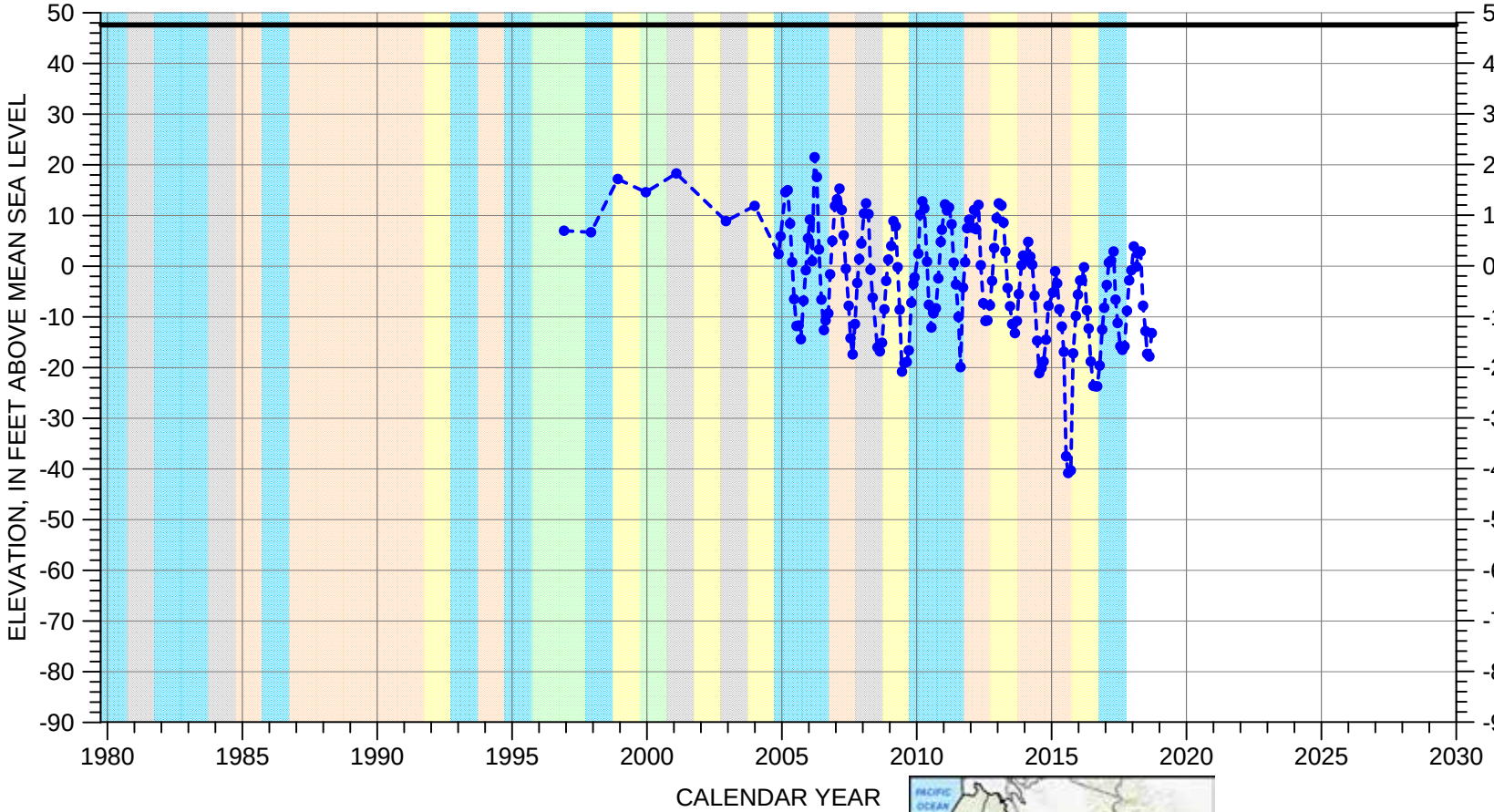
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

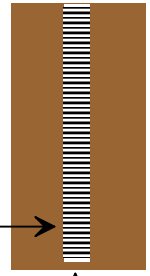
Perforated interval unknown

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY15S_03E-16M01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 15S/03E-17M01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)





Multiple perforated intervals between -80.4 and -132.4 feet msl

Well Bottom -223.4 feet msl

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY15S_03E-17M01.grf

EXPLANATION

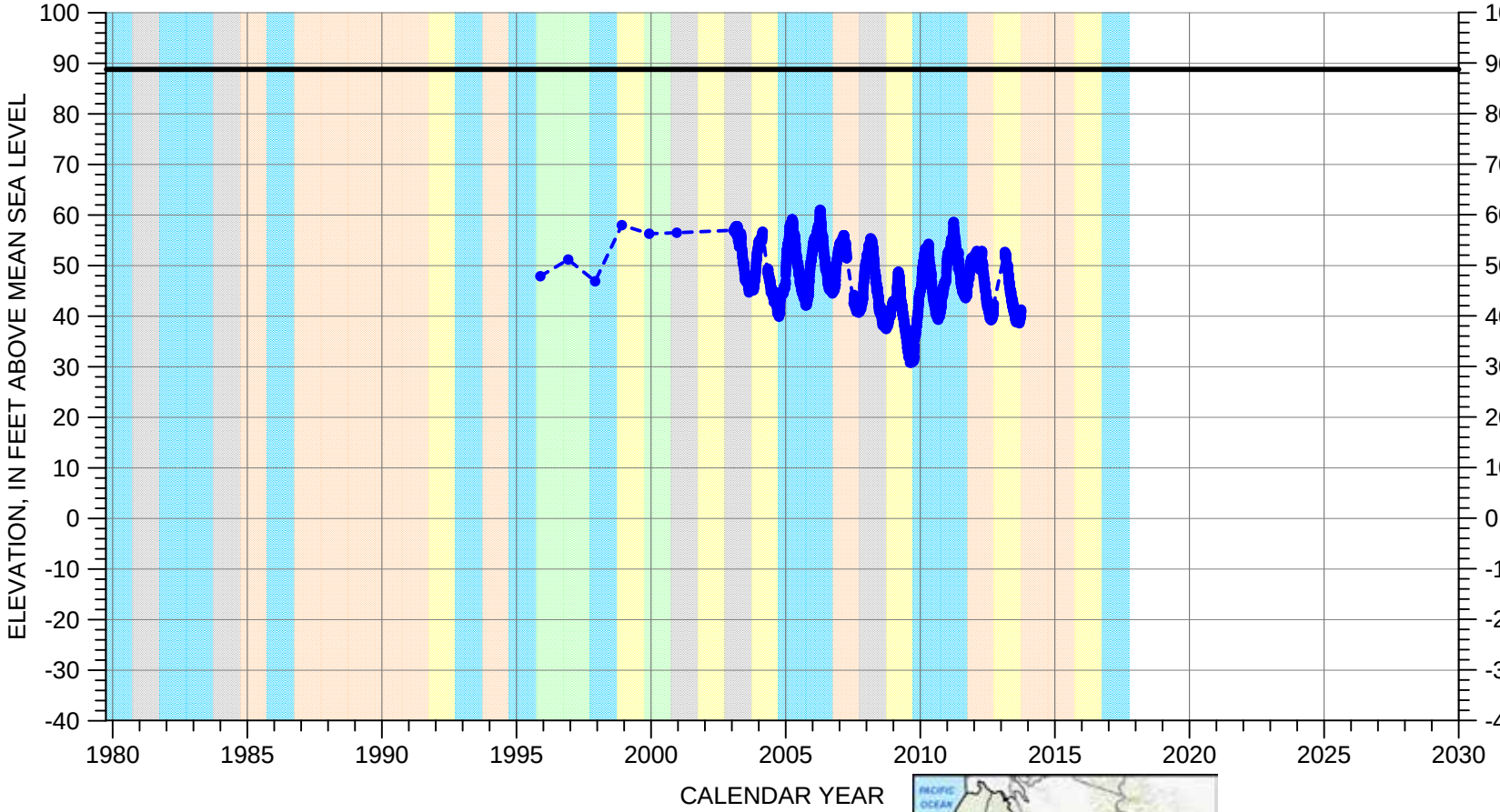
- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-08H04

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



Perforated from
3.8 to -46.2 feet msl

Well Bottom
-51.2 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

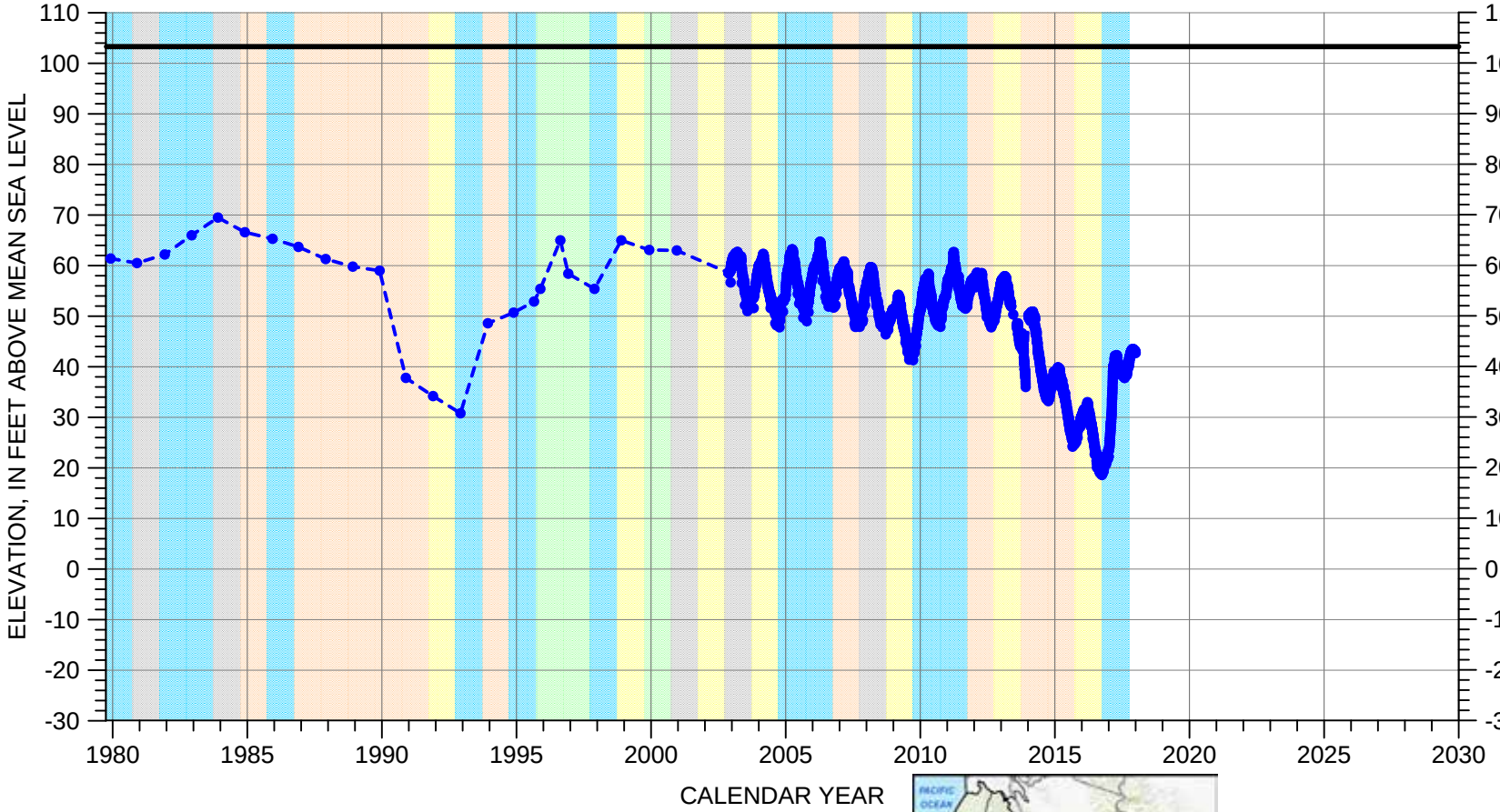
WATER YEAR TYPE DESIGNATION (MCWRA)

- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\16S_04E-08H04.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-15D01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

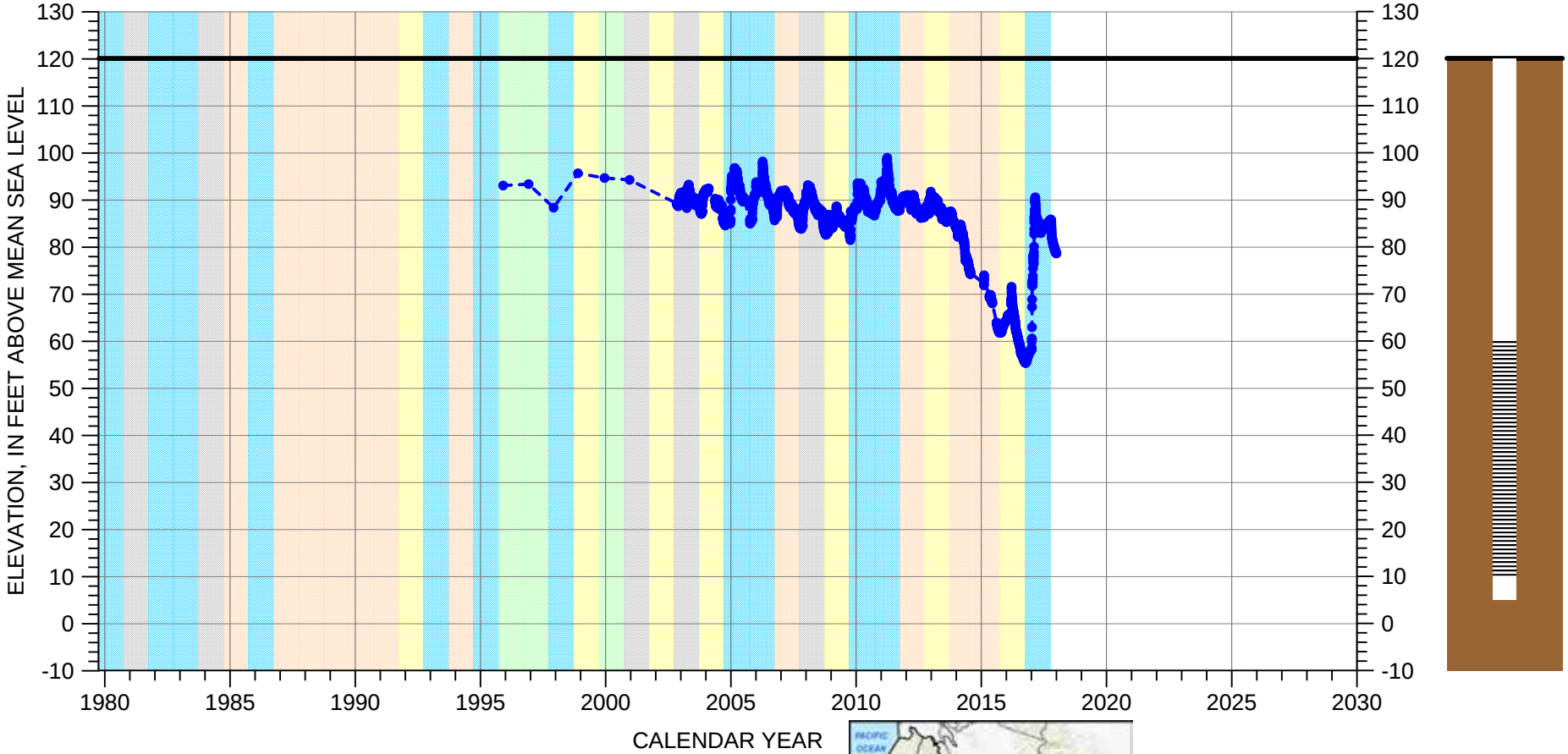
Multiple perforated intervals between -66.7 and -254.7 feet msl

Well Bottom -280.7 feet msl

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\16S_04E-15D01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 17S/05E-06C02

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

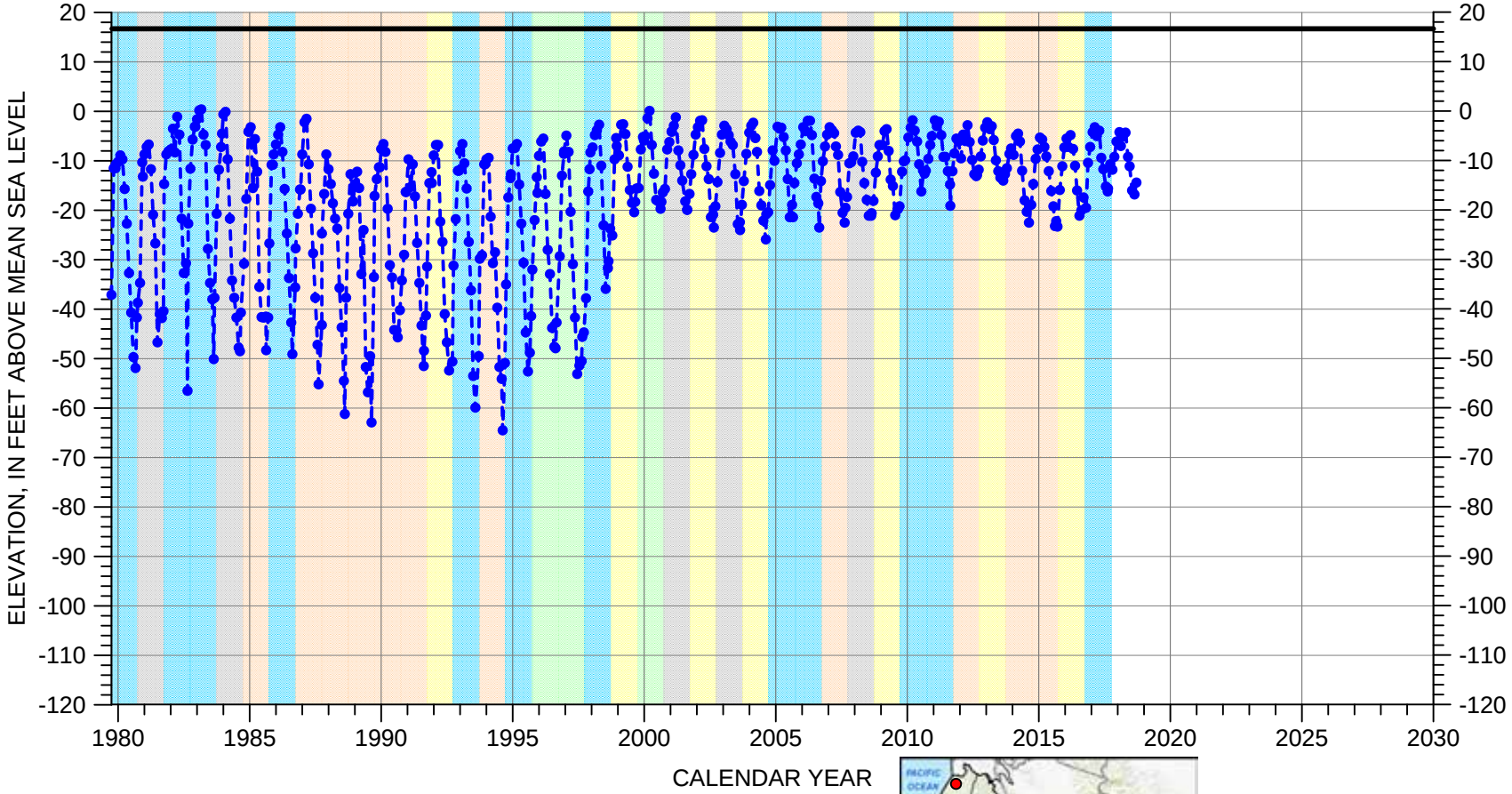
WATER YEAR TYPE DESIGNATION (MCWRA)

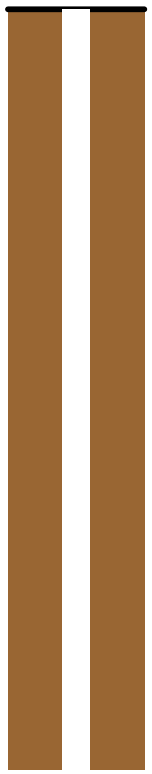
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\17S_05E-06C02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-21N01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





Perforated from
-352.3 to -533.3 feet msl

Well Bottom
-533.3 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

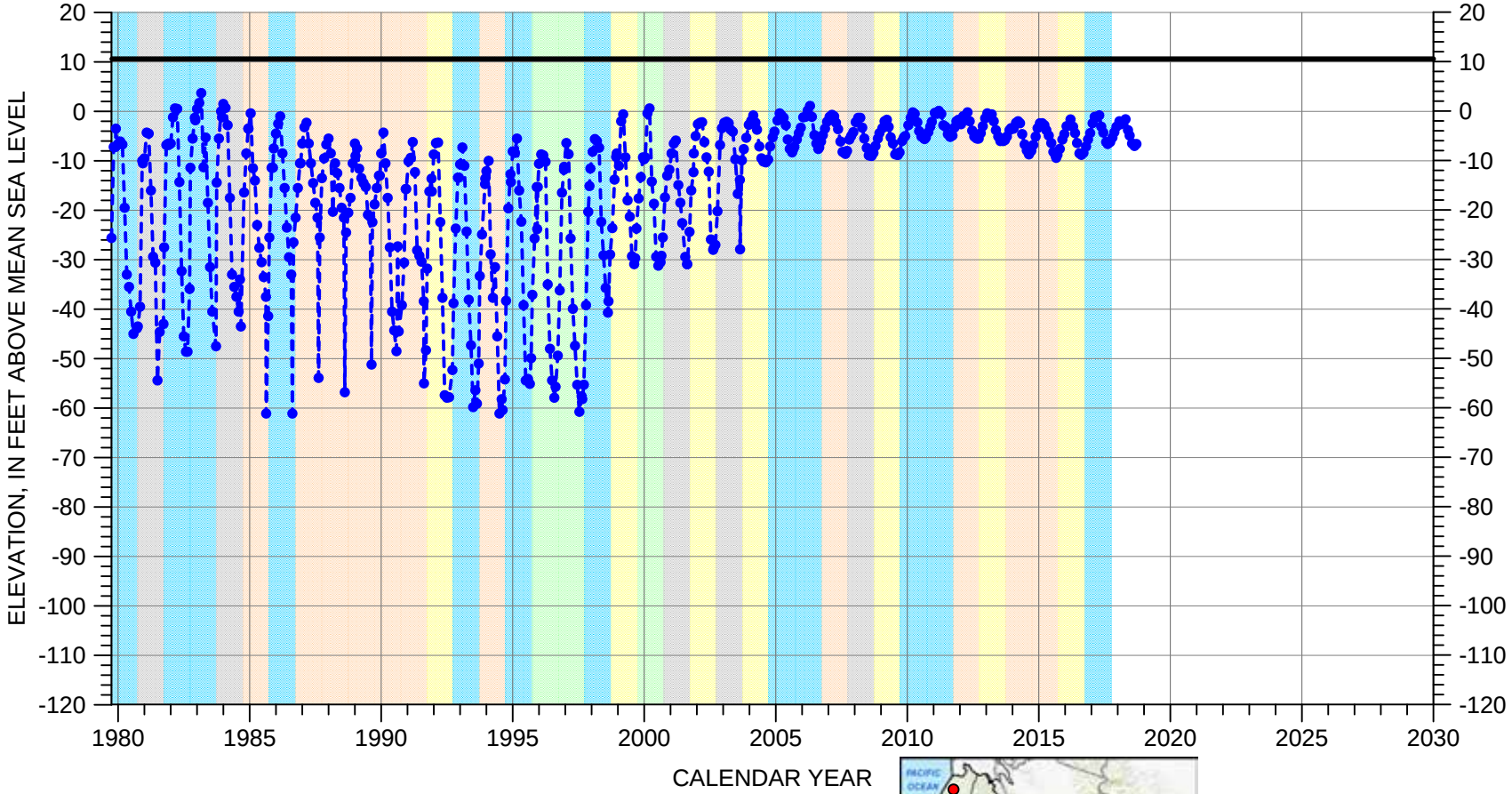
WATER YEAR TYPE DESIGNATION (MCWRA)

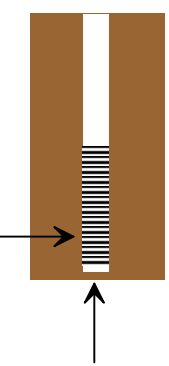
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\13S_02E-21N01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-32A02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

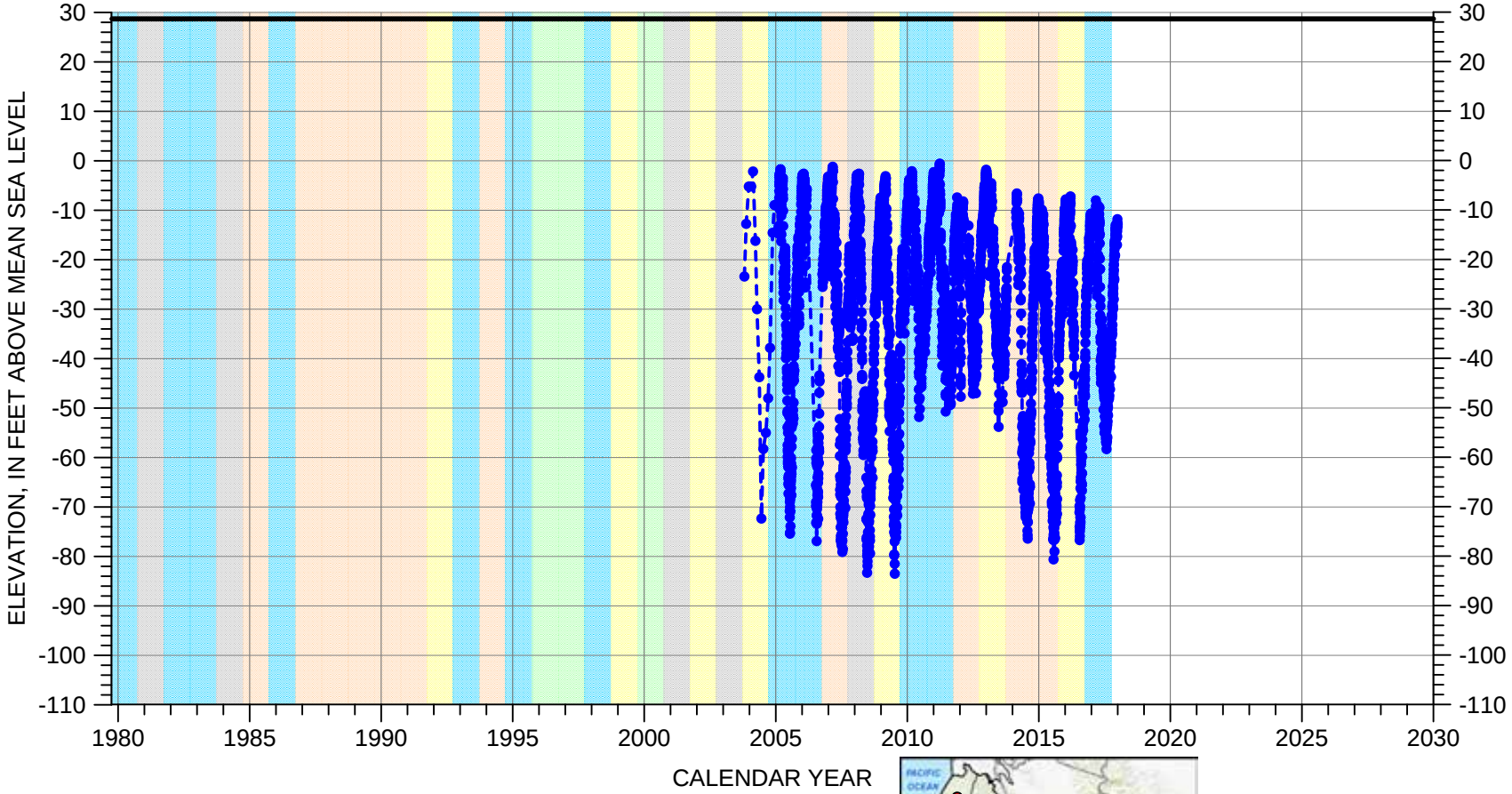
WATER YEAR TYPE DESIGNATION (MCWRA)

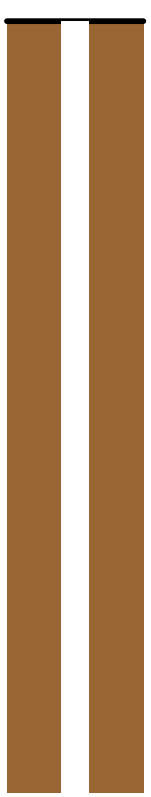
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\13S_02E-32A02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-03F03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





Perforated from
-391.3 to -421.3 feet msl

Well Bottom
-426.3 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

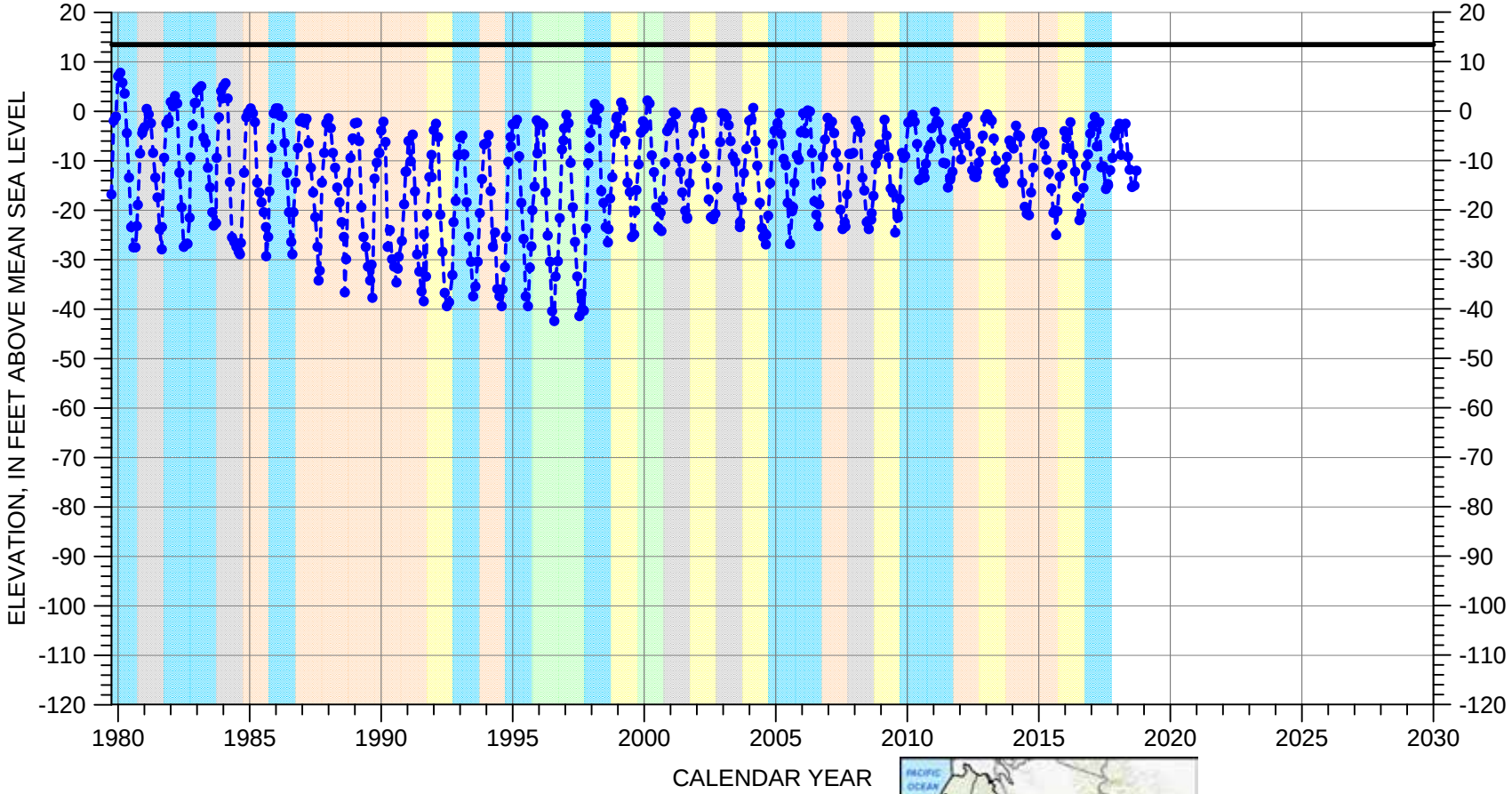
WATER YEAR TYPE DESIGNATION (MCWRA)

- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY14S_02E-03F03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-08M02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



Multiple perforated intervals between -300.5 and -442.5 feet msl

Well Bottom -486.5 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

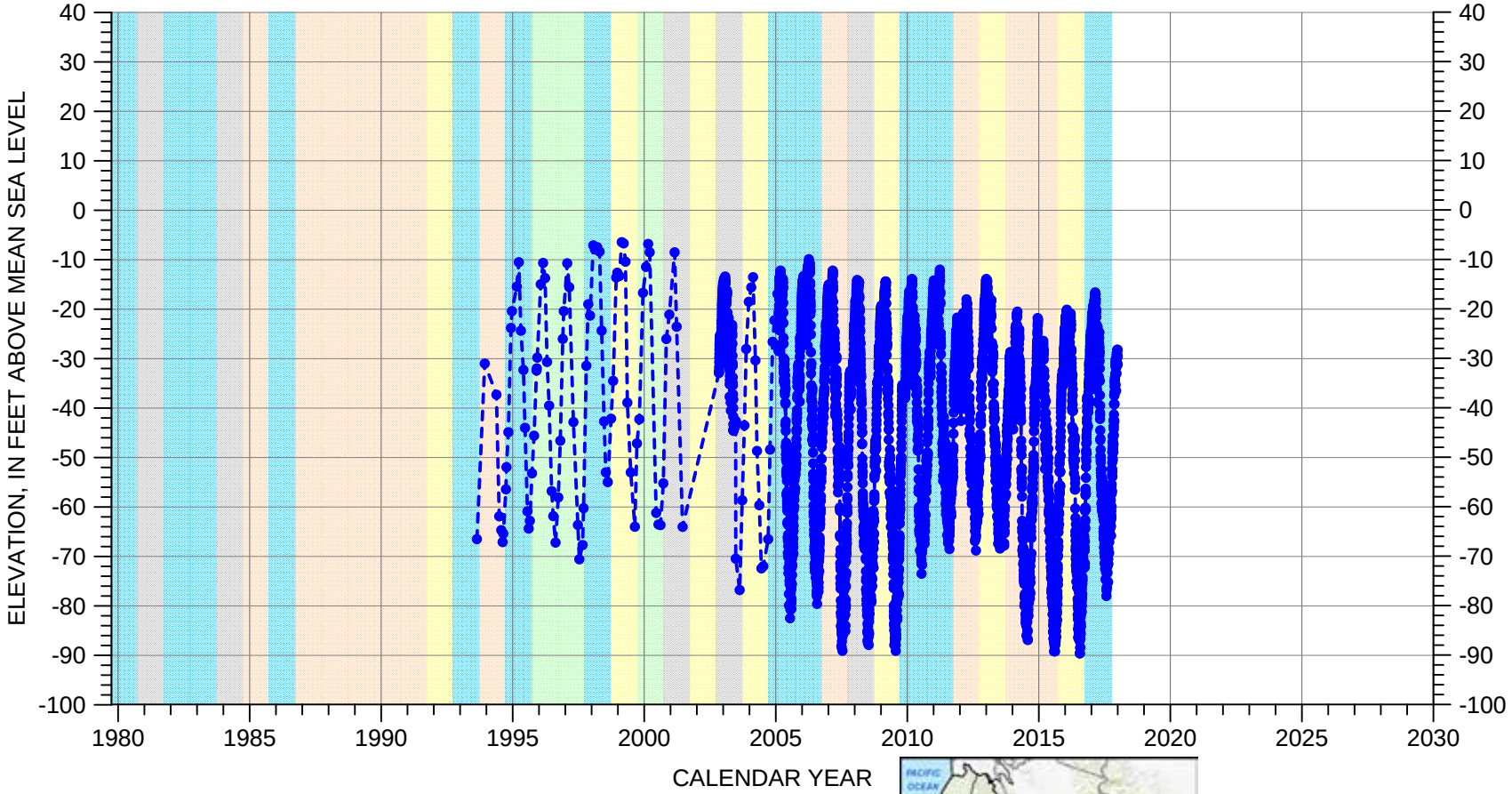
WATER YEAR TYPE DESIGNATION (MCWRA)

- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\14S_02E-08M02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-12B03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



Perforated from
-293.9 to -323.9 feet msl

Well Bottom
-333.9 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE (56.1 FT MSL)

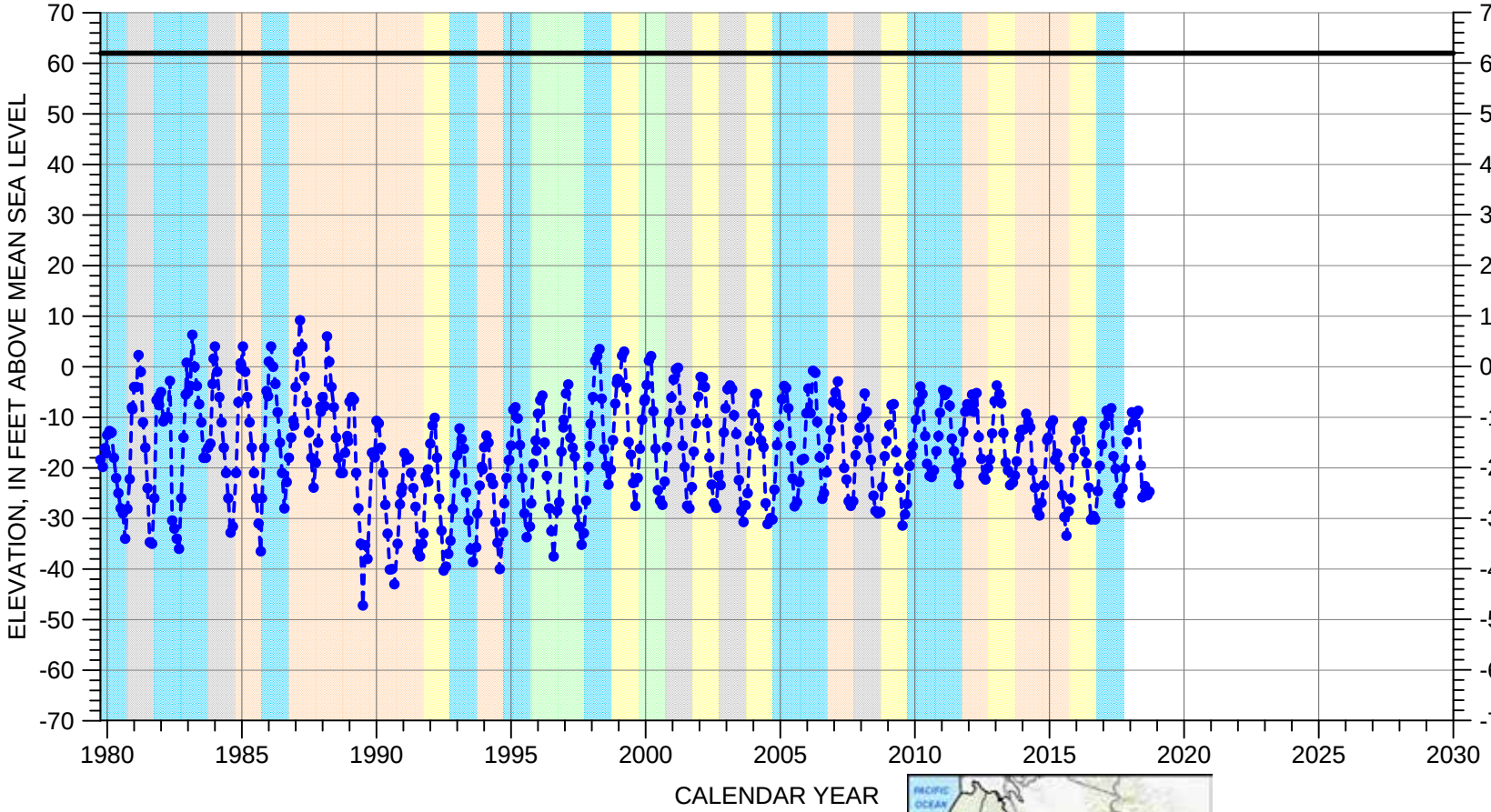
WATER YEAR TYPE DESIGNATION (MCWRA)

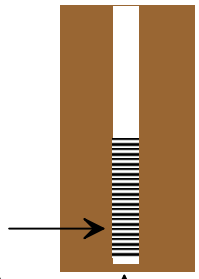
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY14S_02E-12B03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-12Q01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





Multiple perforated intervals between -211 and -230 feet msl

Well Bottom -557 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

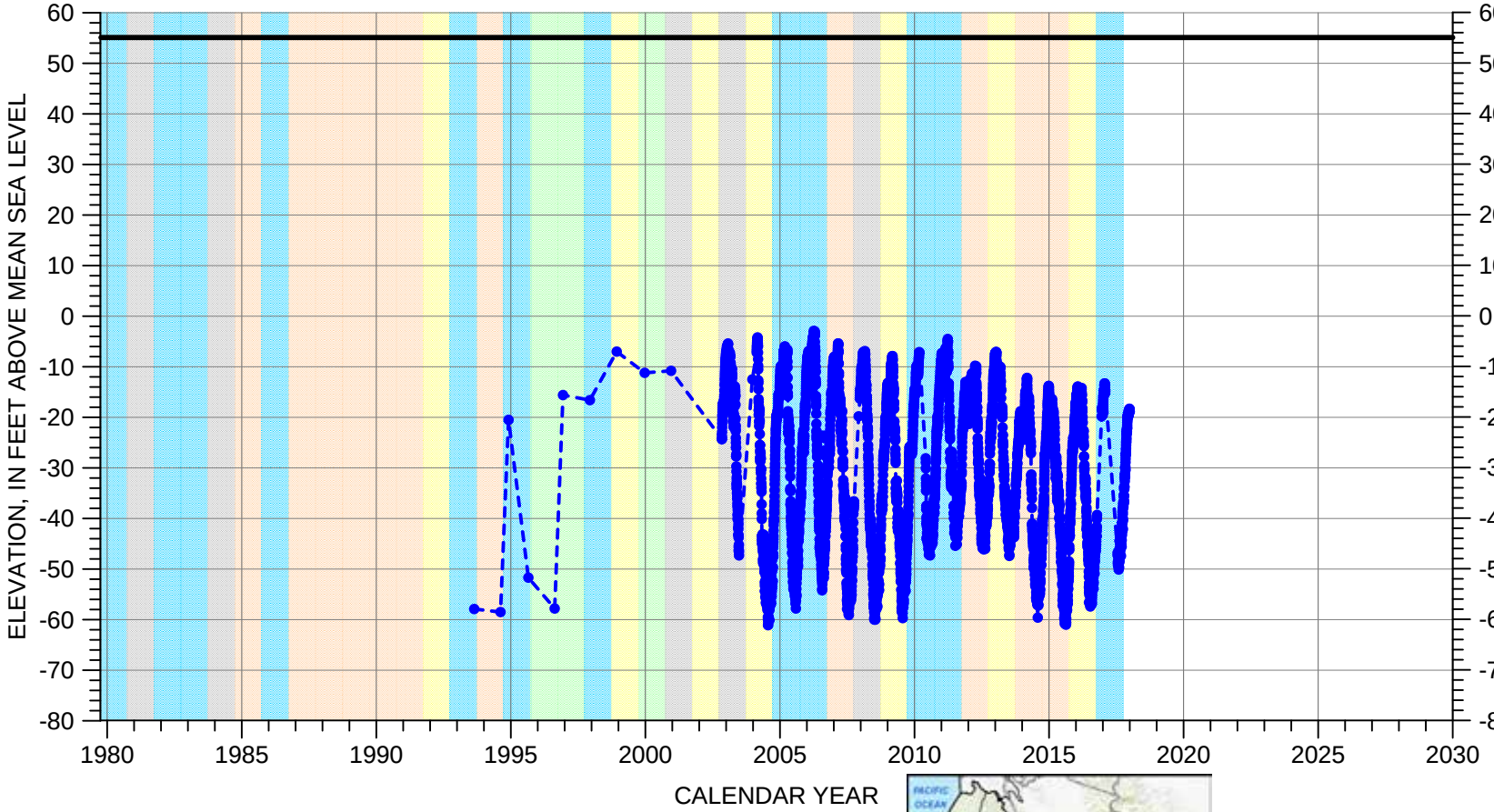
WATER YEAR TYPE DESIGNATION (MCWRA)

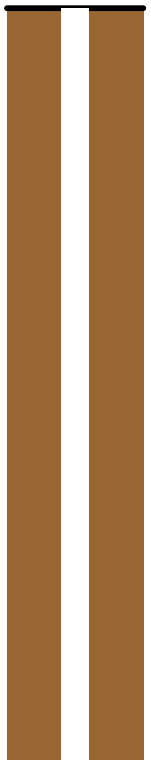
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY14S_02E-12Q01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-18C02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





Multiple perforated intervals between -214.9 and -329.9 feet msl

Well Bottom -339.9 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

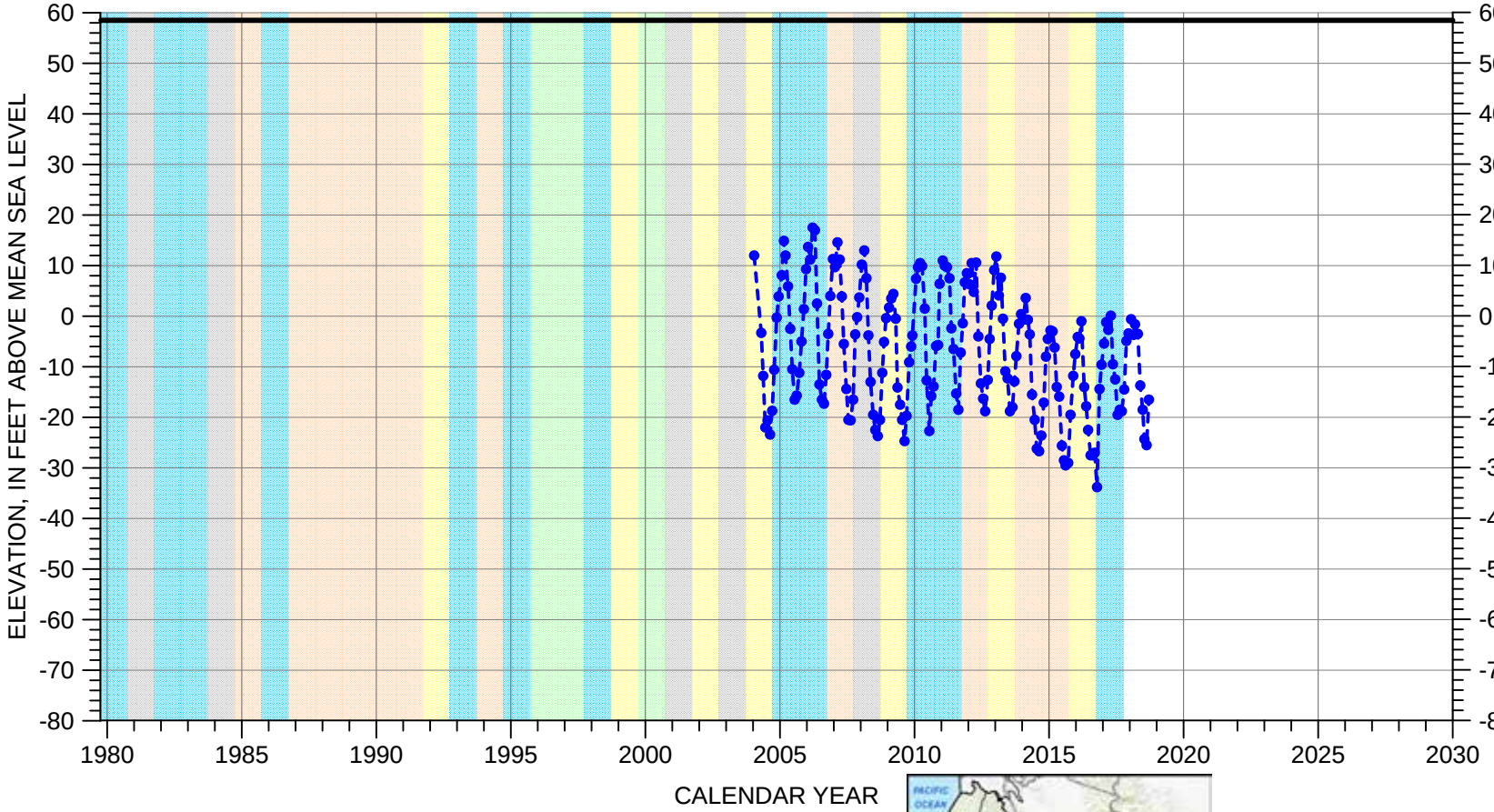
WATER YEAR TYPE DESIGNATION (MCWRA)

- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\14S_03E-18C02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 15S/03E-16F02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



Multiple perforated intervals between -368.5 and -511.5 feet msl

Well Bottom -533.5 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

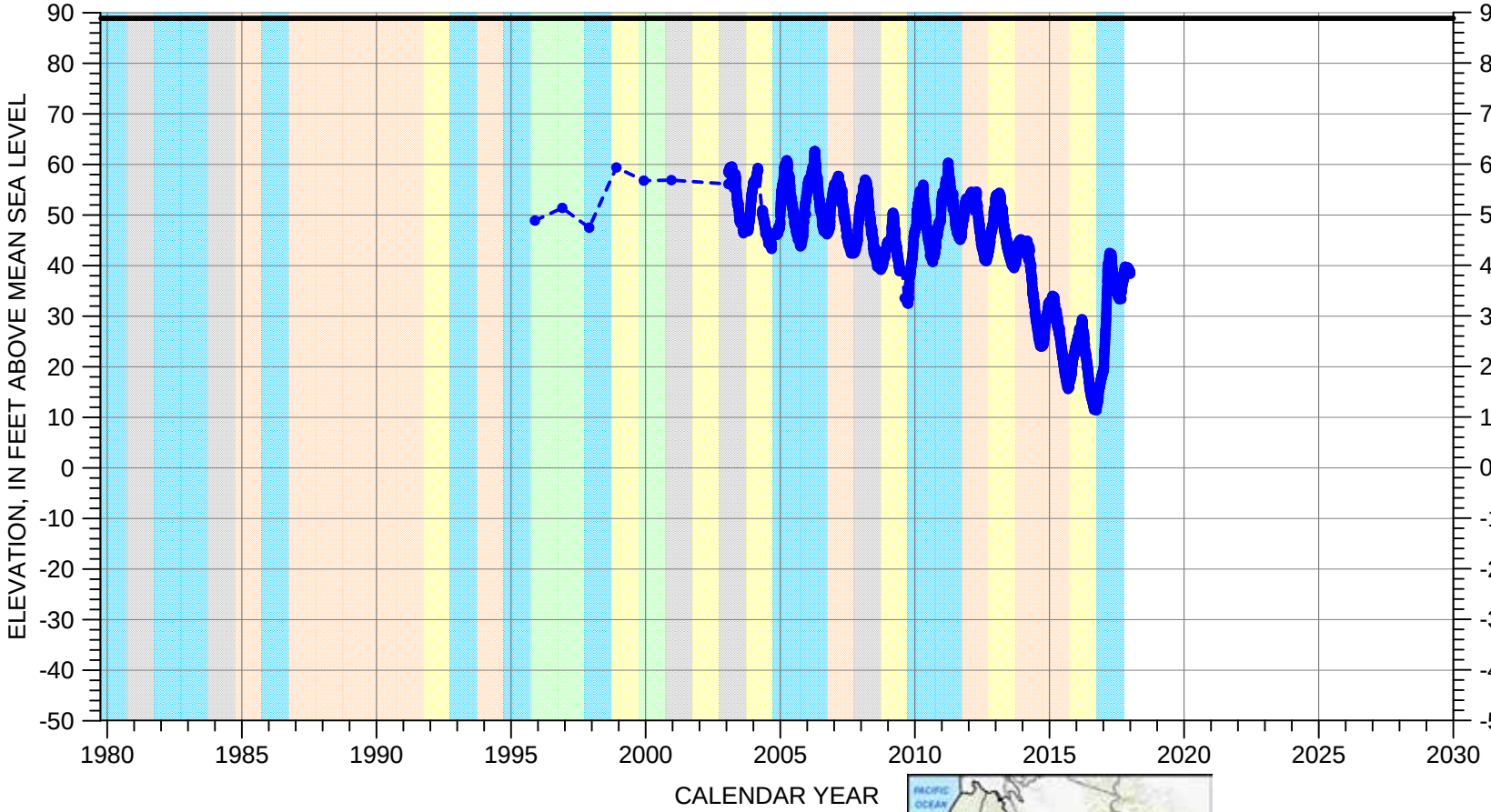
WATER YEAR TYPE DESIGNATION (MCWRA)

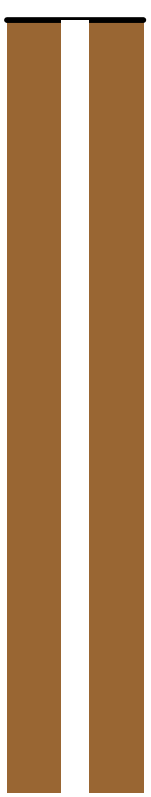
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY15S_03E-16F02.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-08H03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





Perforated from
-151.1 to -201.1 feet msl

Well Bottom
-206.1 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

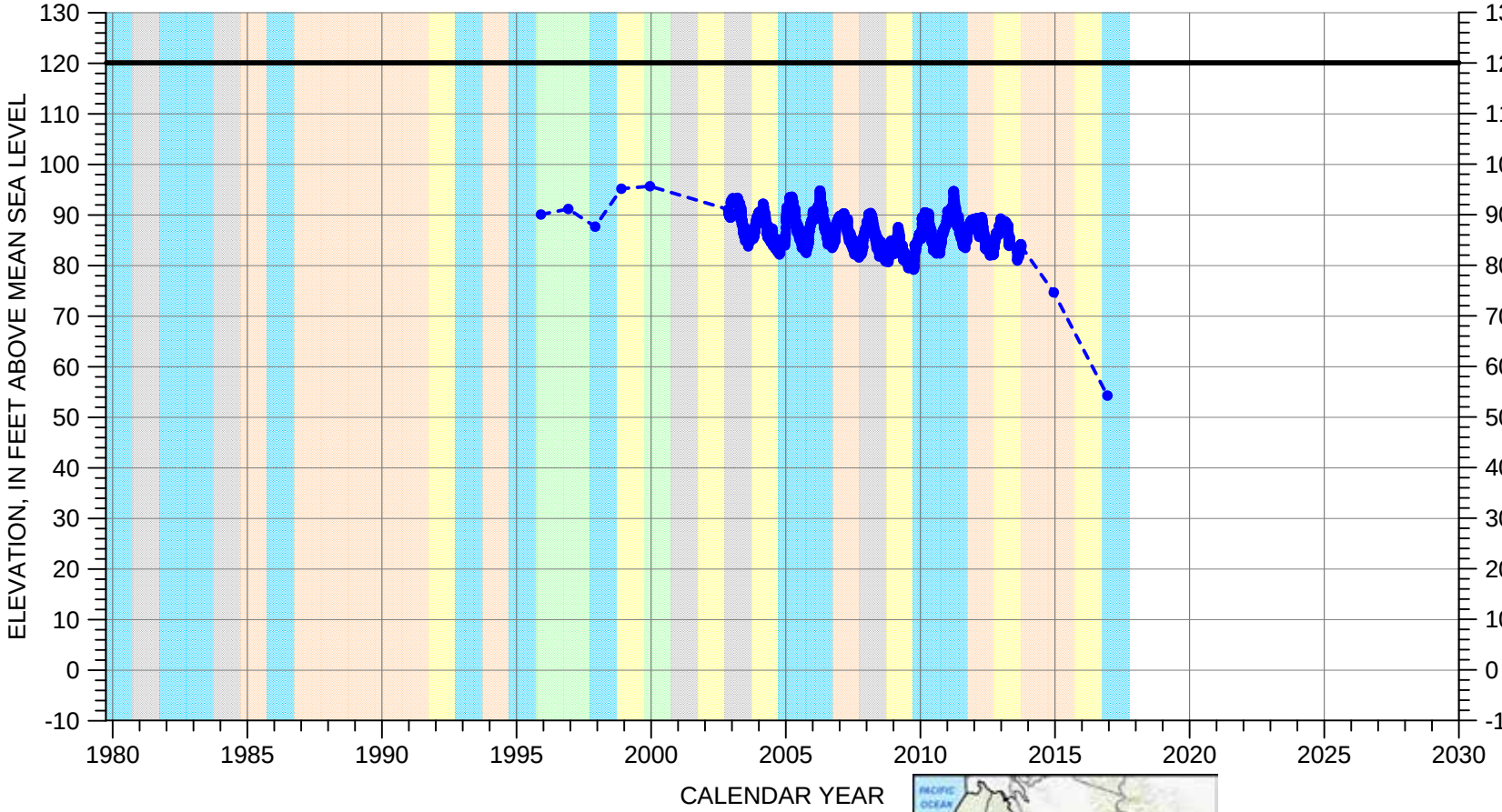
WATER YEAR TYPE DESIGNATION (MCWRA)

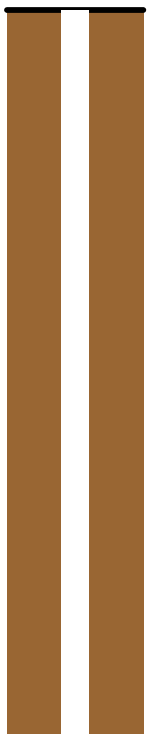
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\16S_04E-08H03.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 17S/05E-06C01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





Perforated from
-129.9 to -169.9 feet msl

Well Bottom
-179.9 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

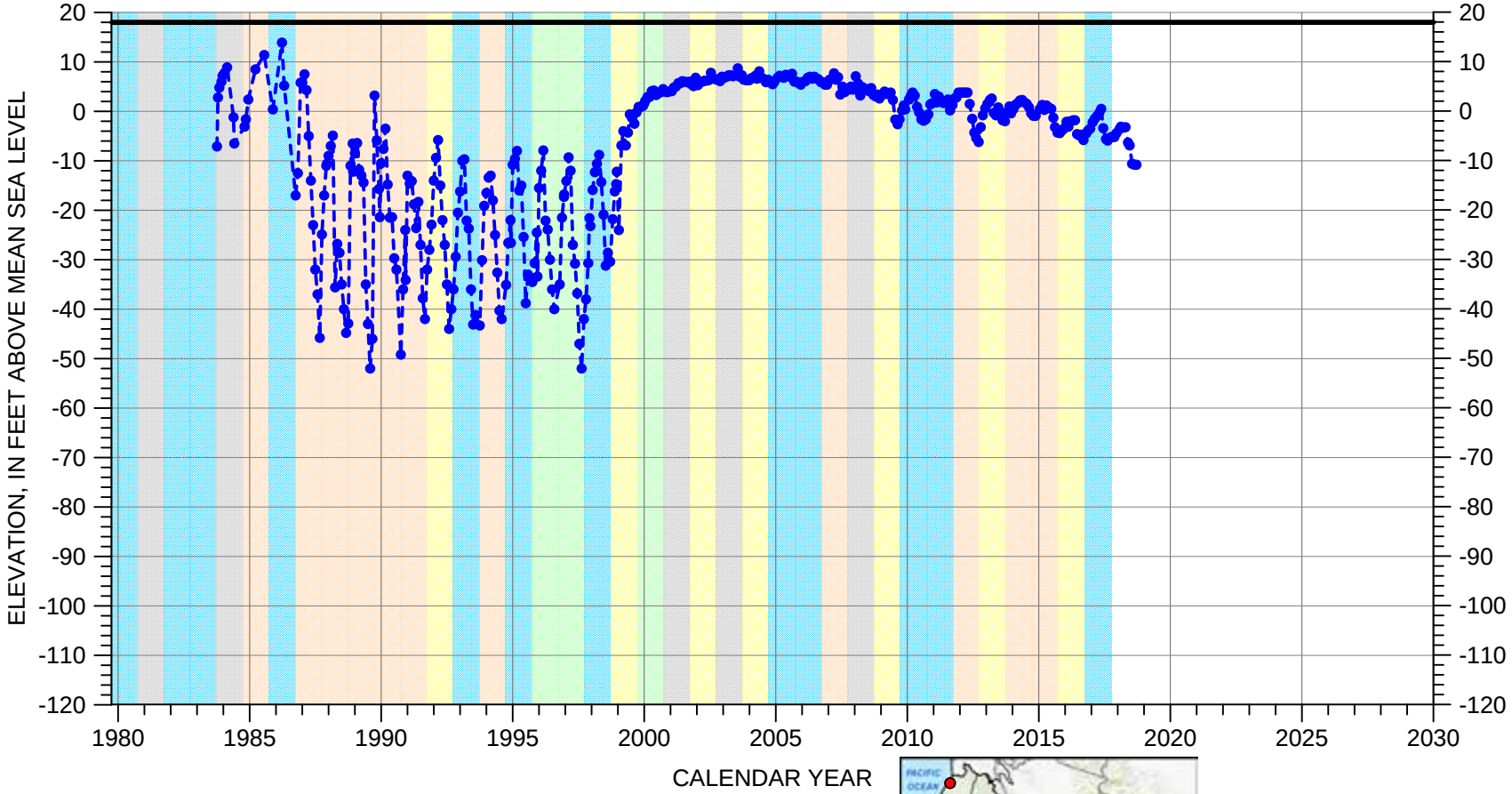
WATER YEAR TYPE DESIGNATION (MCWRA)

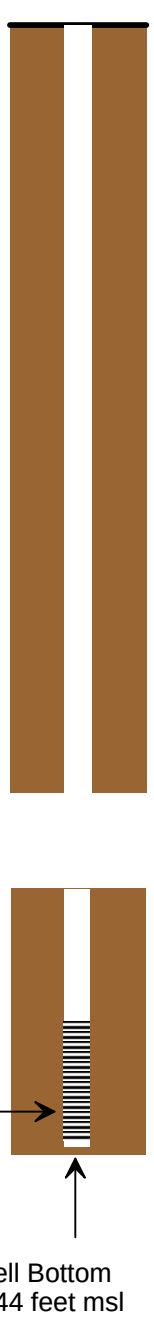
- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\17S_05E-06C01.grf

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-19Q03

180/400-Foot Aquifer Subbasin
(Deep Aquifer)





EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- LAND SURFACE

WATER YEAR TYPE DESIGNATION (MCWRA)

- DRY
- DRY - NORMAL
- NORMAL
- WET - NORMAL
- WET

S:\projects\9100_Salinas_GSP\analysis\water_levels\Hydrographs_MCWRA\SalinasDroughtIndex\grf\Ch7_MCWRA_WY\13S_02E-19Q03.grf

APPENDIX 7B

MONITORING PROCEDURES FROM MCWRA CASGEM MONITORING PLAN

4.0 Monitoring Procedures

This section addresses the various procedures and protocols involved in collecting, processing, and reporting data from wells in the CASGEM network.

4.1 Monitoring Frequency and Timing

Nineteen (19) of the CASGEM wells are currently, and will continue to be, measured on a monthly basis. The three (3) voluntary wells are also measured monthly. MCWRA will use the monthly measurements from August and either January, February, or March to satisfy the biannual CASGEM reporting criteria.

To determine the monthly distribution of seasonal high and low groundwater elevations, MCWRA analyzed measurements from approximately 50 wells throughout the Salinas Valley Groundwater Basin. This included wells in the 180/400 Foot Aquifer, East Side Aquifer, Forebay Aquifer, and Upper Valley Aquifer. The measurements were collected during eight (8) different Water Years (WY): WY 1985, representative of near normal conditions; WY 1991, representative of dry conditions; and the six most recent Water Years, WY 2009 through WY 2014. MCWRA reports this data on a quarterly basis; a sample report is included in Appendix B.

Based on this analysis of historical data, August is typically representative of seasonal low conditions (Figure 10). A relaxation of groundwater levels, or seasonal high conditions, is evident during the period from January to March (Figure 11). Data from these three months will be evaluated and the highest groundwater elevation from that series will be submitted to the CASGEM online submittal system. The month chosen to be representative of the seasonal high groundwater conditions will be consistent across all data groups.

Nineteen (19) of the CASGEM wells are equipped with pressure transducers which collect depth to water data on an hourly basis. This data will be synthesized so that biannual measurements representing seasonal high and low conditions are available for CASGEM reporting. The groundwater level measurement collected at noon on the fifteenth day of the month will be selected and compared to other monthly data to ensure that it is a representative value. Data from the month of August will be used to represent the seasonal low and a fall/winter measurement from either January, February, or March will be used to represent the seasonal high; the same month will be used as was selected based on monthly well measurements, as discussed above.

Four (4) of the wells in the CASGEM network are currently measured once per year, during the period from November to January. Based on the recent analysis of seasonal groundwater highs, this period will be shifted to cover the months from January through March. An additional measurement event will be added during the month of August for these wells in order to also capture the seasonal groundwater low.

Appendix C contains a summary of the frequency and timing of measurement of wells in the CASGEM network. Any new wells that are brought into the CASGEM program will be monitored on a

biannual basis, with data collection occurring on the same schedule as the other wells that are measured twice a year.

4.2 Well Locations

The latitude and longitude of each well was collected using a handheld GPS unit, which has accuracy to within one (1) meter. Coordinates for wells in the CASGEM network are shown in Appendix A. Any wells incorporated into the CASGEM network in the future will be geographically located using a similar method.

4.3 Reference Points

All of the wells that comprise the CASGEM network described herein are currently part of a groundwater level monitoring program conducted by MCWRA. As part of the existing monitoring programs, reference points (RP) have been established for all of the wells. To ensure consistency in measuring depth to water, a description of each well's RP is recorded in a field data collection notebook. In many cases, photographs have also been taken of the RP. Reference point elevations have been determined for all wells that are currently in a monitoring program; this data is listed in Appendix A.

A reference point will be determined for any new wells that are brought into the CASGEM network. Reference point elevations are determined using a digital elevation model from the United States Geological Survey (USGS) with a cell size of 32 feet by 32 feet.

Figure 10 – Distribution of Seasonal High Groundwater Elevations by Month

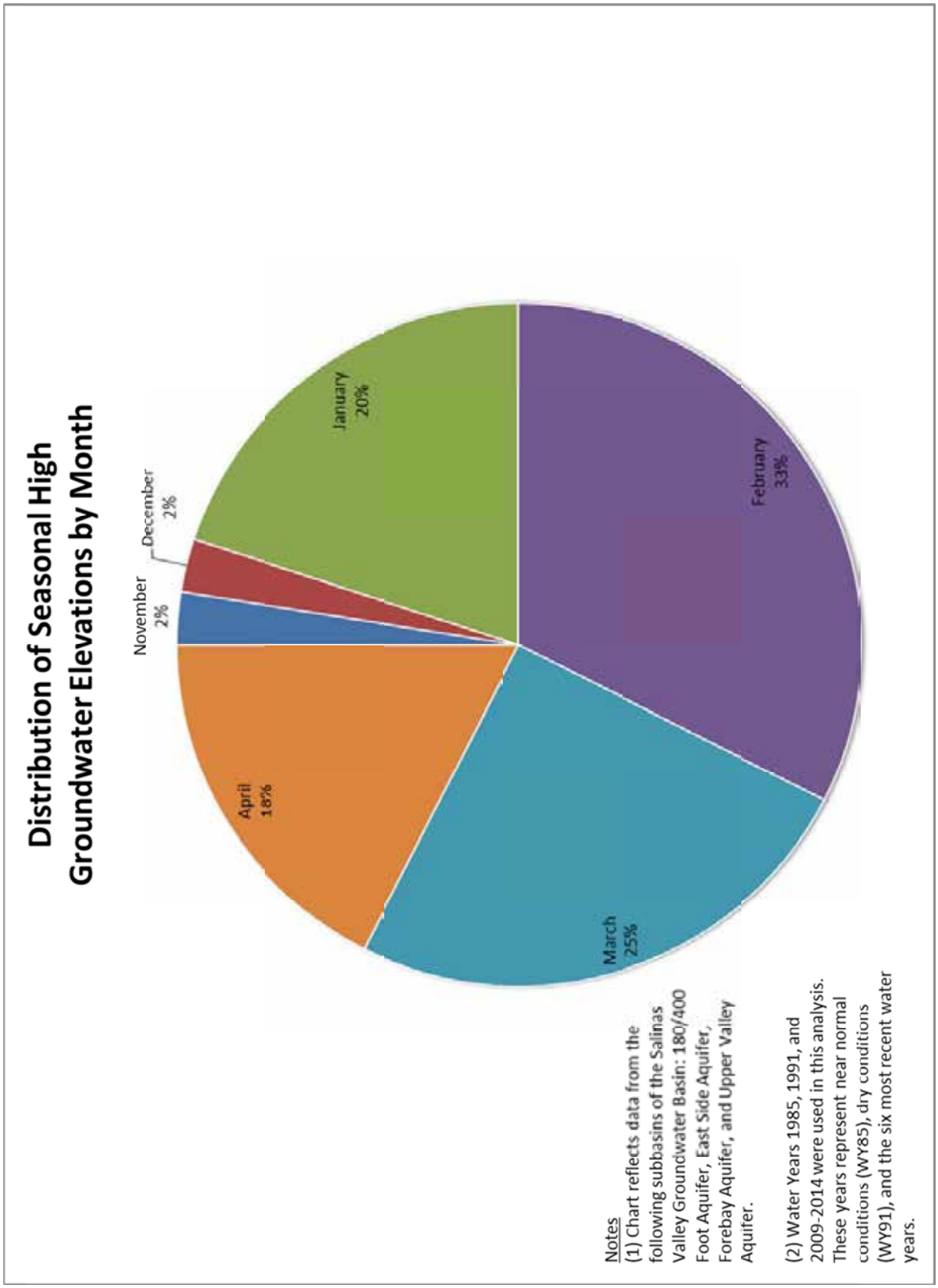
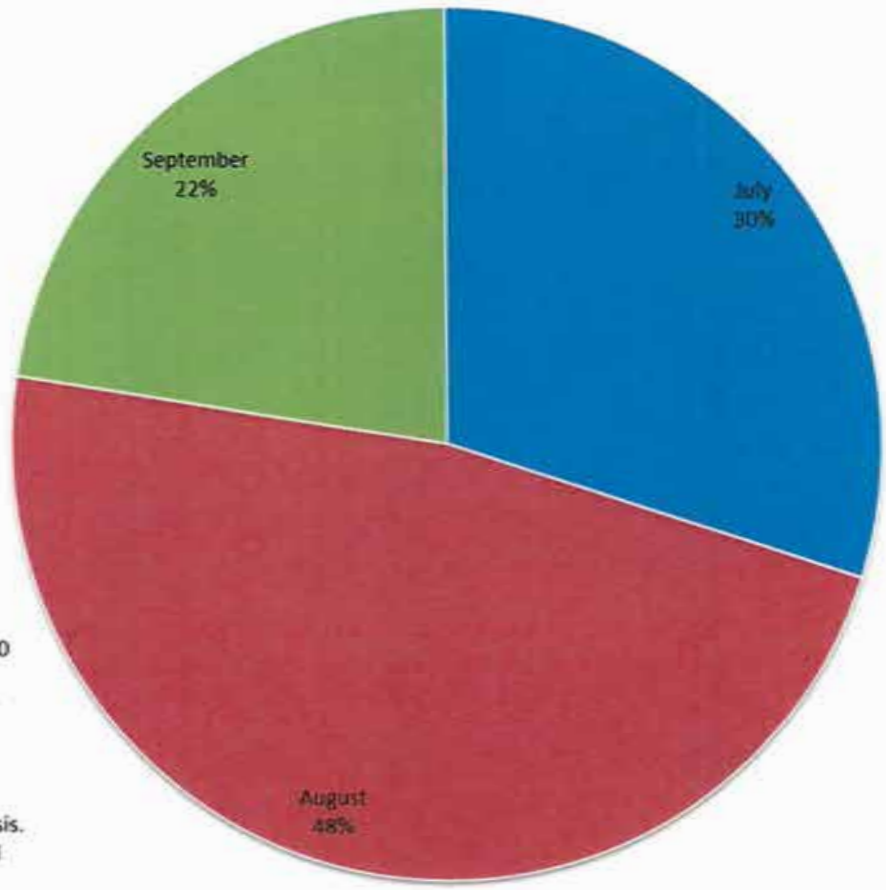


Figure 11 – Distribution of Seasonal Low Groundwater Elevations by Month



Notes
(1) Chart reflects data from the following subbasins of the Salinas Valley Groundwater Basin: 180/400 Foot Aquifer, East Side Aquifer, Forebay Aquifer, and Upper Valley Aquifer.

(2) Water Years 1985, 1991, and 2009-2014 were used in this analysis. These years represent near normal conditions (WY85), dry conditions (WY91), and the six most recent water years.

4.4 Field Methods

Groundwater elevation data collected from wells in the CASGEM network is intended to reflect static conditions. Best efforts will be made to ensure that wells have not recently been pumped prior to collecting a data point. Depth to water measurements will be made using one or more of the methods discussed in the following sections. Measurement methods described in the following sections are based on the Department of Water Resources document *Groundwater Elevation Monitoring Guidelines* (December 2010) with some alterations specific to wells in the monitored basins/subbasins described in this Monitoring Plan.

4.4.1 Graduated steel tape

Prior to measurement:

- Ensure that the reference point on the well can be clearly determined. Check notes in the field data collection notebook.
- Review the notes and comments for previous measurements in the field data collection notebook to determine if there are any unique circumstances at this well.
- Take note of whether oil has previously been present at this well; this will be recorded in the comments section of the data form.

Making a measurement:

- Use the previous depth to water measurement to estimate a length of tape that will be needed.
- Lower the tape into the well, feeling for a change in the weight of the tape, which typically indicates that either (a) the tape has reached the water surface or (b) the tape is sticking to the side of the well casing.
- Continue lowering the tape into the well until the next whole foot mark is at the reference point. This value on the tape should be recorded in the field data collection notebook.
- Bring the tape to the surface and record the number of the wetted interval to the nearest foot.
- If an oil layer is present, read the tape at the top of the oil mark to the nearest foot. Note in the comments section of the data form that oil was present.
- Repeat this procedure a second time and note any differences in measurement in the field data collection notebook.

4.4.2 Electric water level meter

This method of measurement employs a battery-powered water level meter and a small probe attached to a ruled length of cable. Depth to water measurements collected using this equipment are recorded to the nearest tenth of an inch. This instrument is sometimes referred to as a "sounder".

Prior to measurement:

- Review the field data sheet for the well and note whether oil has been present at this well in the past. The electric water level meter should not be used in wells where oil is present.
- Ensure that the reference point on the well can be clearly determined. Check notes in the field data collection notebook.
- Confirm that the water level meter is functioning and is turned on so that the beeping indicator will operate properly.

Making a measurement:

- Review previous depth to water measurements for the well to estimate the length of tape that will be needed.
- Lower the electrode into the well until the indicator sounds, showing the probe is in contact with the water surface.
- Place the tape against the reference point and read the depth to water to the nearest 0.1 foot. Record this value on the field data sheet.
- Make a second measurement and note any differences in measurement in the field data collection notebook.

4.4.3 Sonic water level meter

This meter uses sound waves to measure the depth to water in a well. The meter must be adjusted to the air temperature outside the well; there is a card with reference temperatures in the case with the sonic meter.

Making a measurement:

- Insert the meter probe into the access port and push the power-on switch. Record the depth from the readout.
- Record the depth to water measurement in the field data collection notebook.

4.4.4 Pressure transducer

Automated water-level measurements are made with a pressure transducer attached to a data logger. Pressure transducers are lowered to a depth below the water level in the well and fastened to the well head at a reference point. Data points are logged on an hourly basis. MCWRA uses factory-calibrated, vented pressure transducers (Appendix D). MCWRA staff collects the pressure transducer data once per quarter. During the data collection process, data loggers are stopped, and the data is downloaded onto a laptop, and then the data logger is reactivated and scheduled to begin collecting data again on the next hour. Upon return from the field, data is processed and reviewed for errors.

4.5 Data Collection, Processing, and Reporting

Following completion of all fieldwork, data is transcribed from field data sheets and checked for errors before being loaded into MCWRA's Oracle platform database. All data will be stored in the MCWRA database before being uploaded to the CASGEM website. Submittal of data to the CASGEM website will occur at a minimum of twice per year, no later than January 1 and July 1, per DWR CASGEM program guidelines.

Bi-annual submittal of data to the CASGEM website will include the following for each well in the CASGEM network, as described in the DWR document *CASGEM Procedures for Monitoring Entity Reporting*:

- Well identification number
- Measurement date
- Reference point and land surface elevation, in feet, using NAVD88 vertical datum
- Depth to water, in feet
- Method of measuring water depth
- Measurement quality codes
- Measuring agency identification
- Comments about measurement, if applicable

The following information will also be submitted to the CASGEM online system, as it is required by DWR unless otherwise noted:

- Monitoring Entity name, address, telephone number, contact person name and email address, and any other relevant contact information
- Groundwater basins being monitored (both entire and partial basins)
- State Well Identification number (recommended)
- Decimal latitude/longitude coordinates of well (NAD83)
- Groundwater basin or subbasin
- Reference point elevation of the well, in feet, using NAVD88 vertical datum
- Elevation of land surface datum at the well, in fee, using NAVD88 vertical datum
- Use of well
- Well completion type (e.g. single well, nested well, or multi-completion well)
- Depth of screened interval(s) and total depth of well, in feet, if available
- Well Completion Report number (DWR Form 188), if available

APPENDIX 7C

MONTEREY COUNTY QUALITY ASSURANCE PROJECT PLAN (QAPP)

Quality Assurance Project Plan (QAPP)
For
Water Quality Monitoring
Associated with the Salinas Valley Integrated Water Management Plan (SVIWMP)

EPA R9#03-238
X-97994701-0

Monterey County Water Resources Agency
P.O. Box 930
Salinas, CA 93902
Telephone: (831) 755-4860
Fax: (831) 424-7935
Website: http://www.mcwra.co.monterey.ca.us

WATR 584 GV4 (COPY 2)

1.0 PROJECT MANAGEMENT

1.1 TITLE AND APPROVAL PAGE

Quality Assurance Project Plan
For
Water Quality Monitoring Associated with
The Salinas Valley Integrated Water Management Plan (SVIWMP)
EPA R9#03-238
X-97994701-0

Prepared by:
Monterey County Water Resources Agency (MCWRA)
P.O. Box 930
Salinas, CA 93902

Prepared for:
US EPA Region 9
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Date:

Mark Kutnink
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22 Oct 2007
Date:

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D-2 Specific Conductance
D-3 pH
D-4 Total Alkalinity
D-5 Metals
D-6 Anions

1.3 DISTRIBUTION LIST

The following is a list of organizations and persons who will receive copies of the approved QA Project Plan and any subsequent revisions:

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1.4 PROJECT/TASK ORGANIZATION

The organization responsible for overseeing this ground water monitoring program is the Monterey County Water Resources Agency (Agency). This project is funded through a grant from the Environmental Protection Agency (EPA), under the authority of Section §104 (b)(3) of the Clean Water Act. This project falls under the Monitoring and Assessment funding category. The Monterey County Health Department's Consolidated Chemistry Laboratory is a California state certified laboratory that will perform the chemical analyses for this ground water monitoring program. The laboratory will use standard analytical methods.

The roles and responsibilities of those involved in the implementation of the ground water monitoring program are described below. An organizational chart for the program is shown below.

Project Manager is the responsible official who will oversee the preparation of grants and the fiscal management of the project.

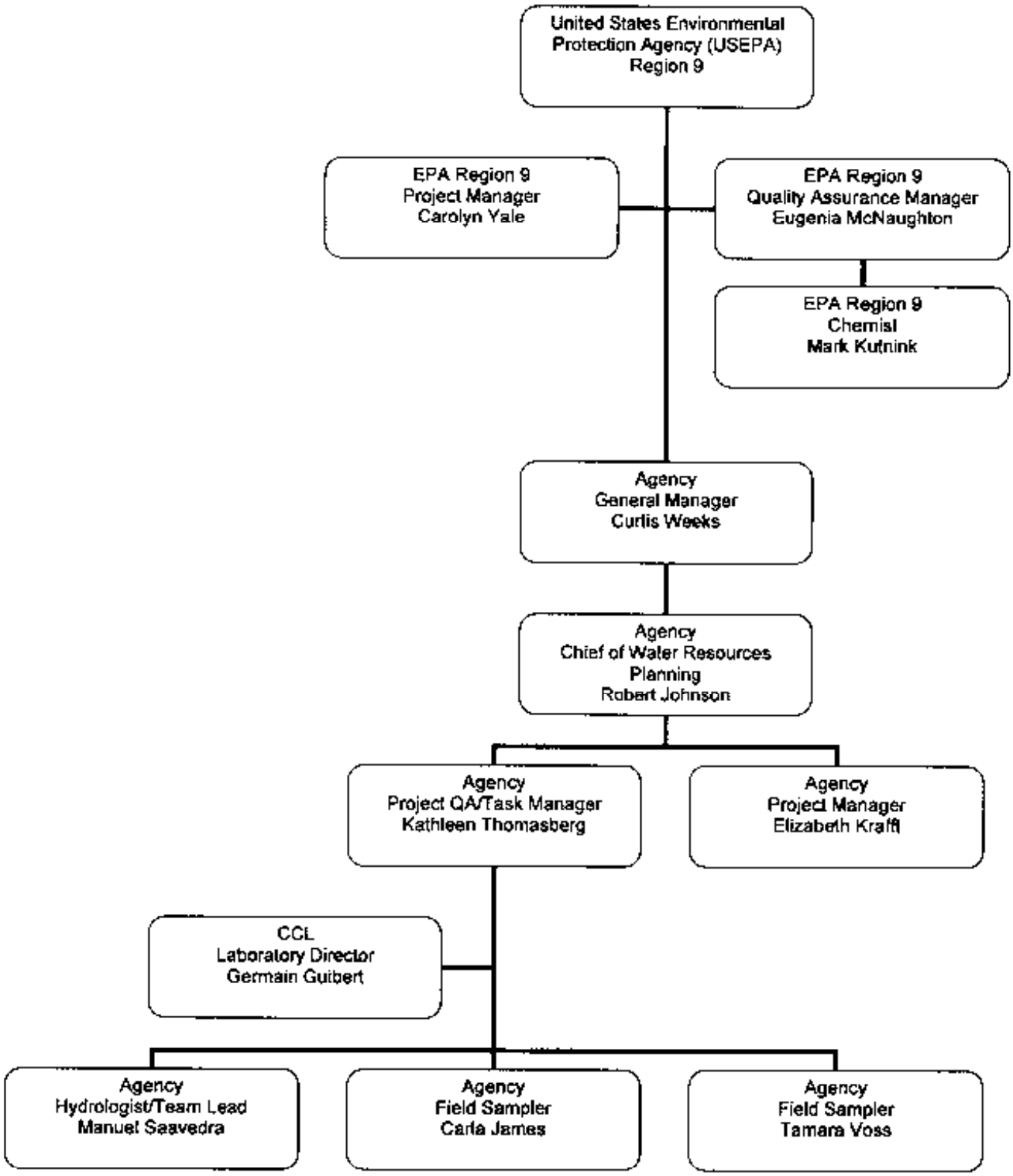
Project QA Manager is in charge of establishing the QA/QC protocols found in the QAPP as part of the sampling and analysis procedures. The QA Manager will also review and assess all analytical data from the contract laboratory and will be the liaison regarding data quality issues and concerns. She may stop all actions, including those conducted by the contract laboratory and will be responsible for ensuring that any amended versions of the QAPP are distributed to the organizations and individuals listed in Section 1.3.

Project Task Manager will oversee the ground water monitoring program. She will ensure that all QAPP protocols are followed and will oversee the writing and revisions of the QAPP. Since the Agency's Water Quality Department is not large, the Project Task Manager will function in the dual role of Task Manager and QA Manager.

Hydrologist/Team Lead will be responsible for coordinating with the Water Resources Technicians/ Field Samplers to review field and analytical requirements, documentation, and sampling schedules.

Water Resources Technicians/Field Samplers will be responsible for sample collection and communication with the contract laboratory regarding the sampling shipment schedule. They are also responsible for writing the QAPP.

ORGANIZATIONAL CHART



1.5 PROBLEM DEFINITION/BACKGROUND

1.5.1 Background

The Monterey County Water Resources Agency's (Agency) mission is to manage, protect, and enhance the quantity and quality of water for present and future generations of Monterey County (County). Monterey County, located along the California Central Coast, covers 3,322 square miles (8604 km^2) and has a resident population of 424,842 (Fact Finder, 2007). The County supports a $3.4 billion agricultural industry (Ag Commission, 2006) and a $1.75 billion tourism industry (EPA Grant R9#03-238). The primary land use within the Salinas Valley is agricultural. Since the 1940's, irrigated acreage within the valley has increased substantially. Coastal regions of California are subject to rapid urbanization, and the milder coastal climate supports year-round intensive cultivation of many high-value crops (Hunt et al, 2003). As agricultural and urban areas have expanded, so have the water needs of the County (EPA Grant R9#03-238).

The Agency uses a network of wells to monitor ground water conditions in the Salinas Valley Ground Water Basin (Basin) (Geomatrix, 2001). The Basin is situated entirely within the County (EPA Grant R9#03-238). The Salinas Valley is surrounded by the Gabilan and Diablo Ranges on the east, by the Sierra de Salinas and Santa Lucia Range on the west, and is drained by the Salinas River, which empties into Monterey Bay in the north (DWR 1946a) (Fig 1). Four subareas based on differences in local hydrogeology and recharge have been identified (White Paper, 1995; DWR, 2003). These are known as the Pressure, East Side, Forebay, and Upper Valley subareas (Fig 2). These subareas are hydrologically and hydraulically connected (EPA Grant R9#03-238); all information collected to date indicates there are no barriers to the horizontal flow (of ground water) between these subareas (White Paper, 1995). The "boundaries" between these subareas have been identified as zones of transition between different depositional environments in past millennia (White Paper, 1995).

The primary surface water features overlying and influencing the Basin's hydrology are the Salinas River and its tributaries, the Nacimiento and San Antonio reservoirs, and the Monterey Bay (EPA Grant R9#03-238). The Salinas River extends approximately 120 miles from the river's headwaters in San Luis Obispo County, near Santa Margarita, and flows north/northwest and discharges into the Monterey Bay National Marine Sanctuary near Moss Landing in Monterey County (EPA Grant R9#03-238). The Nacimiento and San Antonio reservoirs, located in the upper watershed, serve as storage and flood control for the Basin.

Ground water recharge in Salinas Valley is principally from infiltration from the Salinas River, Arroyo Seco Cone, and to a much lesser extent, from deep percolation of rainfall (White Paper, 1995). Deep percolation of applied irrigation water is the second largest component of the ground water budget, but because it represents recirculation of existing ground water rather than an inflow of "new" water, it is not considered a source of recharge (White Paper, 1995). Nitrate contamination of ground water poses a significant threat to the beneficial use of ground water for drinking water and for some agricultural water uses (White Paper, 1995). Nitrate concentrations exceed drinking water standards in some parts of the Basin (MCWRA, 1997). The principal source of nitrates to ground water is almost certainly excess fertilizer that is leached by rainfall and applied irrigation water (White Paper, 1995).

Seawater intrusion is another source of inflow to the Basin, but because it is not usable freshwater it is also excluded as a source of recharge (White Paper, 1995). Historically, ground water flowed from subareas to the south and east through the (Pressure) and seaward to discharge zones in the walls of the submarine canyon in Monterey Bay (Durbin et al 1978; Greene 1970). Within the Pressure subarea, due to the impermeable nature of the clay aquitard above the 180-Foot Aquifer,

recharge from precipitation, agricultural return flows, or river flow is nil (DWR, 2003). Instead, recharge is from underflow originating in Upper Valley areas such as the Arroyo Seco Cone and Salinas River bed or the East Side subarea, and more recently, from seawater intrusion (DWR, 2003). Heavy pumping of the Pressure-180 Foot and Pressure-400 Foot aquifers has caused significant seawater intrusion into both of these aquifers, which was first documented in the1930's (DWR 1946a). Ground water flow in the northernmost area of the Pressure subarea has been directed from the Monterey Bay inland since this time (DWR, 2003). With increased pumping in the East Side subarea since the 1970's, ground water flow is dominantly northeast in the Pressure's central and southern locations (DWR, 2003).

Declining ground water levels in the Pressure and East Side subareas, Basin overdraft, ground water contamination, including nitrate and seawater intrusion are serious concerns for the Agency. (EPA Grant R9#03-238)

1.5.2 Program Objectives

The Agency is charged with management of the Basin's ground water resources. Much of the Agency's investigative work pertaining to the occurrence and use of ground water is to identify the quality, quantity, and temporal trends of ground water resources within the County. A network of monitoring wells provides the information needed to manage and protect ground water resources and sustain beneficial uses. In order for the Agency to develop projects to mitigate problems, such as seawater intrusion, local ground water overdraft, and high nitrate concentrations, the Agency must first implement an effective and accurate monitoring program to identify the extent of the potential problem.

The Ground Water Quality Monitoring Objectives are:
-continued monitoring of the ambient ground water quality, including general minerals
-continued monitoring of coastal aquifers (including Pressure Deep Aquifer) for detection of advancing seawater intrusion
-continued monitoring to determine distribution of conductivity in ground water
-continued monitoring to determine distribution of nitrate in ground water and identification of problem areas

Ambient ground water quality will be used to establish a cohesive and succinct Water Quality Management Plan in accordance to the work begun under EPA-I and continued under EPA-II. For the purposes of this QAPP, the EPA-I grant has funded the Agency to develop this QAPP. The EPA-II grant is funding the Agency to implement the sampling described in the QAPP.

1.5.3 Program Goals

The ground water monitoring objectives in the Salinas Valley will be met by the goal of sampling all 344 wells located throughout the four subareas within the Salinas Valley Ground Water Basin, during the 2007 summer field season.

The ground water monitoring objectives along the coast, specifically located within the Pressure subarea will be met by the goal of sampling all 85 monitoring wells, during the 2007 summer field season.

The Agency's overarching goal for this program is the continued monitoring of the Basin's ambient ground water for use in the management of this important resource, and *not* for the purpose of regulatory control.

1.6 PROJECT/TASK DESCRIPTION

1.6.1 Work Statement and Produced Products

The Salinas Valley Ground Water monitoring will sample 344 wells located throughout the Salinas Valley Ground Water Basin for ten constituents (Table 1). Each well will be sampled once. Samples will be collected during the 2007 summer agricultural growing season and analyzed for a complete mineral panel. The Coastal Ground Water monitoring will sample 85 wells located within the area of historic seawater intrusion. Each well in the Coastal Program will be sampled once a month during the agricultural growing season. The first month's sample will be analyzed for complete mineral panel and the two remaining sampling events will by analyzed for partial mineral panel (three constituents) (Table 1). All water monitoring samples will be delivered the same day as collected to the contract laboratory for analysis.

All ground water sampling locations are accessible using a 4-wheel drive vehicle. All samples will be collected as a grab sample. All sampling locations will be recorded using global positioning system (GPS) equipment, and digital pictures will be taken at each site.

After laboratory analysis and data validation is completed, a technical memorandum (EPA II, XP-96995301 Task 2 Water Quality Assessment) will be written and submitted to US EPA. The technical memorandum, EPA II, XP-96995301 Task 2 Water Quality Assessment, will include result tables for chloride, nitrate, and specific conductivity, and maps of chloride, nitrate, and specific conductivity gradient contours.

1.6.2 Constituents to be monitored and measurement techniques

Samples will be sent to an off-site laboratory for analysis. Ground water samples will be analyzed for either complete or partial mineral panels. A complete mineral panel includes calcium, cation-anion balance, chloride, conductivity, magnesium, nitrate, pH, potassium, sodium, sulfate, and total alkalinity. A partial mineral panel consists of chloride, conductivity, and nitrate.

Sample analysis will be preformed at the Monterey County Consolidated Chemistry Laboratory (CCL), which is part of the Environmental Health Department. Listed below is the laboratory's contact information and ELAP Certification number.

Laboratory Name	*Contact Information*	*Abbreviation*
Monterey County Consolidated Chemistry Laboratory ELAP Certification No 1395	1270 Natividad Road Salinas, CA 93906 Phone: 831-755-4516 Fax: 831-755-4652 http://www.co.monterey.ca.us/health	CCL

1.6.3 Project Schedule

The proposed project schedule is summarized below.

Prior to Sample Collection	
January 2006 - January 2007	: Develop project strategy
15 January, 2007	: Submit Draft QA Project Plan
22 March, 2007	: Receive review comments on QA Project Plan from US EPA
6 July, 2007	: Submit Draft Final QA Project Plan
13 July, 2007	: Obtain QA Project Plan approval (to begin fieldwork)
20 July, 2007	: Submit Final QA Project Plan (signatory copy) EPA R9#03-238; X-97994701-0
Sample Collection	
August 2007 - September 2007	: Coastal Ground Water (each well 3x, once per month)
August 2007 - September 2007	: Salinas Valley Ground Water (each well 1x)
Post Sample Collection	
November 2007	: Compile all remaining laboratory analyses reports
1 - 15 December, 2007	: Evaluate laboratory data for QA/QC requirements
15 December, 2007	: Copy of analytical results sent to well owner/operators
16 - 31 December, 2007	: Summarize and tabulate data
January 2008	: Write Technical Memorandum (EPA II, XP-96995301 Task 2 Water Quality Assessment)
March 2008	: Submit Technical Memorandum (EPA II, XP-96995301 Task 2 Water Quality Assessment) to US EPA

1.6.4 Geographical Setting

The Salinas Ground Water Basin encompasses approximately 537.5 square miles (1,392 km^2). The regional ground water flow is to the northwest. Seawater intrusion is a result of coastal pumping (Figure 3). Ground water pumping can dramatically impact localized coastal ground water flow.

1.6.5 Constraints

Ground water samples must be taken from the well while the pump is operating to ensure that the sample is representative of the aquifer and not standing water within the well casing. The Agency wants to measure the water quality when the aquifers are stressed due to pumping. For this reason the 2007 field sampling season will coincide with the agricultural irrigation season.

1.7 DATA QUALITY OBJECTIVES FOR MEASUREMENT DATA

This section describes the data objectives of the project and defines the measurement performance criteria deemed necessary to meet those objectives.

1.7.1 Objectives and Project Decisions

In Monterey County the Salinas Valley and Coastal Ground Water ambient monitoring programs are designed to characterize the ground water quality conditions of the Basin. All data generated from the sampling program in this project are tabulated as they have been over the many years of the program. Data generated from these monitoring activities allows the Agency to track changes in ground water quality over time and to assess potential impacts to ground water in the Basin. Water resource management and policy decisions may follow based on maps and tabulated data generated as a part of this project (program).

For the coastal ground water sampling program, the general mineral data are evaluated to determine if seawater intrusion is progressing landward as indicated by increasing well chloride values. The chloride values for all wells are evaluated, and then the 500mg/L chloride isochlor contours are mapped for the two coastal aquifers. When the maps are published, the information generated by MCWRA staff and approved by the MCWRA Board of Directors. is posted and passed on to Monterey County departments, regional government regulatory agencies, and public / private entities via the MCWRA web page, presentations, public meetings, and networking.

Monterey County departments such as the Planning Department and Health Department utilize the advancement of seawater as it relates to potable water and public health, while the agricultural community becomes aware of the proximity of their wells to the intrusion advancement, and the possible need for funds to drill new, deeper, wells and destroy the older high nitrate wells. Actions by regulators, depending on the entity, are related to prioritization of Regional Watershed and Water Quality Action Plans, and the associated success of MCWRA capital projects to halt seawater intrusion as governed by the State Water Resources Control Board adjudication process.

Actions by the MCWRA after the landward advancement of seawater have been ongoing for many years. Actions include consideration of more stringent Monterey County well drilling ordinances for assuring the continued prevention of cross-aquifer contamination in the coastal Salinas Valley, *"Zone 6 Drilling Standards", April 19, 1988;* the development and implementation of the Monterey County Recycling Projects, a tertiary treatment plant and treated water distribution system, to help further reduce agricultural pumping in the coastal Salinas Valley for halting seawater intrusion; and future use of these data will be utilized by the newly established Seaside Watermaster for comparison to and the development of the Monterey Peninsula seawater intrusion front.

For the Salinas Valley general mineral ground water sampling program, nitrate data tabulation and map representation has been the focus of the MCWRA for many years. All results over the laboratory's practical quantitative limit generated from this program are tabulated to evaluate the minimum, maximum, median, and mean value of nitrate as NO_3 in mg/L for each of the Salinas Valley Hydrogeologic Subareas.

For the Salinas Valley monitoring program, the Agency sends the general mineral testing results, including nitrate, to the well owners/growers who operate the wells sampled. Also, in this transmittal, the well operators are also provided with a conversion sheet of the nitrate concentration *from mg/L nitrate as NO_3 to pounds of nitrate per acre inch of water*, agricultural terms. If a nitrate

value in ground source water is elevated, then that growers can incorporate this available nitrate into their fertilizer crop scheduling. This is a method for growers to reduce applied nitrate to crops, while maintaining maximum crop productivity.

And, as with the Coastal monitoring program, the tabulated and mapped Salinas Valley nitrate data are posted and passed on to Monterey County departments, regional government regulatory agencies, and public / private entities via the MCWRA web page.

The MCWRA uses the well nitrate data during the technical well application review process. Monterey County Health Department (Heatlh Department) issues well permits after the Agency provides a technical review of well applications for new, abandoned, or repaired wells. The well application proposal is evaluated with other well construction and water quality within a one miles radius of the new well and represented on a map. Agency staff makes qualitative recommendations to the Health Department on the new well's sanitary seal based on other well seals, the perforated intervals, and the nitrate values of wells in the area. The final decision for the well construction is made by the Health Department after the well drilling progresses.

Actions taken by the MCWRA are conditional. If extreme nitrate values are observed in agricultural production wells, then re-sampling of the wells may take place to confirm the elevated concentrations and may lead to increased sampling points for wells in the same vicinity and with the same well design. Continued increases in Salinas Valley ground water nitrate values could lead to special nitrate investigations on movement of nitrate in ground water and also outreach to the public on the reduction of nitrate to the environment.

1.7.2 Action Limits/Levels

Since the overarching goal for this project is the continued monitoring of ambient ground water, the Agency has set no specific water quality standards. As a result, the laboratory's practical quantitation limits (PQL) will serve as the Project Action Levels (PALs). Table 1 provides a listing of the parameter to be sampled and a summary of the laboratory's method detection limit, those minimum concentrations that can be detected above the instrumental background/baseline signal noise. Table 1 also provides the PQL, lowest calibration standard and PALs required by the Agency for the QAPP. The quality limits listed are deemed acceptable by the Agency to meet the project objectives.

1.7.3 Measurement Performance Criteria

The objective of data collection for this Monitoring Project is to produce data that represent the *in situ* conditions of the ground water. This objective will be achieved by using accepted standard methods for water collection and analysis and defining data quality indicators (DQIs) for each analytical parameter. The DQIs include accuracy, precision, comparability, sensitivity, completeness, and representativeness and are defined below and presented in Table 2. Some DQIs will be assessed quantitatively, while others will be qualitatively assessed. Example calculations have been provided for quantitative assessments and appropriate quality control (QC) samples have been identified. Laboratory Data Quality Objectives are given in Table 3.

Accuracy, or bias, is a measure of how close a result is to the expected value of the target analyte in a sample. Accuracy will be determined by the analysis of certified reference materials and matrix spikes, where the results can be compared with an expected value and expressed as %recovery. This is an assessment of laboratory analytical methods. For Laboratory Control Samples (LCS), it will be expressed as %recovery by the following equation:

$$\%Recovery = \frac{X}{T} \times 100$$

where,

X = Measured concentration
T = True spiked concentration

or, for Matrix Spike (MS) samples, by the following equation:

$$\%Recovery = \frac{(B - A)}{T} \times 100$$

where,

B = Measured concentration of spiked sample
A = Measured concentration of unspiked sample
T = True spiked concentration

The frequency of the LCS and MS samples associated with the analytical parameters will be 5%. MS and MSD samples will be spiked at 3-10 times the native sample concentration.

Accuracy/bias as related to contamination involves both field and laboratory components. Field blanks will be collected at a frequency of 5%. Laboratory blanks will be prepared and analyzed at a one per batch or 5% frequency.

Precision is concerned with the ability to quantitatively repeat results. To demonstrate the precision of a method or instrument, field duplicates will be collected, analyzed, and their results compared. Precision is expressed as relative percent difference (RPD) by the following equation:

$$RPD\ (\%) = \frac{|X_1 - X_2|}{(X_1 + X_2)/2} \times 100$$

where,

X_1 = Original sample concentration
X_2 = Duplicate sample concentration
$|X_1 - X_2|$ = Absolute value of $X_1 - X_2$

Field duplicates will be collected at a frequency of 10% for the first two sampling events. If the criterion of <25% RPD is met, then the remaining field duplicates will be collected at a 5% frequency. Laboratory duplicates will be prepared and analyzed at a one per batch or 5% frequency.

Comparability of the data can be defined as the similarity of data generated by different monitoring programs. Comparability helps to measure the scientific coherence and validity of a project. This objective is addressed primarily by using standard sampling and analytical procedures. Additionally, comparability of analytical data is addressed by result comparison of certified reference materials.

Sensitivity of the analytical instrument or method is the ability to detect and quantify an analytical parameter at the concentration level of interest. Sensitivity can be evaluated by method or instrument detection limit studies (MDL and IDL) or calculated practical quantitative limits (PQL) and method report limits (MRL).

Completeness is a measure of the amount of successfully collected and validated data relative to the amount of data planned to be collected for the project. Project completeness is typically based on the percentage of the data needed for the program or study to reach statistically valid conclusions. Because the SVIWMP is a monitoring program, data that are not successfully collected for a specific sample event or site can typically be recollected at a later sampling event. For this reason, most of the data planned for collection can not be considered statistically critical, and it is difficult to set a meaningful objective for data completeness. However, some reasonable objectives for the data are desirable, if only to measure the effectiveness of the Monitoring Program. %Completeness will be expressed by the following equation:

$$\%\text{Completeness} = \frac{N}{T} \times 100$$

where,

N = Number of usable results
T = Total number of samples planned to be collected

A completeness goal of 90% has been set for the ground water monitoring program.

Representativeness can be defined as the degree to which the environmental data generated by the monitoring program accurately and precisely represent actual environmental conditions. This objective is addressed by the overall design of the monitoring program. Specifically, assuring the representativeness of the data is addressed primarily by selecting appropriate locations, methods, times, and frequencies of sampling for each environmental parameter, and by maintaining the integrity of the sample after collection. Representativeness judges how well a single sample can describe the conditions of an entire sample population. Accurate, artifact-free sampling procedures and appropriate sample homogenization achieve representativeness.

1.8 TRAINING REQUIREMENTS/CERTIFICATION

1.8.1 Training of Field Personnel

A specialized training requirement for this project is for the use of Global Positioning Systems (GPS) Technology. Training in the use of handheld GPS units and software will be performed on an individual basis between the trainer and the trainee. Training will be provided by staff experienced in the use of GPS and Geographic Information Systems (GIS).

Field personnel will also be given initial instructions prior to the beginning of sample collection activities. These initial instructions will help familiarize the field personnel with sample collection containers, sample handling techniques, chain-of-custody forms, and sample transport. New field personnel will be accompanied by a trainer in the field as part of the initial instructions. All field samplers have completed a four-hour training session in the field. Training included confirmation of the well ID electrical meter tag number and MCWRA tag number, recognizing the appropriate sampling port, sample collection technique, proper handling of the sample during transportation to the lab, and accurate completion of the chain-of-custody forms. The completion of field training session has been documented in the Agency's personnel files.

All field personnel will follow sample collection procedures from accepted methods for the collection of ground water. Sample collection will follow protocols in accordance with recommended guidelines established by the U.S. Geological Survey (USGS) for ground water collection as described in the

National Field Manual for the Collection of Water-Quality Data, U.S. Geological Survey, Techniques of Water-Resources Investigations, Book 9, Chapters A1-A9. Field personnel will be familiar with the above-mentioned document.

Field personnel will also read and be familiar with this Quality Assurance Project Plan (QAPP) prior to beginning any sample collection activities.

1.8.2 Training of Laboratory Personnel

No specialized training of laboratory personnel is required for this project. The ground water constituents to be analyzed by the laboratory are routine and do not require additional expertise. In addition, the laboratory's QA plan notes that analysts 'must conduct sufficient preliminary tests using the methodology and typical samples to demonstrate competence in the use of the measurement procedure'.

1.8.3 GPS Training Documentation

Documentation of field personnel training for GPS includes: the name of the staff member being trained, the training date, the name of the trainer (instructor), and a checklist of satisfactory completion of each step. These training records are stored inside a monitoring binder and filed in the Agency's Water Quality Section. A sample GPS training record is attached in Appendix A.

Training documentation of laboratory personnel for routine methods is kept on file at the Consolidated Chemistry Laboratory (CCL). The CCL has written a policy regarding laboratory personnel training in their lab QA plan.

1.9 DOCUMENTATION AND RECORDS

1.9.1 QA Project Plan Distribution

The MCWRA Hydrologist/ Team Lead will safeguard the original QAPP and any subsequent revisions (both hard and electronic), plus keep a record of the distribution list in order to send out amendments to the QAPP and retrieve any obsolete versions (from the individuals listed earlier in section 1.3).

1.9.2 Field Documentation and Records

All field documentation generated by the sampling program will be kept on file in the Water Quality Section of the Agency. Field documentation includes field sheets, chain of custody (COC) forms, photographs, and labels (see Appendix B for examples of each).

1.9.2.1 Field Sheets

Field sheets are used to aid in the identification of each ground water source (well). The field sheets list the name of each well (as assigned by the well owner) and the State Well Number. The field sheets also contain a section that describes who the sampler should contact in order to have a well turned on, where to find the sample port, etc. The sampler is responsible for recording the sample date and time on the field sheet. Site observations should be written in the comments section of the field sheet, and initialed by the sampler. Site observations may include information such as detailed directions to the well location, changes to the electrical meter tag number, and the owner contact name and phone number. Field sheets also contain PG&E electrical meter numbers, which can be either verified or updated while the sampler is in the field.

Field sheets are double-checked by the sampler for completeness and accuracy while still in the field. The sampler should look for: incomplete and/or missing data/omissions, incorrect or invalid information, and clarity problems. Any discrepancies should be cleared up before the sampler leaves the field. Data that has been entered by one field sampler will be reviewed by a different field sampler to verify that no transcription errors have occurred. These data entry reviews will take place at least weekly.

Original field sheets are categorized (according to Coastal wells or Salinas Valley wells) inside binders which are kept in the Water Quality Section at the Agency for a period of 10 years. After such time, the copies are transferred to the Monterey County Record Retention Center and archived for a period of 5 years.

Data collected on field sheets will also be recorded electronically and stored in an Access database inside a shared network drive that is backed-up on a daily basis. These electronic records will be retained permanently.

1.9.2.2 Chain Of Custody (COC) Forms

Chain-of-custody (COC) forms will be provided by the Consolidated Chemistry Laboratory and filled out while the sampler is in the field. The COC will accompany the samples at all times in order to insure the custodial integrity of the samples. A sample is considered to be in custody if it is: in someone's physical possession, in someone's view, locked up, or secured in an area that is restricted to authorized personnel.

Care should be taken to protect the COC from physical damage (i.e., water, wind, etc). The COC will have the following information:

- Client Code
- Client Name
- Client Address
- Client Phone Number
- Client Fax Number
- Report Attention
- Sampler Name
- Collection Date
- Collection Time
- Sample Site (identified by state well identification number) or QC sample (if appropriate)
- Sample Type (all of the samples in this project will be **grab** samples)
- Matrix (all of the samples in this project will be **ground water** samples)
- Analyses Requested

Upon relinquishing the sample(s) to the Consolidated Chemistry Laboratory, the sampler will sign and date the COC form. Lab personnel will then receive the sample(s), mark the date and time received, assign unique lab identification numbers (lab IDs) to each sample, and sign the COC form. The signed COC form is then photocopied; the lab keeps the original, and a copy is given to the sampler.

Hard copies of COC forms are categorized (Coastal wells or Salinas Valley wells) inside binders which are kept in the Water Quality Section at the Agency for a period of 10 years. After such time,

the copies are transferred to the Monterey County Record Retention Center and archived for a period of 5 years.

Electronic COC information is also stored in an Access database inside a shared network drive that is backed-up on a daily basis. These electronic records will be retained permanently.

1.9.2.3 Photographs

The Agency maintains a photo catalog which contains photographs of the Coastal well site locations. The photo catalog is carried into the field to assist with the identification of each well. If there are significant changes to the appearance of the well site, then staff will take a new digital photo. The old photo in the catalog will then be replaced with a copy of the new photo. Photographs will be taken of the Salinas Valley wells after confirming the correct well location of each.

Two photographs of each well location will be taken using a high resolution digital camera. One photograph will be from a distance of 100 ft. or more to aid in the identification of the correct site location. The second photograph will be a close up of the well and pump head, which will be used to verify location of the correct sampling port. Printed hard copies of these two photographs for each well will be kept in the photo log book and labeled with the state well identification number as listed on the field sheets.

Photographs will serve to help verify information entered into the field sheets. Photographs are stored in an electronic database and labeled according to site number and date last photographed. Previous photos will be archived electronically for retrieval purposes if the need arises.

1.9.2.4 Labels

Labels for each sample site are pre-printed on Avery (size 5163) sheets (10 labels per sheet). Indelible ink will be used on the labels and clear packing tape will be applied over the label to prevent it from coming off if it gets wet. Each label will have the following information:

- Sample Site (pre-printed)
- Collection Date (to be filled out in the field)
- Collection Time (to be filled out in the field)
- Analyses Requested (complete or partial mineral panel)
- Sampler Name (to be filled out in the field)
- Comments (if any)

The sample site name (state well identification number) will serve as the unique identifier for each sample (e.g. 14S/02E-08M02). When the samplers arrive at the CCL a unique in-house lab number is assigned to each sample.

1.9.2.5 Field Quality Control Sample Records

Quality Control samples from the field will be identified using the state well identification number plus either -1 or -2 (e.g. 14S/02E-08M02-1, for a field blank).

- -1 = Field Blank
- -2 = Field Duplicate

1.9.3 Laboratory Documentation and Records

The Consolidated Chemistry Laboratory will keep a sample receiving log containing the completed COC forms submitted with the samples collected for this project. The CCL will keep records of all analyses performed as well as associated QC information, including: laboratory blanks, laboratory duplicates, matrix spikes, matrix spike duplicates and laboratory control samples. Hard copy data of analytical results will be maintained for three years by the CCL. The CCL maintains a Laboratory Information Management System (LIMS) which will be used to store electronic data.

The data generated by the CCL for each sampling event will be compiled into individual data reports. The individual data reports will include the following information:

- Sample results and associated Quantitative Limits (QLs)
- Cation-Anion Balance Sheet
- QC check sample records and acceptance criteria for the following:
  - Laboratory Control Sample(s)
  - Matrix Spike(s)
  - Matrix Spike Duplicate(s)
  - Analytical Duplicate(s)
  - Method Blank(s)
- Project narrative including a discussion of problems or unusual events (including, but not limited to, topics such as: receipt of samples in incorrect, broken, or leaky containers, with improperly or incompletely filled out COC forms; receipt and/or analysis of samples after the holding times have expired; summary of QC results exceeding acceptance criteria; etc.)

The above information is logged into the LIMS database at CCL.

The Public Health Chemist of the Consolidated Chemistry Laboratory will be responsible for reviewing, validating, and/or qualifying results on the data reports. Any deviations from sample preparation, analysis, and/or QA/QC procedures will be documented. Departure from QC acceptance limits will be highlighted. Once the data reports are finalized, the hard copy will be sent to the Project QA Manager at the Agency.

At the end of the sampling season, all data for both programs (Coastal and Salinas Valley) will be electronically transferred to the Agency. After data verification, the Agency Hydrologist/ Team Lead will upload the data to the Agency's Water Resources Agency Information Management System (WRAIMS) relational database.

1.9.4 Technical Reviews and Evaluations

Technical reviews and evaluations are limited to Field Activities and Laboratory Data Review Checklists.

1.9.4.1 Field Activities Review Checklist

Field personnel will be required to fill out a Field Activities Review Checklist as part of the double-check process upon returning from the field after each sampling event (see Appendix C).

1.9.4.2 Laboratory Data Review Checklist

Laboratory data reports from the CCL will be routed to the Project QA Manager at the Agency, who will do a preliminary assessment of the data. The data reports will then be given to the Agency

Hydrologist/ Team Lead who will be responsible for completing a Laboratory Data Review Checklist (see Appendix C).

1.9.5 Technical Memorandum

The Agency Project QA Manager is responsible for the preparation of the technical memorandum. The technical memorandum will be written in the "post sample collection" phase (see section 1.6.3). The technical memorandum will be submitted to USEPA for review by the EPA Region 9 Project Manager.

The technical memorandum will contain the following elements:

- Table of results for Chloride
- Table of results for Nitrate
- Table of results for Specific Conductance
- Map of Chloride contours for 500 mg/L values
- Map of Nitrates showing those sites which have values above and below the Drinking Water Standard Limit of 45 mg/L (nitrate as NO3)
- Map of Conductivity contours

2.0 DATA GENERATION AND ACQUISITION

2.1 SAMPLING DESIGN

In the Salinas Valley, there are four hydrogeologic subareas: Pressure, East Side, Forebay, and Upper Valley. All four subareas were selected using a directed sampling design approach. These subareas were selected deliberately based on knowledge from previous monitoring work to contain analytes of interest, specifically nitrate and conductivity in the Salinas Valley Program, and chloride and conductivity in the Coastal Program. Actual sampling sites/wells within the Salinas Valley Basin Monitoring Program were chosen using a non-deliberate sampling approach. The wells included are acquired opportunistically. Site accessibility is a key issue for sampling. Permission of property owners must be secured before accessing private wells.

There are just over 1700 active wells in the Salinas Valley. Of this total number of wells, 344 wells make up the Salinas Valley Ground Water program and 85 wells make up the Coastal Ground Water program. The wells that make up these two programs have all been sampled in the past; some have data sets as far back as the 1950's, when this was a State of CA Department of Public Works (now the Department of Water Resources) program. The Agency wants to keep as complete and continuous a data set for each of these wells as possible.

Due to the time constraints the Agency is facing during this shortened 2007 field season, June - September, staff will prioritize which wells within the Salinas Valley portion of this project will be sampled. Wells to be sampled first will be located within approximately one mile radius of municipalities and industries (such as vegetable packing plants). We refer to these areas as high beneficial use areas. Ground water wells will be identified by State Well Numbers (Township, Range, Section, and Subsection).

All wells are high production agricultural wells. All wells are sampled in the same way, if the pump is in operation then a sample will be collected. If the pump if not operating then the field sampler will note it on the field sheets and come back to the well at a later date when the well is in operation. The pump must be operating for a sample to be collected. The age of well does not alter sampling

protocols. If a well is found to have been abandoned since the Agency last sampled the well, a notation will be made on the field sheets and the well will be removed from future sampling efforts.

2.1.1 Salinas Valley Ground Water

While it is known that high levels of nitrates exist in some aquifers of the Salinas Valley Ground Water Basin, a significant sampling effort to determine the extent in the ground water has not been conducted by the Agency for several years. There are a total of 344 sample locations within the Salinas Valley monitoring program. Sample locations are operational ground water wells, the majority of which are used for agricultural irrigation. The Pressure subarea has 158 wells, the East Side subarea has 66 wells, the Forebay has 84 wells, and the Upper Valley has 35 wells (Figures 4-7). Each of these wells will be sampled once during the 2007 summer field season (July-September). The primary criterion currently used to determine if a well will be included in the Salinas Valley monitoring program has been its status as previously sampled. This program is an ongoing ambient ground water monitoring program and continuity in sampling the same wells each field year is of prime importance, especially for water quality trend analysis. Other factors that are important in deciding if a well should be included in the monitoring program are; copy of the well completion report (commonly referred to as the driller's log), location of the perforation interval along the well casing to determine which aquifer is sampled, age of the well, and construction method used to drill the well. Additionally it is useful to know the proximity of the well to other water use (industrial, municipal, or domestic) areas. A list of Salinas Valley well names and locations are given in Table 4. All wells on this program are planned to be part of the monitoring design for subsequent years. Until these monitoring wells are abandoned or destroyed, they will remain part of this program.

2.1.2 Coastal Ground Water

The Agency currently conducts a seawater intrusion monitoring and mapping program (EPA II). This program will continue to evaluate the extent and status of seawater intrusion in the coastal areas of the Salinas Valley Basin (EPA II). The Coastal portion of the ground water program contains 85 wells, most of which are located in the Pressure subarea (Figure 8). Each well will be sampled three times, once each month of the summer 2007 field season (July-September). The first sample collection at each well will be analyzed for a complete mineral panel (Table 1), and following two collections will be analyzed for a partial mineral panel (Table 1). There are 21 wells located in the Pressure 180-Foot Aquifer, 52 wells within the Pressure 400-Foot Aquifer, two wells with perforations within both the Pressure180-Foot and 400-Foot Aquifers, four wells are located within the Pressure Deep Zone Aquifer, three in the East Side Deep Aquifer, one in the East Side Shallow Aquifer, and one in the Prunedale Aquifer. The principal criterion for inclusion in the Coastal monitoring program is historical sampling and well availability. Additional criteria for selecting a well for inclusion into the Coastal monitoring program are: a well completion report, location of the perforation interval along the well casing to determine which aquifer is sampled (180, 400, or deep zone AQ), well age, and well construction type. A list of Coastal sites and their representative aquifers are listed in Table 5.

It can not be stressed enough how important the continued monitoring of these ground water wells are for the Agency to meet its mission of monitoring the quality of the County's ground water resources. Some of these well have been sampled since the 1950's and the loss of such a long term water quality record within the County of Monterey would irreplaceable.

2.2 SAMPLING METHODS

The objectives of the sampling procedure are to minimize changes in ground water chemistry during sample collection and transport to the laboratory, and to maximize the probability of obtaining a representative, reproducible ground water sample. This well-volume purging procedure provides a reproducible sampling technique with the goal that the samples obtained will represent water quality over the entire screen interval of the well.

Standing water in the well casing can be of a different chemical composition than that contained in the aquifer to be sampled. Solutes may be adsorbed on to, or desorbed from the well casing material, oxidation may occur, and biological activity is possible. Therefore, the stagnant water within the well must be purged so that the sample is representative of the aquifer. As a result, a well may be sampled only after the pump has been in operation for at least 15-20 minutes.

All the wells included in this project, from both the Salinas Valley area and the Coastal monitoring area are high production agricultural wells that contain deep turbine pumps operating at 500-1200 gallons per minute (gpm). Over the years of managing the ambient monitoring program, the Agency has determined that operating a deep turbine pump for 15-20 minutes before taking a sample is sufficient time to clear the entire well casing of three well volumes for ensuring a representative well sample. For referencing well casing volume, the Agency uses the well casing size provided in the well completion reports (driller's log) for each of the wells included in this monitoring program (National Field Manual for the Collection of Water-Quality Data, Chapter A2).

Sample bottles and caps are rinsed three times with ambient ground water prior to collection. The sample container is then filled, tightly capped, and labeled. No field sample filtration is required. Samples are put into a cooler with ice immediately and maintained at 4°C and delivered to the laboratory daily. See Table 6 for sample collection requirements. Extra sample containers, caps and field supplies will be carried in the truck as back-up should any problem arise in the field. Additionally, the Field Sampler will carry and maintain an updated hardcopy of the QAPP in the field to be used as a reference.

The following precautions will be followed in order to limit sampling error at the wellhead:

- Operate the pump long enough to produce water that is representative of the aquifer and not stagnant water from the casing.
- Take samples at the wellhead or near the wellhead and away from fertilizer injection ports.

Sample collection will follow protocols in accordance with recommended guidelines established by the U. S. Geological Survey (USGS) for ground water collection as described in the National Field Manual for the Collection of Water-Quality Data.

The National Field Manual for the Collection of Water-Quality Data, U.S. Geological Survey, Techniques of Water-Resources Investigations, Book 9, Chapters A1-A9 is maintained as a web-based document and is located at http://pubs.water.usgs.gov/twri9A. Updates and revisions for the National Field Manual can be found using this web-based approach.

2.3 SAMPLE HANDLING AND CUSTODY

This section describes how all samples will be treated after collection, during transport, and upon arrival at the CCL. It also includes information on proper sample disposal after laboratory analysis.

2.3.1 *Sample Containers and Preservatives*

Sample containers to be used in this project are high density polyethylene (HDPE), one pint (~0.5 L) and 0.5 gallon (~2 liter) sizes, for partial mineral or complete mineral analyses, respectively. The Agency has used these same sample container types during previous years of this ongoing ambient monitoring program and has never had any problems with container contamination issues. Field blanks will be closely monitored and, should a problem arise, corrective actions will be taken. Only one container (pint *or* half gallon) is needed per sampling site to provide the necessary volume to run the required lab analyses (see Table 6). Sample containers and caps are purchased in bulk from a plastic container manufacturer (Consolidated Container Company). The caps for the containers are packaged separately. The containers and caps are clean upon receipt, as long as they arrive with the outer cardboard packaging intact. The containers will be kept in a closed, dry environment away from the outside elements. Sterility is not of importance because this sampling project does not include microbiological testing. As previously mentioned, all containers and caps will be rinsed three times with ambient sample water prior to sample collection.

Sample containers are labeled with pre-printed labels, which lists which panel of analytes is requested, either complete mineral or partial mineral. The collection date, collection time, and sampler name are recorded in the field with an indelible marker. After being filled out, labels will be covered with clear plastic tape (packaging type) to protect the labels from destruction during transport.

No chemical *field preservation* of the samples is required. All samples will be kept at 4±2°C.

Preservation of samples, if required prior to analysis, will be the responsibility of the contract lab (CCL). Part of the CC lab sample receiving protocols includes lab personnel verifying, at the time of sample receipt, if any samples require lab preservation. Refer to Table 6 for listings of preservatives for specific analytes.

2.3.2 *Sample Packaging and Transport*

All samples will be handled, prepared, transported and stored in a manner so as to minimize contamination and spills. After collection, sample caps will be checked for tightness, and the samples will be put in ice chests immediately. During travel between sites, ice chest lids will be kept tightly closed in order to keep the samples at the correct temperature and protect them from sunlight. Ice used for maintaining sample temperature will be double-bagged inside durable plastic bags (Ziploc type) and be of sufficient quantity so that all samples will stored at 4±2°C. Maximum holding times for specific analytes are listed in Table 6.

2.3.3 *Sample Custody*

Chain of custody (COC) procedures require that possession of samples be traceable from the time the samples are collected until completion and submittal of the analytical results. A completed chain of custody form is to accompany the samples to the contract laboratory (CCL). Requirements for COC paperwork can be found in Section 1.9.2.2 of this document.

All samples collected for this project will be transported from the field to the CCL via an Agency vehicle. The field sampler will deliver the samples directly to the CCL daily; there will be no intermediary transfers. Samples need to arrive at the CCL no later than 15:00, to ensure log-in and laboratory preservation. Personnel at the CCL will examine the samples for correct documentation and holding times. The CCL will follow sample custody procedures as outlined in their QA plan (see Appendix D).

2.3.4 Sample Disposal

All samples remaining after successful completion of analyses will be disposed of properly. It is the responsibility of the personnel at the CCL to ensure that all applicable regulations are followed in the disposal of samples or related chemicals. Sample disposal procedures used by the CCL are discussed in their QA plan (see Appendix D).

2.4 ANALYTICAL METHODS

All samples will be analyzed at the County Consolidated Chemistry Laboratory (CCL). Analyses will be performed following either EPA approved methods or methods from *Standard Method for the Examination of Water and Wastewater, 18th Edition*, see Table 1 (CCL's QA Manual cites *18th Edition*, see Appendix D). Standard operating procedures (SOPs) from CCL have been included in Appendix D for each of the analyses. Should there be any deviation from these SOPs the Laboratory Director must contact the Project QA Manager.

The CCL will submit a data report and associated QC results after analyses are complete to the Project QA Manager. This data report is described in Section 1.9.3. After a preliminary assessment the Project QA Manager will pass the data on to the Team Lead, who will review the data report and QC results and evaluate its quality and usability in addressing the Project objectives.

2.5 QUALITY CONTROL

2.5.1 Field Sampling Quality Control

The assessment of field measurements will be determined from the collection and analysis of field blanks and field duplicates. For this monitoring program the field blanks will be collected at one every 20 samples or a frequency of 5%. Field duplicates will be collected at a frequency of 10% for the first two sampling events. If the criterion of <25% RPD is met, then the remaining field duplicates will be collected at a 5% frequency. Analytical acceptance criteria and corrective actions for field QC are listed in Table 2.

Deionized (DI) water will be acquired from the CCL and kept at 4±2°C, while transported into the field. Field blank samples will be obtained by pouring DI water into a pint (~500 mL) HDPE sample container that has been triple-rinsed with DI water at the sampling location. The container will be tightly capped, placed in the cooler and delivered to the contract laboratory. Field blanks are labeled with the sampling location (State Well Number) followed by "-1".

Field blanks will be used to evaluate the collection process (from field sampling through sample analysis) for contamination from exposure to ambient conditions, from sample containers or from improper sampling and handling technique. If target analytes are found in field blanks, sampling and handling procedures will be reevaluated and corrective actions taken. Corrective actions may consist of, but are not limited to, re-training of field personnel, discussions with the contract laboratory, invalidation or qualifying of results.

Field duplicates will be collected for every analytical parameter. The duplicate sample will be collected immediately after collection of the native, following the same sampling protocols. Field duplicates are labeled with the sampling location (State Well Number) followed by "-2".

Field duplicates will be used to evaluate the precision of the sample collection through analysis. The combined variability from sampling and analysis technique, in addition to sample heterogeneity, will

be assessed using field duplicates. If acceptance criteria are exceeded, field sampling and handling protocols will be reviewed and problems corrected. These may consist of, but are not limited to, additional training, revised sampling techniques and reevaluation of sampling location.

2.5.2 Laboratory Analyses Quality Control (Contract Laboratory)

The Monterey County Consolidated Chemistry Laboratory's (CCL) personnel are responsible for analytical Quality Control. Standard laboratory quality control elements include method blanks, laboratory control samples, analytical duplicates, matrix spikes and calibration procedures. Laboratory data quality objectives include QC acceptance criteria, frequency of analysis, and corrective actions. These data quality objectives and quality control elements for CCL are described in its QA Manual (Appendix D) and SOPs (Appendix D) and are listed in Table 3. After examination of these documents, the Agency believes that the laboratory will be able to meet the project data quality needs. Any deviation from these written procedures must be documented by the laboratory and reported to the Project QA Manager.

2.6 INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE REQUIREMENTS

Testing, inspection, and maintenance of laboratory equipment are the responsibility of the Monterey County Consolidated Chemistry Laboratory and are detailed in its QA manual in Appendix D.

2.7 INSTRUMENT CALIBRATION AND FREQUENCY

Instrument calibrations are the responsibility of the Monterey County Consolidated Chemistry Laboratory and acceptance criteria for calibrations are detailed in its QA manual in Appendix D.

2.8 INSPECTION/ACCEPTANCE REQUIREMENTS FOR SUPPLIES

2.8.1 Initial Inspection of Supplies

As mentioned previously in Section 2.3.1, sample containers are purchased in bulk from an outside vendor who specializes in supplying plastics to the beverage industry. An initial inspection will be conducted upon receipt of each shipment. Each shipment will be considered acceptable for use if *all* of the following are true:

- The shipment arrives with the outer cardboard packaging intact.
- The containers are the correct type (HDPE) and size (0.5 gal/~2L *or* 1 pint/~0.5L).
- The insides of the containers are dry.
- The insides of the containers are free of dirt or any particulate matter.

2.8.2 Field Inspection of Supplies

Immediately prior to sample collection, field samplers will visually inspect each sample container for the following:

- Dirt or any particulate matter
- Cracks of any size
- Improper fit of the cap on the container

If the field sampler observes any of the above, then the container will be discarded and an acceptable container will be used instead.

2.8.3 Laboratory Inspection of Supplies

CCL will be responsible for establishing inspection and acceptance criteria for supplies that adhere to their internal QA/QC policies.

2.9 DATA ACQUISITION REQUIREMENTS (NON-DIRECT MEASUREMENTS)

Non-direct measurement data will not be used during this monitoring program. Should at some time in the future the Agency decide to use data from an external source, QA/QC requirements will be established. Should this occur, an addendum to this QAPP will be submitted to USEPA.

2.10 DATA MANAGEMENT

Data, as related to documentation and records, will be managed as outlined earlier in Section 1.9 of this QAPP.

In addition, the CCL will group QA/QC data under a separate client code so that QA/QC data can be filtered from regular sample data before being uploaded into the Agency's Data Management System (WRAIMS). This allows the Agency a greater flexibility both in quickly and easily accessing the data that included QA/QC samples for initial review, and increased flexibility in uploading and moving large data sets.

3.0 ASSESSMENT AND RESPONSE ACTIONS

This section lists review procedures that will be taken to ensure all the protocols outlined in the QAPP are consistently followed.

3.1 REVIEWS

3.1.1 Readiness Reviews

Water Resources Technicians/ Field Samplers will be trained by the Hydrologist/Team Lead before any field sampling begins. Training will cover proper sample collection and handling and the completion of all paperwork (COCs, field logbooks, etc). The Team Lead will ensure that Field Samplers have properly prepared all collection containers, paperwork and other supplies needed to complete a successful sampling event. Any problems discovered during the readiness review will be corrected before the Samplers begin work.

3.1.2 Field Reviews

The Team Lead will be responsible for overseeing that all field activities are incompliance with Agency protocols. The Team Lead will be available via phone should any questions arise while the Samplers are in the field. The Team Lead will also review all field paperwork such as COCs and field logbooks for completion. Additionally the field QC samples (field blanks and duplicates) will be used to evaluate the individual Sampler's technique. If problems are exposed they will be corrected straight away so that all further samples are valid. A stop-work order may be issued by the Project QA Manager at any time if a discrepancy or error is found that could negatively affect the data being collected.

3.1.3 Post Sampling Reviews

Post sampling reviews will be conducted following each sampling event in order to ensure all information is complete. Reviews will be conducted by the Field Sampler due to the small size of the staff. They will include evaluation of sampling activities and field documentation and will take place in the office, not in the field. Findings will be passed on to the Team Lead and the Project QA Manager to be incorporated into the next field event.

3.1.4 Laboratory Data Reviews

The Team Lead will be responsible for reviewing the laboratory's data for completeness and accuracy. The data will also be checked to determine that all specified methods were used and all related QC data was provided with the sample analytical results. These reviews will take place immediately upon receipt of data reports from the laboratory. This will ensure that any method deviations are corrected or explained, and any missing or incomplete data are provided. The Project QA Manager has the authority to request re-testing of laboratory data if it is invalid or would otherwise compromise the quality of the resulting project conclusions.

3.2 REPORTS

The Project QA Manager will be responsible for the technical memorandum (EPA R9# 03-238 Task 3.3) which will be provided in March 2008 to US EPA. The technical memorandum (EPA R9# 03-238 Task 3.3) will include result tables for chloride, nitrate, and specific conductivity, and maps of chloride, nitrate, and specific conductivity gradients. The technical memorandum will include a summary of any significant QA/QC issues and how they were resolved. It is currently understood that this project is of short enough duration that only a final technical memorandum to the EPA is necessary.

4.0 DATA VALIDATION AND USABILITY

4.1 DATA VERIFICATION AND VALIDATION

Data review is the in-house examination to ensure that the data have been recorded, transmitted, and processed correctly. The Team Lead is responsible for the data review. This examination will check for data entry errors, calculation errors, and data omission errors. If possible these errors will be corrected.

4.1.1 Field Data

Field data include logbooks, photographs, and COCs. The Field Sampler is responsible for reviewing the field data at the end of the sampling event. This includes determining that all information is complete and any deviations from the sampling methodologies are documented using the Field Activities Review Checklist (Appendix C).

4.1.2 Laboratory Data

Initial evaluation of the laboratory data are carried out by the CCL in agreement with protocols listed in their SOPs and QA manual. The Team Lead will also conduct an independent review of the data and QC parameters as described in sections 3.1.4 and using the Laboratory Data Review Checklist as detailed in section 1.9.4.4 and Appendix C.

4.2 RECONCILIATION WITH USER REQUIREMENTS

The purpose of the continued ambient monitoring of the Salinas Valley Basin Ground Water is to assess the water quality to manage and protect ground water resources. For data to be useful in developing the overreaching Salinas Valley Integrated Water Management Plan, it must first meet the requirement of this QA project Plan. The Project QA Manager will be responsible for making the final evaluation of the data's usability in meeting the Project objectives. All data passing this final evaluation will then be used to establish a cohesive and succinct Water Quality Management Plan in accordance to the work begun under EPA-I and continued under EPA-II. Additionally, the Agency will integrate these ground water quality data with previously collected data for use in trend analysis.

5.0 REFERENCES

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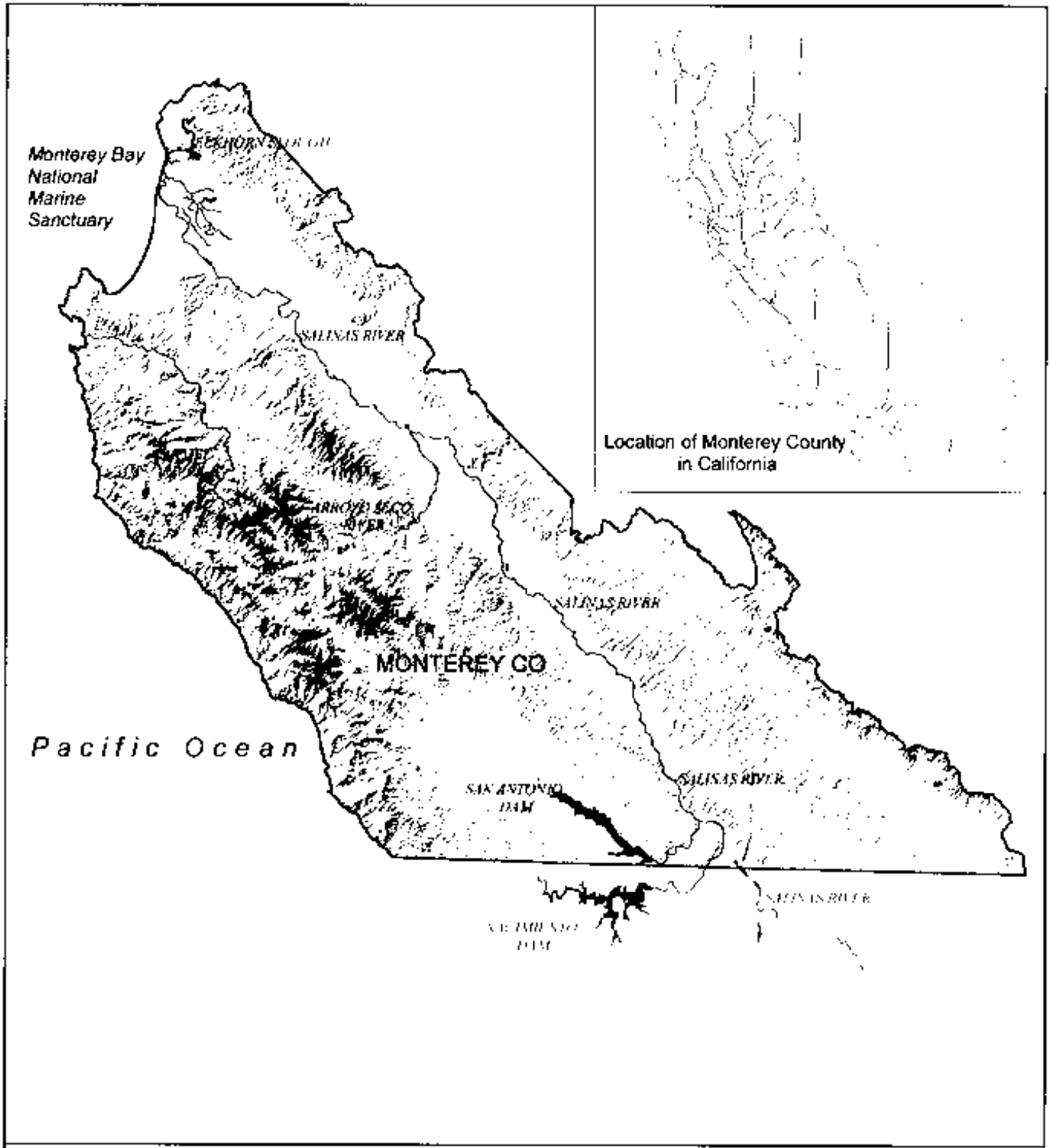
FIGURES

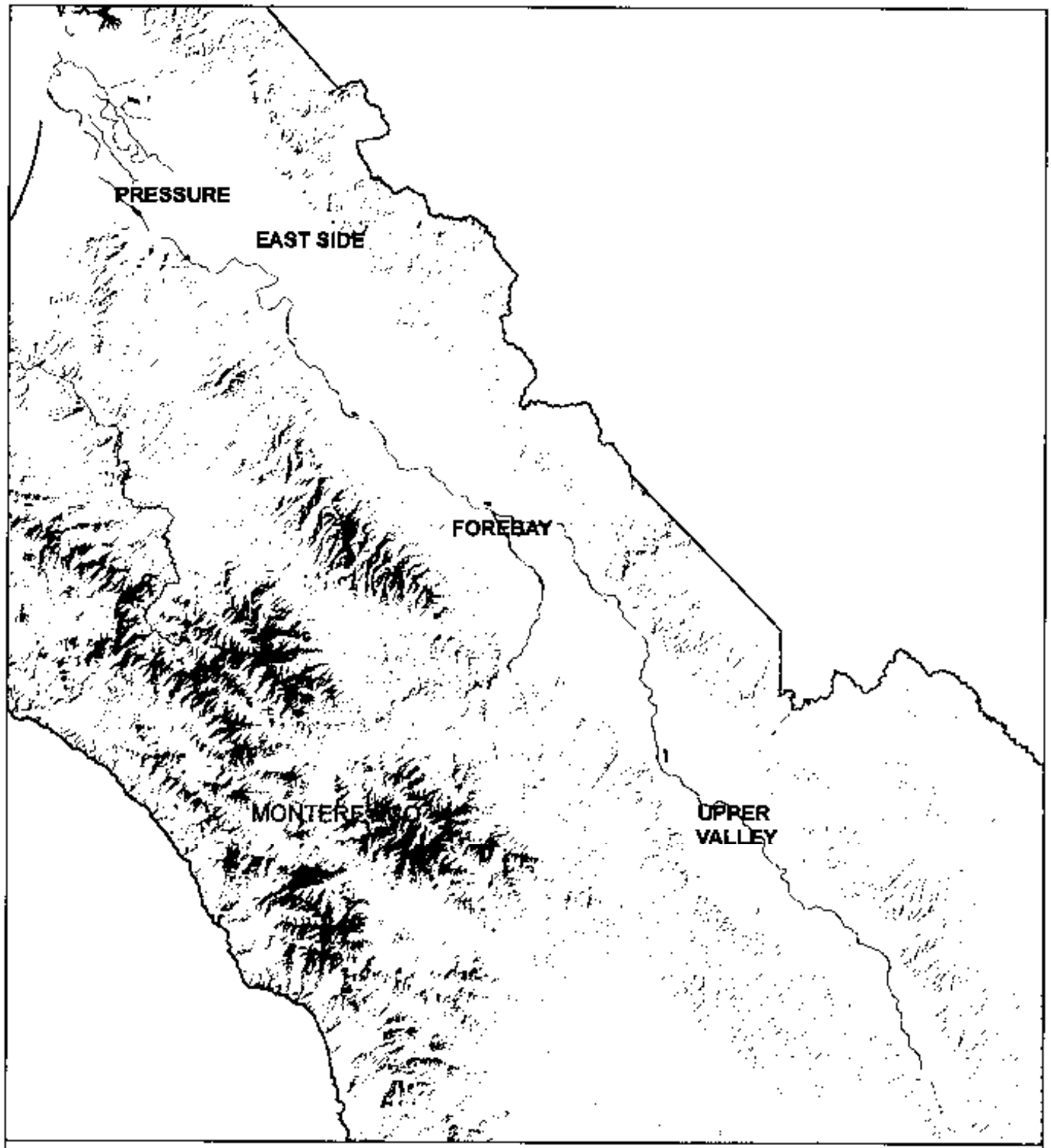


Legend
Water Bodies/ Channels

Monterey County, California

Figure 1

Map Date July 5, 2007

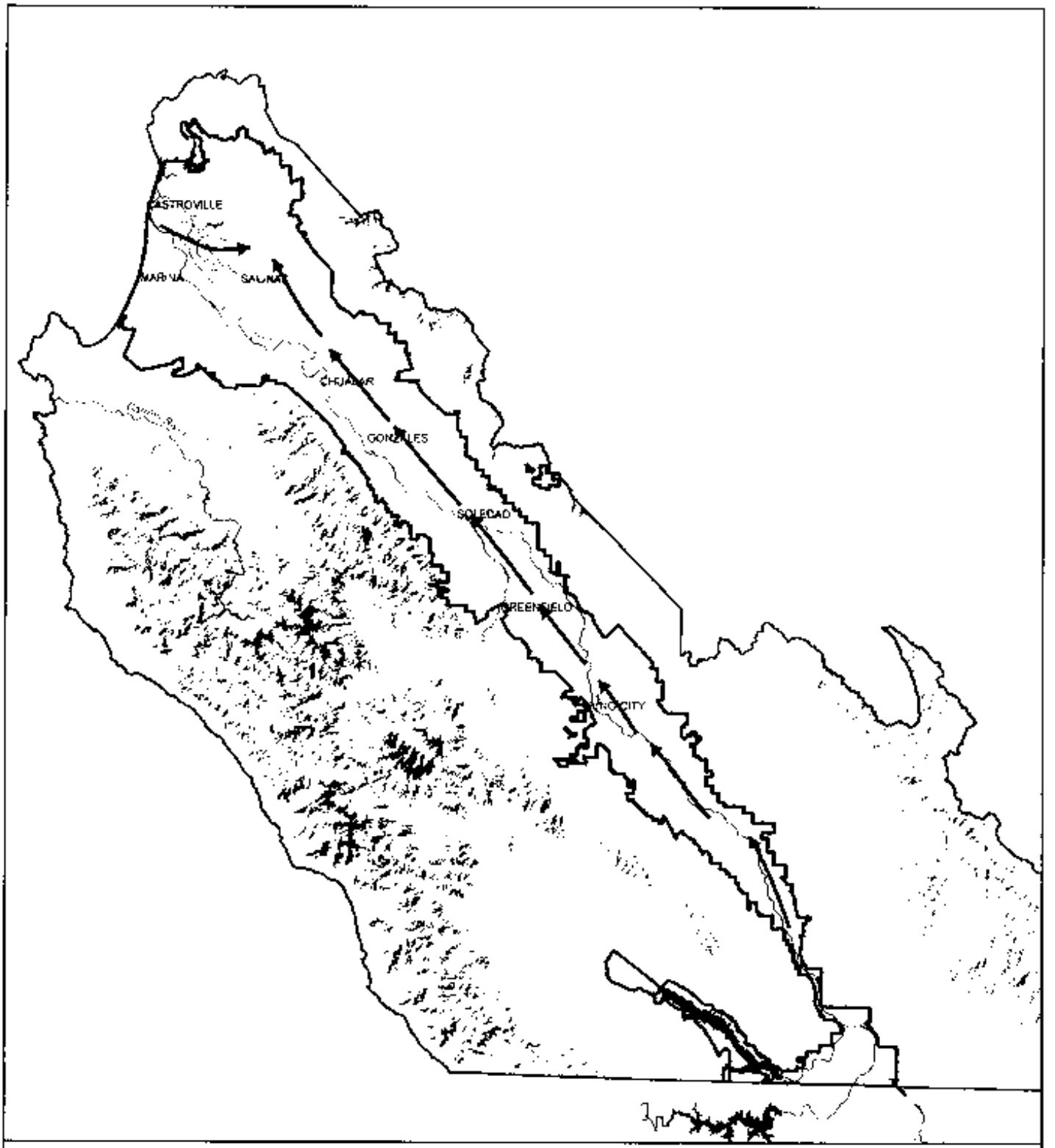


Legend
Water Bodies/ Channels

Salinas Valley Aquifers

Figure 2

Map Date July 5, 2007



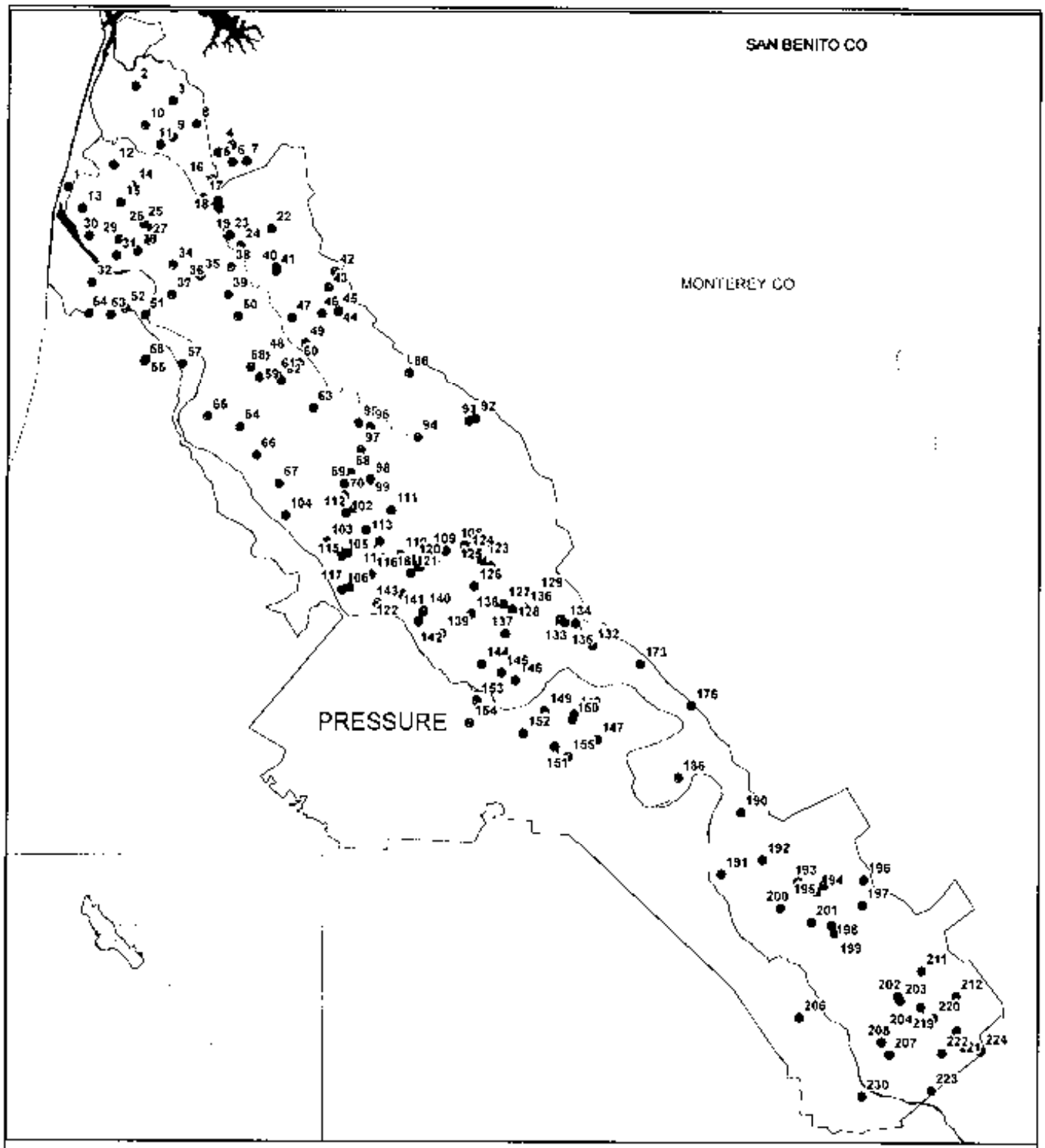
Ground Water Flow Direction in the Salinas Valley

Figure 3

Legend

- Ground Water Flow Direction
- Assessment Zone 2C
- Monterey County
- Rivers and Other Bodies of Water

Map Date: July 6, 2007



Salinas Valley Wells in the Pressure Subarea

Figure 4

Legend:

- Study Well
- Rivers

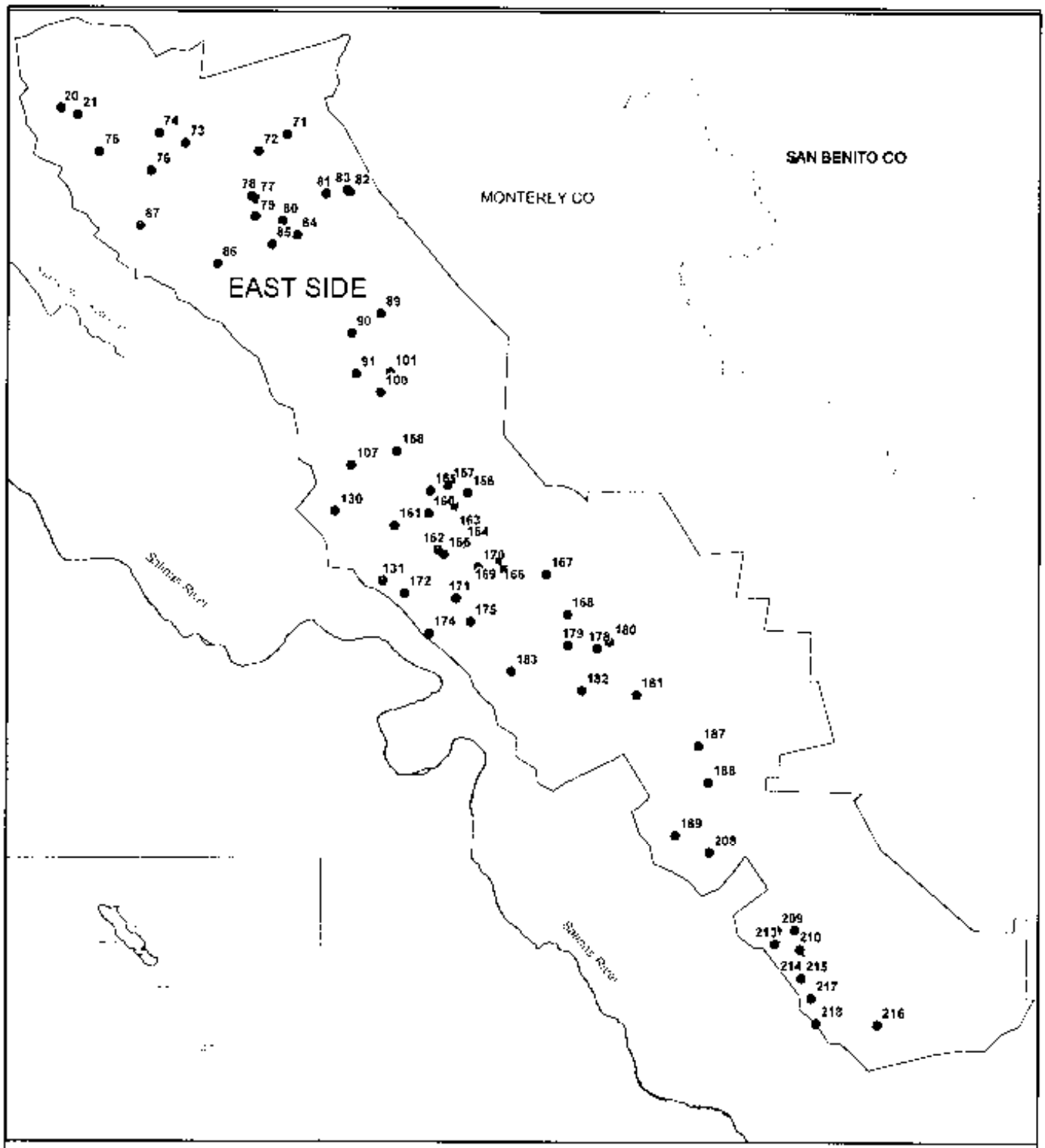
SUBAREA

SUBAREA

PRESSURE

0 0.75 1.5 2.25 3 Miles

Map Date: July 5, 2007



Salinas Valley Wells in the East Side Subarea

Figure 5

Legend:

- Study Well
- Rivers

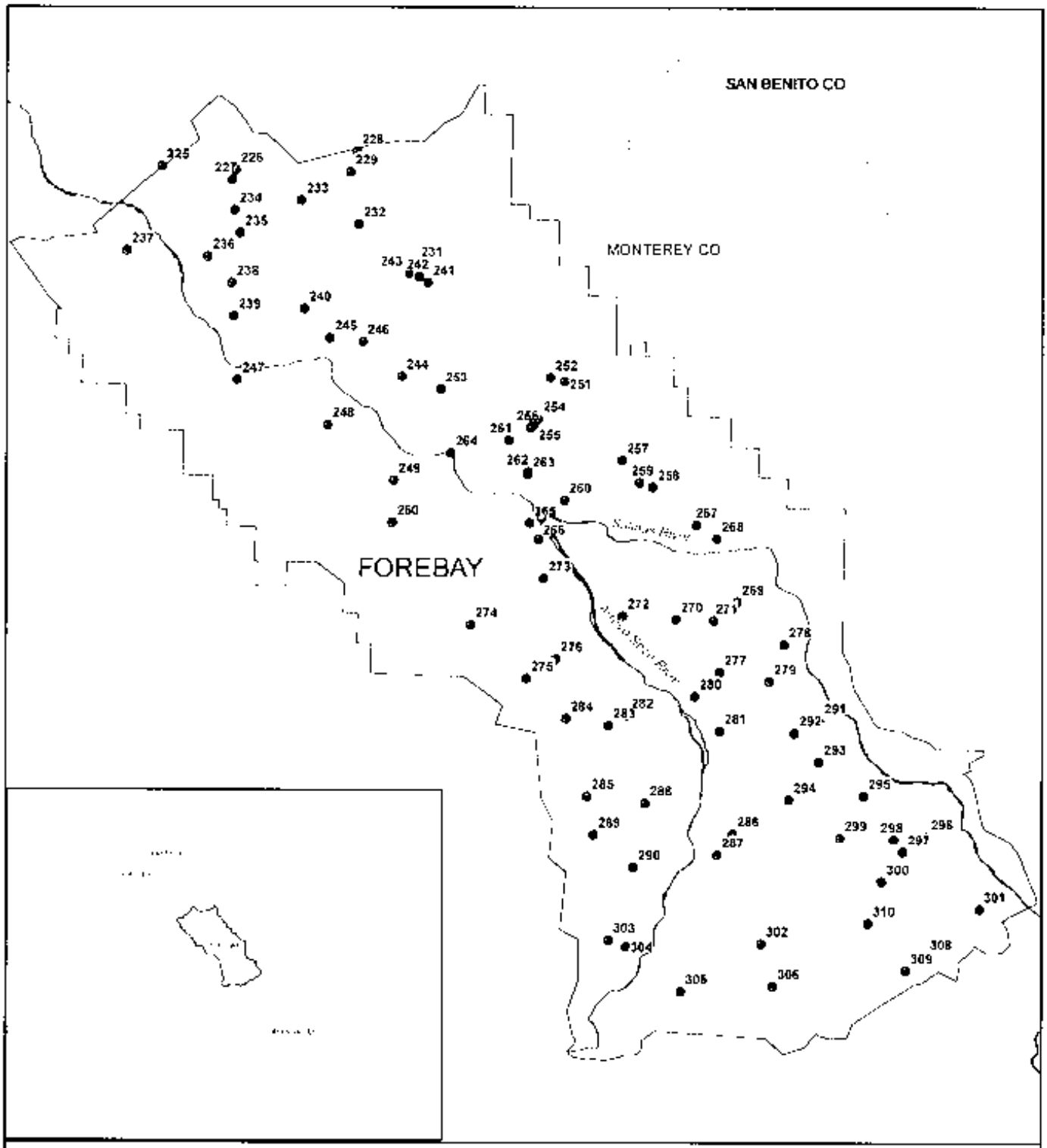
SUBAREA

SUBAREA

EAST SIDE

0 0.75 1.5 3 Miles

Map Date: July 5, 2007



Salinas Valley Wells in the Forebay Subarea

Figure 6

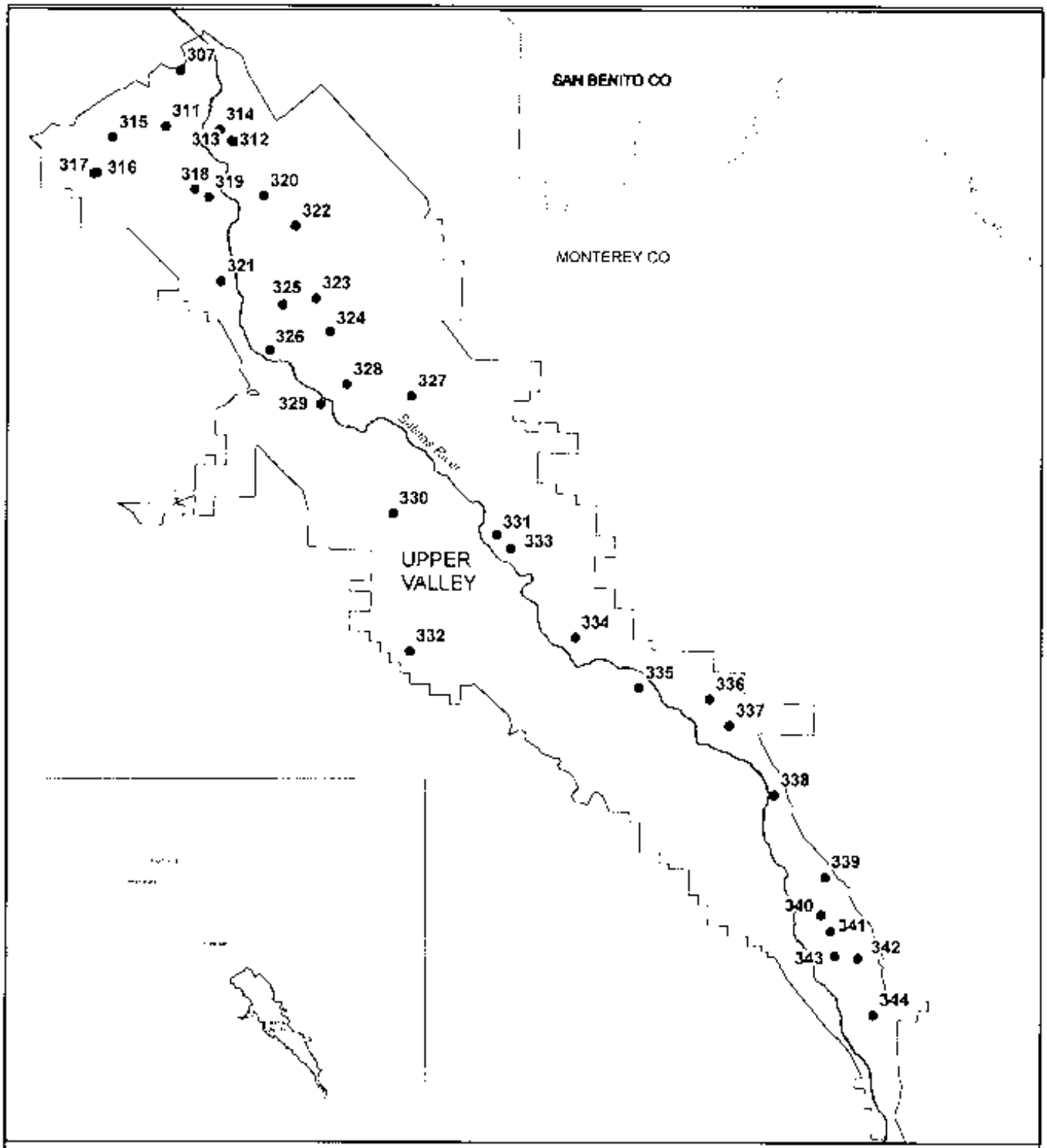
Legend:

- Study Well
- Rivers

SUBAREA

- SUBAREA
- FOREBAY

Map Date: July 5, 2007



Salinas Valley Wells in the Upper Valley Subarea

Figure 7

Legend:

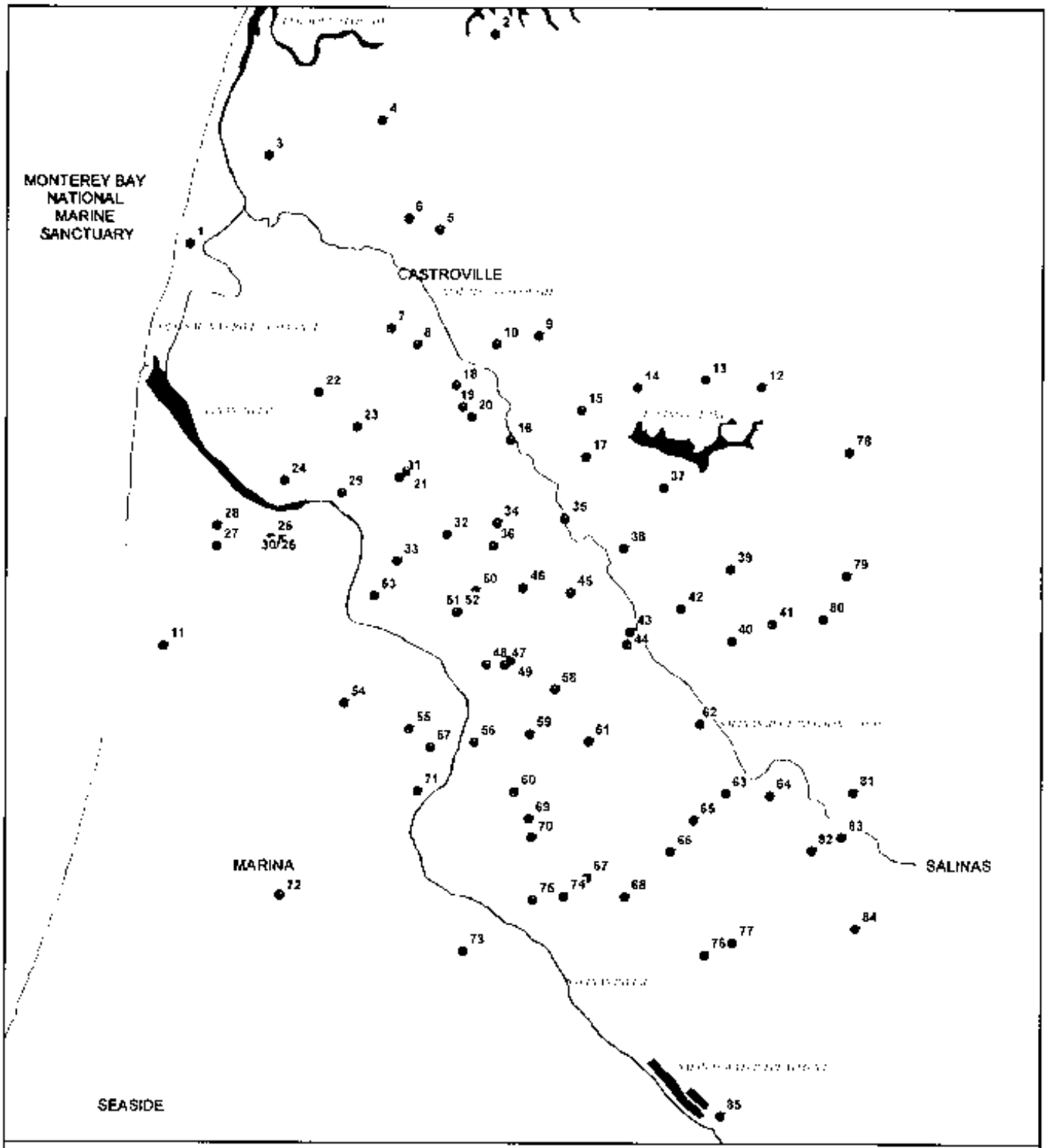
- Study Well
- Rivers

SUBAREA

SUBAREA

UPPER VALLEY

Map Date: July 5, 2007



Coastal Ground Water Monitoring Program Wells

Figure 8

Legend:

- Study Well
  Cities
- Water Bodies/ Channels

0 0.5 1 1.5 2 Miles

Map Date: July 02, 2007

TABLES

Table 1 COMPLETE MINERAL PANEL ANALYTES

ANALYTE	*METHOD*	*LABORATORY MDL***	*LABORATORY PQL*	*LOWEST CALIB. STD.*	*PAL*
Calcium (Ca)	SM 3111 B[1]	0.02 mg/L	1.0 mg/L	1.0 mg/L	1.0 mg/L
CATION ANION BALANCE	Calculated	--	--	--	--
*Chloride (Cl)	EPA 300.0[2]	0.01 mg/L	1.0 mg/L	0.1 mg/L	1.0 mg/L
*Conductivity (SEC)	SM 2510 B	1 umho/cm @ 25 C	1 umho/cm @ 25 C	N/A	1 umho/cm @ 25 C
Magnesium (Mg)	SM 3111 B	0.005 mg/L[1]	1.0 mg/L	0.1 mg/L	1.0 mg/L
*Nitrate (NO3)	EPA 300.0	0.002 mg/L[2]	1.0 mg/L	0.1 mg/L	1.0 mg/L
pH (Laboratory)	SM 4500-H B	pH Units (2 sig figs)	pH Units (2 sig figs)	N/A	pH Units (2 sig figs)
Potassium (K)	SM 3111 B	0.025 mg/L[1]	0.1 mg/L	0.1 mg/L	0.1 mg/L
Sodium (Na)	SM 3111 B	0.03 mg/L[1]	1.0 mg/L	0.1 mg/L	1.0 mg/L
Sulfate (SO4)	EPA 300.0	0.03 mg/L[2]	1.0 mg/L	0.1 mg/L	1.0 mg/L
Total Alkalinity (as CaCO3)	SM 2320 B	1.0 mg/L	1.0 mg/L	N/A	1.0 mg/L

[1] = MDL study completed February 2007
[2] = MDL study completed May 2007
* = Partial Mineral Panel analytes
** = These are the laboratory's latest MDLs and supersede the MDLs listed in Appendix D-1.
MDL = method detection limit; PQL = practical quantitative limit; PAL = project action level
All laboratory results are bracketed by calibration standards. No "estimated" results (below the lowest calib std and above the MDL) are given to the Agency

Table 2 QUALITY CONTROL REQUIREMENTS FOR LABORATORY ANALYSES

QA PROCEDURE	QA PARAMETER	FREQUENCY	CRITERION	CORRECTIVE ACTION
Field Blank	Field Contamination	1/20 field samples; 5% frequency	<MDL	Recollect sampling event or flag data if unable recollect
Field Duplicate	Field Precision	1/10 field samples for first two events; if criterion is met, then 1/20 field samples	RPD < 25%	Recollect sampling event or flag data if unable recollect
Method Blank	Analytical Contamination	3 per analytical batch	< RL	Reanalyze analytical batch
LCS (CRM)	Accuracy	1 per analytical batch	80-120% REC	Reanalyze analytical batch
Analytical Duplicate	Analytical Precision	1 per analytical batch	RPD < 25%	Reanalyze analytical batch
Matrix Spike	Matrix Interference and Accuracy	1 per analytical batch; at 3-10x the native conc.	75-125% REC	Reanalyze analytical batch
Matrix Spike Duplicate	Precision and Accuracy	1 per analytical batch; at 3-10x the native conc.	RPD <25%	Reanalyze analytical batch
Continuing Calibration	Analytical Control	1 per 10 sample runs	80-120% of initial slope	Reanalyze analytical batch
Assess percent of data successfully collected	Data Completeness	N/A	90%	N/A

MDL=Method Detection Limit; RPD=Relative Percent Difference RL=Report Limit.

REC=Recovery; LCS=Laboratory Control Sample; CRM=Certified Reference Material

An analytical batch is defined as 20 or fewer samples.

Table 3 LABORATORY DATA QUAILITY OBJECTIVES (DQOs)

ANALYTE	METHOD BLANK	LCS (CRM)	ANALYTICAL DUPLICATE	MATRIX SPIKE	MATRIX SPIKE DUPLICATE	CONTINUING CALIBRATION
Calcium (Ca)	yes	yes	yes	yes	yes	yes
Chloride (Cl)	yes	yes	yes	yes	yes	yes
Conductivity (SEC)	yes	yes	yes	no	no	yes
Magnesium (Mg)	yes	yes	yes	yes	yes	yes
Nitrate (NO3)	yes	yes	yes	yes	yes	yes
pH (Laboratory)	no	yes	yes	no	no	yes
Potassium (K)	yes	yes	yes	yes	yes	yes
Sodium (Na)	yes	yes	yes	yes	yes	yes
Sulfate (SO4)	yes	yes	yes	yes	yes	yes
Total Alkalinity (as CaCO3)	yes	yes	yes	no	no	yes

Table 4 SALINAS VALLEY WELLS AND LOCATIONS

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
13S/01E-36J01	PRESSURE 900	1	5741483.0	2170847.00002
13S/02E-20M02	PRESSURE 400	2	5748878.5	2182094.25003
13S/02E-21N01	PRESSURE 400	3	5753018.5	2180456.75002
13S/02E-27L01	PRESSURE 180	4	5759500.0	2175572.50002
13S/02E-27M01	PRESSURE 400	5	5758010.0	2174784.50002
13S/02E-27P01	PRESSURE 400	6	5759593.5	2173660.50002
13S/02E-27Q02	PRESSURE 400	7	5761129.5	2173768.75002
13S/02E-28B01	PRESSURE 400	8	5755624.0	2177900.75002
13S/02E-28E01	PRESSURE 400	9	5752984.0	2176434.75002
13S/02E-29F02	PRESSURE 400	10	5749961.0	2177732.25002
13S/02E-29J01	PRESSURE 400	11	5751657.5	2175604.25002
13S/02E-31A02	PRESSURE 900	12	5746516.5	2173308.00002
13S/02E-31N02	PRESSURE 400	13	5743060.5	2168496.25002
13S/02E-32M02	PRESSURE 900	14	5748673.0	2170965.00002
13S/02E-32N01	PRESSURE 400	15	5747285.0	2169132.75003
13S/02E-33H03	PRESSURE 180	16	5757325.5	2171726.00002
13S/02E-33R01	PRESSURE 180	17	5756359.5	2169699.75003
13S/02E-34M02	PRESSURE 180	18	5757952.0	2169365.25003
13S/02E-34N01	PRESSURE 180	19	5758043.5	2168657.25003
13S/02E-36J01	EAST SIDE BOTH	20	5772057.0	2168257.00002
14S/02E-01A01	EAST SIDE	21	5773736.0	2167596.00002
14S/02E-02E02	PRESSURE 400	22	5763989.0	2166284.00003
14S/02E-03F02	PRESSURE 180	23	5759284.0	2165549.00003
14S/02E-03K02	PRESSURE 400	24	5760546.0	2164390.00002
14S/02E-05F04	PRESSURE 400	25	5749784.5	2166850.50002
14S/02E-05G03	PRESSURE 400	26	5750701.5	2166258.50002
14S/02E-05K01	PRESSURE 400	27	5750303.5	2164892.00002
14S/02E-05P02	PRESSURE 400	28	5749120.0	2163754.25002
14S/02E-06J03	PRESSURE 400	29	5747119.5	2164986.75002
14S/02E-06L01	PRESSURE 900	30	5743826.5	2165438.75002
14S/02E-06R02	PRESSURE 400	31	5746852.5	2163229.50003
14S/02E-07K01	PRESSURE 400	32	5744199.0	2160286.75002
14S/02E-08A01	PRESSURE 400	33	5751818.0	2162226.75002
14S/02E-09D03	PRESSURE 400	34	5753098.5	2162246.50002
14S/02E-09H03	PRESSURE 400	35	5756070.0	2161048.75002

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
14S/02E-09L02	PRESSURE 400	36	5754291.5	2160250.25002
14S/02E-09N01	PRESSURE 400	37	5752950.5	2158867.00003
14S/02E-10C01	PRESSURE 400	38	5759437.0	2162015.75002
14S/02E-10P02	PRESSURE 400	39	5759125.0	2158942.75002
14S/02E-11C01	PRESSURE 180	40	5764471.5	2161959.50002
14S/02E-11D01	PRESSURE 180	41	5764508.5	2161568.25002
14S/02E-12B01	PRESSURE 400	42	5771184.5	2161614.00002
14S/02E-12L02	PRESSURE 400	43	5770434.5	2159815.50002
14S/02E-12Q01	PRESSURE 400	44	5771537.0	2157088.75002
14S/02E-13B02	PRESSURE 180	45	5771526.0	2157219.75003
14S/02E-13D01	PRESSURE 180	46	5769699.5	2156883.75002
14S/02E-14B01	PRESSURE 180	47	5766275.0	2156434.00002
14S/02E-14N03	PRESSURE 400	48	5763230.0	2152205.50003
14S/02E-14R01	PRESSURE 180	49	5767842.5	2153580.50002
14S/02E-15B01	PRESSURE 400	50	5760275.5	2156533.25002
14S/02E-17B02	PRESSURE 400	51	5749990.5	2156598.25002
14S/02E-17C01	PRESSURE 180	52	5747844.0	2157381.75003
14S/02E-18A01	PRESSURE 400	53	5746233.0	2156686.25002
14S/02E-18C01	PRESSURE 400	54	5743827.5	2156787.25002
14S/02E-20B01	PRESSURE 180	55	5750165.5	2151711.75003
14S/02E-20B02	PRESSURE 180	56	5750001.0	2151554.75003
14S/02E-21F02	PRESSURE 180	57	5754169.5	2151251.50002
14S/02E-22H01	PRESSURE 400	58	5761690.5	2150902.75002
14S/02E-22H02	PRESSURE 180	59	5762674.0	2149777.00002
14S/02E-23A01	PRESSURE 180	60	5767130.0	2151399.50002
14S/02E-23F01	PRESSURE 180	61	5764570.5	2149971.00002
14S/02E-23L03	PRESSURE 400	62	5765164.5	2149382.00002
14S/02E-25D03	PRESSURE 400	63	5768753.5	2146325.50002
14S/02E-27K01	PRESSURE 180	64	5760536.0	2144212.25002
14S/02E-28H02	PRESSURE 180	65	5756940.5	2145354.75002
14S/02E-34A03	PRESSURE 400	66	5762394.5	2141097.75002
14S/02E-35L02	PRESSURE 400	67	5764879.0	2137944.25002
14S/02E-36H01	PRESSURE 180	68	5773015.5	2139158.50003
14S/02E-36J02	PRESSURE 400	69	5772268.5	2137939.00002
14S/02E-36R02	PRESSURE 400	70	5772326.5	2136698.50002
14S/03E-02E03	EAST SIDE BOTH	71	5794727.5	2165742.50002
14S/03E-03K01	EAST SIDE BOTH	72	5791884.0	2164011.25002

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
14S/03E-04E01	EAST SIDE BOTH	73	5784479.5	2164809.75002
14S/03E-05B02	EAST SIDE BOTH	74	5781839.5	2165837.25002
14S/03E-06L01	EAST SIDE SHALLOW	75	5775895.0	2163924.50003
14S/03E-08C01	EAST SIDE BOTH	76	5781050.5	2162072.25002
14S/03E-10F02	EAST SIDE	77	5791569.0	2159330.50002
14S/03E-10F03	EAST SIDE BOTH	78	5791236.5	2159578.00002
14S/03E-10P01	EAST SIDE	79	5791544.0	2157558.25002
14S/03E-10R02	EAST SIDE BOTH	80	5794251.5	2157151.00002
14S/03E-11H01	EAST SIDE SHALLOW	81	5798504.0	2159823.00002
14S/03E-12E01	EAST SIDE SHALLOW	82	5800865.5	2160009.25003
14S/03E-12E02	EAST SIDE	83	5800608.5	2160173.25003
14S/03E-14D01	EAST SIDE SHALLOW	84	5795697.5	2155748.25003
14S/03E-15H03	EAST SIDE BOTH	85	5793222.5	2154777.00002
14S/03E-16K03	EAST SIDE	86	5787748.0	2152845.50003
14S/03E-17D01	EAST SIDE	87	5779979.0	2156594.00002
14S/03E-20D01	PRESSURE 400	88	5779540.0	2150357.75002
14S/03E-24H01	EAST SIDE SHALLOW	89	5803951.0	2147934.50002
14S/03E-24N01	EAST SIDE	90	5801060.0	2146002.50002
14S/03E-25L02	EAST SIDE BOTH	91	5801508.5	2141975.75002
14S/03E-28B02	PRESSURE 400	92	5786919.0	2145249.50002
14S/03E-28F02	PRESSURE 400	93	5786200.6	2144963.98574
14S/03E-29L04	PRESSURE 180	94	5780547.4	2143125.21920
14S/03E-30E01	PRESSURE 180	95	5773899.5	2144670.25003
14S/03E-30F02	PRESSURE 180	96	5775180.5	2144268.50002
14S/03E-30N01	PRESSURE 180	97	5774083.5	2141696.50002
14S/03E-31F01	PRESSURE 180	98	5775271.5	2138346.50003
14S/03E-31F02	PRESSURE 400	99	5775228.5	2138492.00002
14S/03E-36A01	EAST SIDE SHALLOW	100	5803921.0	2140085.50002
14S/04E-30N01	EAST SIDE BOTH	101	5804847.5	2142132.00001
15S/02E-01A03	PRESSURE 400	102	5772482.0	2134724.00002
15S/02E-01K01	PRESSURE 180	103	5770291.5	2131514.75002
15S/02E-02G01	PRESSURE 400	104	5765615.0	2134401.50002
15S/02E-12A01	PRESSURE 400	105	5772051.5	2129878.50002
15S/02E-12R01	PRESSURE 400	106	5772057.5	2126203.25003
15S/03E-01L01	EAST SIDE	107	5801038.5	2132896.75002
15S/03E-04K03	PRESSURE 400	108	5785732.5	2131172.00002
15S/03E-04N03	PRESSURE 400	109	5783621.0	2130577.75002

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
15S/03E-05N01	PRESSURE 180	110	5778619.0	2130164.00003
15S/03E-06A03	PRESSURE 180	111	5777613.0	2135010.00002
15S/03E-06D02	PRESSURE 400	112	5773392.0	2135175.75002
15S/03E-06F02	PRESSURE 400	113	5774781.5	2132857.75002
15S/03E-06K01	PRESSURE 400	114	5776302.5	2131605.50002
15S/03E-07D02	PRESSURE 400	115	5772729.0	2130304.25002
15S/03E-07G01	PRESSURE 400	116	5775356.0	2127909.75002
15S/03E-07N01	PRESSURE 180	117	5772911.5	2126430.50002
15S/03E-08B04	PRESSURE 400	118	5780790.5	2128738.25002
15S/03E-08C06	PRESSURE 180	119	5780025.5	2129640.75003
15S/03E-08C07	PRESSURE 400	120	5780124.5	2129385.50002
15S/03E-08F07	PRESSURE 400	121	5779786.0	2128096.50002
15S/03E-08N03	PRESSURE 400	122	5778859.5	2125760.50002
15S/03E-09B01	PRESSURE 180	123	5787613.5	2129526.50003
15S/03E-09C01	PRESSURE 180	124	5785912.0	2130387.75002
15S/03E-09H02	PRESSURE 180	125	5788543.5	2128841.50003
15S/03E-09K04	PRESSURE 400	126	5786815.0	2126625.50003
15S/03E-10P01	PRESSURE 180	127	5789973.0	2124641.25002
15S/03E-10P03	PRESSURE 180	128	5790992.5	2124075.25002
15S/03E-10R02	PRESSURE 180	129	5793537.5	2125764.25002
15S/03E-12E02	EAST SIDE BOTH	130	5799472.0	2128349.25000
15S/03E-13J02	EAST SIDE	131	5804170.5	2121482.50002
15S/03E-13N01	PRESSURE 180	132	5799834.5	2120075.00003
15S/03E-14C01	PRESSURE 180	133	5796323.5	2123063.75002
15S/03E-14G01	PRESSURE 180	134	5796738.0	2122656.50003
15S/03E-14H01	PRESSURE 180	135	5797941.0	2122606.00002
15S/03E-15B01	PRESSURE 400	136	5792336.0	2124219.00002
15S/03E-15L02	PRESSURE 180	137	5790177.0	2121393.00002
15S/03E-16B03	PRESSURE 400	138	5786481.0	2123545.50002
15S/03E-16M01	PRESSURE 180	139	5783233.5	2121388.25002
15S/03E-17B01	PRESSURE 180	140	5781259.5	2123911.75003
15S/03E-17B02	PRESSURE 180	141	5781099.5	2123757.50002
15S/03E-17G01	PRESSURE 180	142	5780630.0	2122750.25002
15S/03E-18B01	PRESSURE 180	143	5776074.5	2124737.50002
15S/03E-21A01	PRESSURE 180	144	5787617.0	2118056.00002
15S/03E-22F02	PRESSURE 180	145	5789756.5	2117099.00002
15S/03E-22G01	PRESSURE 180	146	5791343.0	2116241.25002

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
15S/03E-25L01	PRESSURE 180	147	5800408.5	2109728.50003
15S/03E-26A01	PRESSURE 400	148	5797857.5	2112518.00002
15S/03E-26D01	PRESSURE 180	149	5794548.5	2112893.75003
15S/03E-26H02	PRESSURE 180	150	5797573.5	2111904.75002
15S/03E-26P01	PRESSURE 400	151	5795686.5	2108925.25002
15S/03E-27J01	PRESSURE 400	152	5792207.5	2110413.00002
15S/03E-28B02	PRESSURE 400	153	5787075.5	2113993.25002
15S/03E-28G01	PRESSURE 180	154	5786358.0	2111546.50003
15S/03E-35B05	PRESSURE 180	155	5797153.0	2107813.50003
15S/04E-05K01	EAST SIDE	156	5812585.0	2130171.00001
15S/04E-05M01	EAST SIDE BOTH	157	5810608.5	2130920.50001
15S/04E-06D04	EAST SIDE BOTH	158	5805535.0	2134296.75001
15S/04E-06R01	EAST SIDE BOTH	159	5808832.0	2130397.50001
15S/04E-07A01	EAST SIDE BOTH	160	5808667.0	2128112.25001
15S/04E-07E02	EAST SIDE	161	5805290.0	2126918.25001
15S/04E-07R01	EAST SIDE SHALLOW	162	5809617.5	2124497.75001
15S/04E-08C01	EAST SIDE SHALLOW	163	5811226.0	2128961.75001
15S/04E-08L01	EAST SIDE BOTH	164	5812038.0	2125163.50001
15S/04E-08N01	EAST SIDE BOTH	165	5810237.5	2124086.00001
15S/04E-09N01	EAST SIDE	166	5815679.0	2123673.25001
15S/04E-15D02	EAST SIDE SHALLOW	167	5820525.5	2122131.50001
15S/04E-15P02	EAST SIDE BOTH	168	5822591.0	2118164.75001
15S/04E-16D01	EAST SIDE BOTH	169	5816370.5	2122604.00001
15S/04E-17B01	EAST SIDE	170	5813674.5	2122802.00001
15S/04E-17P02	EAST SIDE SHALLOW	171	5811444.0	2119748.75001
15S/04E-18L01	EAST SIDE	172	5806258.0	2120249.25001
15S/04E-19D02	PRESSURE 400	173	5805231.0	2118084.25001
15S/04E-19H03	EAST SIDE	174	5808765.0	2116311.75003
15S/04E-20B02	EAST SIDE SHALLOW	175	5812893.0	2117437.00001
15S/04E-20N01	PRESSURE 400	176	5810999.0	2113437.25001
15S/04E-20Q01	EAST SIDE	177	5813019.5	2113916.75003
15S/04E-22J01	EAST SIDE	178	5825620.5	2114797.50001
15S/04E-22L02	EAST SIDE BOTH	179	5822626.0	2115130.25001
15S/04E-23M01	EAST SIDE	180	5826800.0	2115510.00001
15S/04E-26G01	EAST SIDE	181	5829452.0	2110273.75001
15S/04E-27G01	EAST SIDE BOTH	182	5824082.0	2110658.00001
15S/04E-28C01	EAST SIDE	183	5817013.0	2112539.50001

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
15S/04E-28C01	EAST SIDE	184*	*	*
15S/04E-29K03	EAST SIDE	185*	*	*
15S/04E-32E01	PRESSURE 180	186	5809573.0	2105524.75003
15S/04E-36H01	EAST SIDE BOTH	187	5835591.5	2105235.00001
15S/04E-36R02	EAST SIDE BOTH	188	5836592.5	2101652.75001
16S/04E-01L02	EAST SIDE	189	5833261.5	2096387.25003
16S/04E-04C01	PRESSURE 400	190	5816563.5	2101653.00001
16S/04E-08J01	PRESSURE 180	191	5814399.5	2094772.87501
16S/04E-09A01	PRESSURE 180	192	5818962.5	2096385.75001
16S/04E-10K01	PRESSURE 400	193	5822871.5	2093933.87501
16S/04E-10R02	PRESSURE 400	194	5824891.5	2092808.00001
16S/04E-11E02	PRESSURE 400	195	5825734.0	2093587.12501
16S/04E-12M01	PRESSURE 400	196	5830110.0	2094179.62501
16S/04E-13D01	PRESSURE 400	197	5829977.5	2091400.75001
16S/04E-14M01	PRESSURE 400	198	5826507.0	2089158.00001
16S/04E-14M02	PRESSURE 400	199	5826934.0	2088314.12501
16S/04E-15D01	PRESSURE 180	200	5820915.5	2091029.00003
16S/04E-15H02	PRESSURE 400	201	5824314.0	2089470.00001
16S/04E-24R01	PRESSURE 400	202	5833826.5	2081330.00003
16S/04E-25A01	PRESSURE 400	203	5834115.0	2080854.00001
16S/04E-25K01	PRESSURE 180	204	5832503.0	2077482.12501
16S/04E-25Q01	PRESSURE 400	205	5832125.5	2076199.75001
16S/04E-27G01	PRESSURE 180	206	5823057.0	2078926.75001
16S/04E-36B01	PRESSURE 180	207	5833029.5	2074811.87501
16S/05E-07G01	EAST SIDE BOTH	208	5836648.0	2094674.00003
16S/05E-17P01	EAST SIDE BOTH	209	5843361.0	2086999.12503
16S/05E-17R01	EAST SIDE SHALLOW	210	5845212.0	2087024.25003
16S/05E-19F01	PRESSURE 180	211	5836477.0	2084158.37503
16S/05E-19R01	PRESSURE 180	212	5840423.0	2081360.37503
16S/05E-20C01	EAST SIDE	213	5843125.0	2085585.12503
16S/05E-20H01	EAST SIDE	214	5845691.0	2085074.25003
16S/05E-20R01	EAST SIDE BOTH	215	5845834.0	2082220.00003
16S/05E-27G01	EAST SIDE	216	5853466.8	2077678.05320
16S/05E-28D01	EAST SIDE BOTH	217	5846865.0	2080272.25003
16S/05E-28P01	EAST SIDE BOTH	218	5847355.5	2077784.37503
16S/05E-30C01	PRESSURE 180	219	5836401.5	2080129.50003
16S/05E-30G01	PRESSURE 180	220	5837912.0	2078876.87503

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
16S/05E-30J02	PRESSURE 400	221	5840526.5	2077512.50003
16S/05E-31A01	PRESSURE 180	222	5838804.0	2075067.12503
16S/05E-31Q01	PRESSURE 180	223	5837656.0	2070857.75003
16S/05E-32C01	PRESSURE 180	224	5843159.0	2075228.62503
16S/05E-32M01	FOREBAY	225	5840439.0	2072879.00003
16S/05E-33F01	FOREBAY	226	5847064.0	2072544.75003
16S/05E-33Q01	FOREBAY	227	5846731.0	2071679.00003
16S/05E-35C01	FOREBAY	228	5857923.0	2074215.75003
16S/05E-35L01	FOREBAY	229	5857341.0	2072381.25003
17S/04E-01D01	PRESSURE 180	230	5829970.4	2070190.88233
17S/05E-01R01	FOREBAY	231	5863270.5	2064114.75003
17S/05E-02G01	FOREBAY	232	5858061.5	2067655.75001
17S/05E-03B01	FOREBAY	233	5852910.5	2069821.37503
17S/05E-04C01	FOREBAY	234	5846947.5	2068985.25003
17S/05E-04K01	FOREBAY	235	5847433.5	2066928.37503
17S/05E-04N01	FOREBAY	236	5844523.0	2064819.50003
17S/05E-06Q01	FOREBAY	237	5837274.0	2065350.12503
17S/05E-09G01	FOREBAY	238	5846689.0	2062431.75003
17S/05E-09Q01	FOREBAY	239	5846868.5	2059437.25003
17S/05E-10Q01	FOREBAY	240	5853142.5	2060133.00003
17S/05E-12B01	FOREBAY	241	5864362.0	2062470.37503
17S/05E-12B02	FOREBAY	242	5863570.5	2063023.50003
17S/05E-12B03	FOREBAY	243	5862636.0	2063300.00003
17S/05E-13L02	FOREBAY	244	5861995.0	2054065.12503
17S/05E-14D01	FOREBAY	245	5855476.7	2057512.98904
17S/05E-14G01	FOREBAY	246	5858431.5	2057156.87503
17S/05E-21A01	FOREBAY	247	5847203.9	2053734.78530
17S/05E-23L01	FOREBAY	248	5855276.5	2049667.00003
17S/05E-25L01	FOREBAY	249	5861282.5	2044709.87503
17S/05E-36F02	FOREBAY	250	5861156.5	2040988.13679
17S/06E-16N01	FOREBAY	251	5876658.0	2053579.37503
17S/06E-17R01	FOREBAY	252	5875370.0	2053960.00003
17S/06E-19D01	FOREBAY	253	5865512.0	2052870.75003
17S/06E-20K01	FOREBAY	254	5874270.5	2050202.50003
17S/06E-20Q02	FOREBAY	255	5873861.0	2049734.12503
17S/06E-20Q03	FOREBAY	256	5873624.0	2049413.37503
17S/06E-27E03	FOREBAY	257	5881725.5	2046512.12503

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
17S/06E-27K01	FOREBAY	258	5884526.5	2044144.50003
17S/06E-27L01	FOREBAY	259	5883319.0	2044534.62503
17S/06E-28N01	FOREBAY	260	5876603.5	2042971.37503
17S/06E-29C01	FOREBAY	261	5871659.0	2048323.00003
17S/06E-29K01	FOREBAY	262	5873377.5	2045490.50003
17S/06E-29Q01	FOREBAY	263	5873361.0	2045274.25003
17S/06E-30F01	FOREBAY	264	5866434.0	2047190.00003
17S/06E-32G01	FOREBAY	265	5873481.5	2040947.12503
17S/06E-32J02	FOREBAY	266	5874264.0	2039466.50003
17S/06E-35F01	FOREBAY	267	5888535.0	2040776.00003
17S/06E-35J01	FOREBAY	268	5890370.5	2039573.75003
18S/06E-01E01	FOREBAY	269	5892201.0	2033873.12503
18S/06E-02N01	FOREBAY	270	5886656.0	2032336.12503
18S/06E-02R01	FOREBAY	271	5890070.0	2032210.75003
18S/06E-03P01	FOREBAY	272	5881836.0	2032629.37503
18S/06E-05H01	FOREBAY	273	5874765.0	2035980.12503
18S/06E-07A01	FOREBAY	274	5868250.5	2031805.25003
18S/06E-08R01	FOREBAY	275	5873246.0	2027074.87503
18S/06E-09M02	FOREBAY	276	5875856.5	2028751.00003
18S/06E-11J01	FOREBAY	277	5890622.5	2027590.87503
18S/06E-12A01	FOREBAY	278	5896424.0	2030093.87503
18S/06E-12R02	FOREBAY	279	5895096.5	2026768.25003
18S/06E-14B01	FOREBAY	280	5888379.5	2025469.87503
18S/06E-14R01	FOREBAY	281	5890625.0	2022391.37503
18S/06E-15F01	FOREBAY	282	5882187.0	2023781.12503
18S/06E-15M01	FOREBAY	283	5880584.0	2022838.50003
18S/06E-16L01	FOREBAY	284	5876773.5	2023478.50003
18S/06E-21Q01	FOREBAY	285	5878665.0	2016542.37503
18S/06E-25F01	FOREBAY	286	5891762.0	2013188.12503
18S/06E-26R01	FOREBAY	287	5890408.5	2011271.25003
18S/06E-27A01	FOREBAY	288	5883864.0	2015914.75003
18S/06E-28J01	FOREBAY	289	5879251.0	2013091.87503
18S/06E-34B01	FOREBAY	290	5882838.0	2010128.37503
18S/07E-18K01	FOREBAY	291	5899619.5	2023322.62503
18S/07E-18P01	FOREBAY	292	5897367.5	2022162.75003
18S/07E-19G02	FOREBAY	293	5899561.5	2019657.12503
18S/07E-19N01	FOREBAY	294	5896875.0	2016213.75002

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
18S/07E-20K01	FOREBAY	295	5903526.5	2016596.50003
18S/07E-28K01	FOREBAY	296	5909064.5	2012996.12503
18S/07E-28N02	FOREBAY	297	5906995.5	2011573.25003
18S/07E-29J01	FOREBAY	298	5906172.5	2012704.50003
18S/07E-29M01	FOREBAY	299	5901432.0	2012790.87503
18S/07E-32G02	FOREBAY	300	5905129.0	2008896.37503
18S/07E-34P02	FOREBAY	301	5913853.5	2006429.50003
19S/06E-01H01	FOREBAY	302	5894418.0	2003322.50003
19S/06E-03E02	FOREBAY	303	5880577.0	2003637.62503
19S/06E-03K01	FOREBAY	304	5882172.5	2003068.00003
19S/06E-11C01	FOREBAY	305	5887118.5	1999053.25003
19S/06E-12A01	FOREBAY	306	5895441.5	1999532.50003
19S/07E-03H02	UPPER VALLEY	307	5916058.0	2002263.25003
19S/07E-04G01	FOREBAY	308	5908976.0	2002192.50003
19S/07E-04Q01	FOREBAY	309	5907241.5	2000938.12503
19S/07E-05B02	FOREBAY	310	5903922.5	2005128.00003
19S/07E-10P02	UPPER VALLEY	311	5914112.0	1994937.37503
19S/07E-13D01	UPPER VALLEY	312	5923060.5	1993005.87503
19S/07E-13D02	UPPER VALLEY	313	5922703.0	1993016.87503
19S/07E-13D03	UPPER VALLEY	314	5921177.5	1994464.25003
19S/07E-16D01	UPPER VALLEY	315	5907215.0	1993447.25003
19S/07E-20A01	UPPER VALLEY	316	5904728.0	1988737.75003
19S/07E-20A02	UPPER VALLEY	317	5905140.0	1988780.50003
19S/07E-23F01	UPPER VALLEY	318	5917918.5	1986682.87503
19S/07E-23G01	UPPER VALLEY	319	5919819.5	1985678.50003
19S/07E-24H02	UPPER VALLEY	320	5927076.5	1985899.12503
19S/07E-36N01	UPPER VALLEY	321	5921376.0	1974705.75003
19S/08E-30A01	UPPER VALLEY	322	5931268.5	1981945.62503
20S/08E-05C02	UPPER VALLEY	323	5933968.0	1972500.37503
20S/08E-05R03	UPPER VALLEY	324	5935855.5	1968133.00003
20S/08E-06B01	UPPER VALLEY	325	5929631.0	1971657.50003
20S/08E-07E01	UPPER VALLEY	326	5927847.5	1965744.25003
20S/08E-15H03	UPPER VALLEY	327	5946414.0	1959720.37503
20S/08E-16C01	UPPER VALLEY	328	5938055.0	1961243.37501
20S/08E-17K03	UPPER VALLEY	329	5934573.0	1958618.62503
20S/08E-34G01	UPPER VALLEY	330	5944061.5	1944379.50003
20S/08E-36R01	UPPER VALLEY	331	5957517.0	1941628.62503

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
21S/08E-15J01	UPPER VALLEY	332	5946267.0	1926489.62503
21S/09E-06C01	UPPER VALLEY	333	5959365.5	1939884.62503
21S/09E-16E02	UPPER VALLEY	334	5967913.5	1928310.37503
21S/09E-22J01	UPPER VALLEY	335	5976378.5	1921774.75003
21S/09E-24Q01	UPPER VALLEY	336	5985537.5	1920320.00003
21S/10E-30E02	UPPER VALLEY	337	5988110.5	1916891.25003
21S/10E-32N01	UPPER VALLEY	338	5993930.5	1907839.00003
22S/10E-09P01	UPPER VALLEY	339	6000619.0	1897117.87503
22S/10E-16P01	UPPER VALLEY	340	6000072.0	1892154.87503
22S/10E-21C01	UPPER VALLEY	341	6001268.5	1890089.75003
22S/10E-22N01	UPPER VALLEY	342	6004921.0	1886561.87503
22S/10E-28B01	UPPER VALLEY	343	6001816.0	1886849.25003
22S/10E-34G01	UPPER VALLEY	344	6007012.0	1879185.87503

[1] State Plane Coordinate System, California Zone IV, Feet North American Datum 1983

*Coordinates to be collected

Table 5 COASTAL WELLS AND LOCATIONS

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
13S/01E-25R01	PRESSURE 900	1	5742345.5	2174687.00002
13S/02E-15M01	PRUNEDALE	2	5757881.5	2185405.50002
13S/02E-19Q03	PRESSURE 900	3	5746313.5	2179184.50002
13S/02E-20J01	PRESSURE 400	4	5752096.0	2180981.25002
13S/02E-28L02	PRESSURE BOTH	5	5755055.5	2175441.75002
13S/02E-28M02	PRESSURE 400	6	5753447.0	2175997.50002
13S/02E-32J03	PRESSURE 400	7	5752560.0	2170401.75002
13S/02E-33N04	PRESSURE 400	8	5753898.0	2169605.00002
13S/02E-34G01	PRESSURE 400	9	5760129.5	2170052.25002
13S/02E-34M01	PRESSURE 400	10	5757997.5	2169621.75002
14S/01E-13J02	PRESSURE 400	11	5741048.0	2154289.50002
14S/02E-01C01	EASTSIDE DEEP	12	5771477.5	2167454.25002
14S/02E-02A02	EASTSIDE DEEP	13	5768561.0	2167823.50002
14S/02E-02C03	PRESSURE 400	14	5765109.0	2167416.00002
14S/02E-03H01	PRESSURE 400	15	5762283.0	2166255.50002
14S/02E-03M02	PRESSURE 400	16	5758710.5	2164740.50002
14S/02E-03R02	PRESSURE 400	17	5762517.0	2163892.75002
14S/02E-04B01	PRESSURE 400	18	5755909.0	2167499.00002
14S/02E-04G02	PRESSURE 400	19	5756262.0	2166403.75002
14S/02E-04H01	PRESSURE 400	20	5756715.0	2165886.25002
14S/02E-04N03	PRESSURE 400	21	5753365.0	2163112.75002
14S/02E-05C03	PRESSURE 400	22	5748893.5	2167132.50002
14S/02E-05K02	PRESSURE 400	23	5750829.0	2165370.75002
14S/02E-07A01	PRESSURE 400	24	5747142.5	2162655.25002
14S/02E-07J02	PRESSURE 400	25	5746655.0	2159408.25002
14S/02E-07J03	PRESSURE DEEP ZONE	26	5746476.9	2159735.06998
14S/02E-07L04	PRESSURE 400	27	5743780.0	2159328.00002
14S/02E-07L05	PRESSURE 400	28	5743784.5	2160380.50002
14S/02E-08C03	PRESSURE 400	29	5750055.0	2162036.75002
14S/02E-08M02	PRESSURE 400	30	5747103.0	2159672.50002
14S/02E-09D04	PRESSURE 400	31	5753016.5	2162818.75002
14S/02E-09K02	PRESSURE 400	32	5755450.0	2159946.25002
14S/02E-09N02	PRESSURE 400	33	5752897.5	2158609.50002
14S/02E-10E02	PRESSURE 400	34	5758062.0	2160525.75002
14S/02E-10H01	PRESSURE 400	35	5761492.0	2160761.75002

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
14S/02E-10M02	PRESSURE 400	36	5757853.5	2159387.75002
14S/02E-11B01	PRESSURE 400	37	5766446.0	2162325.25002
14S/02E-11M03	PRESSURE 400	38	5764448.5	2159266.75002
14S/02E-12N02	PRESSURE 180	39	5769893.5	2158219.50002
14S/02E-13F01	PRESSURE 180	40	5769952.5	2154587.75002
14S/02E-13G01	PRESSURE 400	41	5772057.5	2155470.50002
14S/02E-14A01	PRESSURE 400	42	5767367.0	2156210.25002
14S/02E-14L02	PRESSURE 180	43	5764775.5	2155024.75003
14S/02E-14L03	PRESSURE 400	44	5764610.5	2154419.75002
14S/02E-15A01	PRESSURE 400	45	5761774.5	2157015.50002
14S/02E-15C02	PRESSURE 400	46	5759385.5	2157259.00002
14S/02E-15L02	PRESSURE 180	47	5758452.0	2153366.00003
14S/02E-15N01	PRESSURE 400	48	5757522.5	2153353.25002
14S/02E-15P01	PRESSURE 400	49	5758767.5	2153584.50002
14S/02E-16A02	PRESSURE 400	50	5756957.5	2157123.50002
14S/02E-16G01	PRESSURE 400	51	5755957.0	2155999.50002
14S/02E-16H01	PRESSURE 400	52	5756041.0	2156035.25002
14S/02E-17A02	PRESSURE 400	53	5751744.5	2156837.50002
14S/02E-20B03	PRESSURE 900	54	5750210.5	2151407.25003
14S/02E-21E01	PRESSURE 400	55	5753561.0	2150101.50003
14S/02E-21J01	PRESSURE 180	56	5756896.0	2149447.75002
14S/02E-21L01	PRESSURE 180	57	5754605.0	2149175.75002
14S/02E-22B01	PRESSURE 400	58	5760986.0	2152124.75002
14S/02E-22L01	PRESSURE 400	59	5759725.0	2149855.00002
14S/02E-22P02	PRESSURE 180	60	5758952.5	2146937.25002
14S/02E-23M01	PRESSURE 180	61	5762708.0	2149478.75002
14S/02E-24E01	PRESSURE 180	62	5768326.5	2150393.25002
14S/02E-24P02	PRESSURE 400	63	5769670.0	2146858.75002
14S/02E-24Q01	PRESSURE 180	64	5771942.5	2146772.50003
14S/02E-25D04	PRESSURE 180	65	5768019.0	2145519.50003
14S/02E-26J03	PRESSURE 400	66	5766847.5	2143883.00002
14S/02E-26N03	PRESSURE 180	67	5762617.0	2142567.75002
14S/02E-26P01	PRESSURE 180	68	5764519.0	2141615.00003
14S/02E-27C02	PRESSURE 400	69	5759686.0	2145562.00002
14S/02E-27F02	PRESSURE 180	70	5759825.0	2144647.75002
14S/02E-28C01	PRESSURE 400	71	5753983.5	2146953.50002
14S/02E-32D06	PRESSURE 180	72	5746981.0	2141653.75003

STATE WELL NUMBER	AQUIFER	MAP ID	FALSE EASTING[1]	FALSE NORTHING[1]
14S/02E-33P01	PRESSURE BOTH	73	5756348.0	2138806.75003
14S/02E-34A04	PRESSURE 180	74	5761465.0	2141623.00002
14S/02E-34B03	PRESSURE 180	75	5759909.5	2141431.00002
14S/02E-36E01	PRESSURE 180	76	5768600.0	2138685.00002
14S/02E-36G01	PRESSURE 400	77	5770039.0	2139297.50002
14S/03E-06L02	EASTSIDE DEEP	78	5775957.0	2164155.50002
14S/03E-07P02	EASTSIDE SHALLOW	79	5775832.0	2157899.00003
14S/03E-18E02	PRESSURE 400	80	5774633.5	2155704.50003
14S/03E-19Q02	PRESSURE 180	81	5776192.0	2146948.50002
14S/03E-30E03	PRESSURE 400	82	5774081.0	2143975.75002
14S/03E-30F01	PRESSURE 180	83	5775609.5	2144673.00002
14S/03E-31B01	PRESSURE 180	84	5776312.0	2140030.50002
15S/02E-12C01	PRESSURE 180	85	5769441.0	2130513.75002

[1] State Plane Coordinate System, California Zone IV, Feet, North American Datum 1983

Table 6 REQUIREMENTS FOR SAMPLE COLLECTION[1]

ANALYTE	CONTAINER TYPE	SAMPLE VOLUME	PRESERATIVE	HOLDING TIME
Calcium (Ca)	polyethylene (HDPE[2])	200 mL[3]	HNO_3 pH<2	3 days w/o pres. 6 months w/ pres.
CATION ANION BALANCE[4]	N/A Calculation	N/A Calculation	N/A Calculation	N/A Calculation
Chloride (Cl)[5]	polyethylene (HDPE[2])	100 mL[2]	4±2°C	28 days
Conductivity (SEC)[5]	polyethylene (HDPE[2])	100 mL[2]	4±2°C	28 days
Magnesium (Mg)	polyethylene (HDPE[2])	200 mL[2]	HNO_3 pH<2	3 days w/o pres. 6 months w/ pres.
Nitrate (NO3)[5]	polyethylene (HDPE[2])	100 mL[2]	none HSO_4, pH<2	48 hours at 4° C 28 days
pH (Laboratory)	polyethylene (HDPE[2])	30 mL[2]	none	48 hours at 4° C
Potassium (K)	polyethylene (HDPE[2])	200 mL[2]	HNO_3 pH<2	3 days w/o pres 6 months w/ pres.
Sodium (Na)	polyethylene (HDPE[2])	200 mL[2]	HNO_3 pH<2	3 days w/o pres 6 months w/ pres.
Sulfate (SO4)	polyethylene (HDPE[2])	100 mL[2]	4±2°C	28 days
Total Alkalinity (as CaCO3)	polyethylene (HDPE[2])	100 mL[2]	4±2°C	14 days

[1] = CCL QA Manual and SOPs
[2] = High Density Polyethylene
[3] = only one 0.5 gal (~2L) container is needed for all analyses
[4] = Cation anion balance is a calculation
[5] = Analytes in partial mineral panel, one pint (~500 mL) container is need for analyses

APPENDICES

APPENDIX A

GLOBAL POSITIONING SYSTEM (GPS) TRAINING

Appendix A-1: GPS Training Record

Appendix A-2: TSC1 Asset Surveyor Manual

Appendix A-3: Pro XR/XRS Receiver Manual

Geographic Positioning System (GPS) Training Record

Name of Trainee

Name of Trainer

Date of Training

	Satisfactory Completion / Understanding
Verification of access to Pathfinder Office software	
Preparation of data dictionary	
Set-up of equipment	
Trimble® TSC1 Asset Surveyor[1]	
Trimble® Pro XR Receiver[1]	
Connector cables	
Batteries (Asset Surveyor and Receiver)	
Confirmation of communication between Asset Surveyor and Receiver	
Acquiring satellites	
Setting up and checking critical settings	
-logging intervals	
-PDOP mask[2]	
Proper packing and unpacking of equipment	
Transferring data files from Asset Surveyor to the computer	

[1] The Agency uses Trimble® products, the GPS industry standard.
[2] PDOP = Position Dilution Of Precision

TSC1 Asset Surveyor
Operation Manual

Trimble

TSC1 Asset Surveyor

Operation Manual

Part Number 34182-05-ENG

Version 5.00

October 1999

Revision A

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1 Quick Setup

The instructions in this chapter are a simplified version of the various steps found in Chapters 4, 5, and 6 of this manual. The purpose of the simplified version is to provide quick setup guides with reasonable default values that can be distributed to field crews to ensure proper setup of rover or base station receivers.

Data is logged to the TSC1 with the Asset Surveyor software. For full details on configuration and data collection, refer to the *TSC1 Asset Surveyor Software User Guide*.

Note – The steps outlined in this chapter do not include steps required to collect data using carrier phase information. For instructions on how to collect high accuracy features, see Chapter 7, Carrier Phase Data Collection.

1.1 Before Leaving the Office

1. Install the Pathfinder Office software on your office computer (refer to the *Pathfinder Office Getting Started Guide*).
2. Using the Pathfinder Office software, prepare any data files or data dictionaries you require, and transfer them to the TSC1. If you want to update GPS or attribute information on features stored in a GIS, import the data files and data dictionary into Pathfinder Office and then transfer them to the TSC1. You may also want to transfer any waypoint and coordinate system files to the datalogger.

3. Check that you have all the required equipment, and that it is operational. Set up and connect your GPS system (the appendix for your GPS receiver lists the equipment and shows you how to connect it).

4. If the GPS receiver has an On/Off switch, turn it on (the Series 4000, GPS Total Station 4700, GPS Total Station 4800, Site Surveyor 4400 and 4600LS receivers have an On/Off switch).

   Start the Asset Surveyor software to check that it and the GPS receiver are communicating correctly. If communication is established, the GPS status line appears. If communication fails, an error message pops up on the screen.

5. Check all critical settings in the Asset Surveyor software.

   You should also check non-critical and display settings, especially if the system has been used by someone else recently. For details of how to configure Asset Surveyor, refer to the *TSC1 Asset Surveyor Software User Guide*.

6. Turn everything off and pack it into carrying cases if you have to travel a significant distance to the survey site. Pack spare sets of batteries if you expect to operate the receiver for any length of time.

1.2 In the Field

1. Travel to the survey site, remembering to carry all the required equipment with you.

2. Reassemble the system.

3. If the GPS receiver has an On/Off switch, turn it on. Then start the Asset Surveyor software, if it is not already on.

   Wait until the GPS receiver acquires enough satellites to start computing GPS positions, before beginning to work. The number of satellites being tracked displays on the status line.

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You should now change some of the configuration settings as follows:

Main menu

1.	*Configuration*	Highlight *Configuration* then press the key

Configuration menu

2.	*GPS rover options*	Press
3.	*Logging options*	Press

Logging options screen

4.	*Point feature*	Synchronized with the base station
5.	*Line/arcs*	Synchronized with the base station
6.	*Not in feature*	Synchronized with the base station
7.	*Minimum positions*	3
8.	*Allow GPS update*	'Warn first'
9.	*Warning distance*	'Any'
10.	To accept	Press

Position filters screen

11.	*Position mode*	'Manual 3D' or 'Overdet. 3D' depending on canopy density
12.	*PDOP mask*	4 or 6 (depending on receiver)
13.	To accept	Press

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4. Create a new data file, associating the correct data dictionary with it. Alternatively, re-open an existing data file.
5. Begin collecting data. Collect, review and update all the features necessary.
6. Close the data file.
7. Disconnect and repack the components of the system. Remember to turn off the GPS receiver, if it has an On/Off switch. Return to your office.

1.3 Back in the Office

1. Transfer the data files from the TSC1 to the PC using the Pathfinder Office software.
2. Use the Pathfinder Office software for differential correction, plotting, and exporting the data file(s) to a GIS.
3. Recharge the TSC1 datalogger and GPS receiver batteries.

1.4 Rover Configuration

Use the following procedure to set up your system in a rover configuration.

From the *Utilities* menu, select *Factory defaults*. This resets the Asset Surveyor software to its default configuration and then restarts the datalogger.

Antenna options screen

14. *Height*	Height to antenna's phase center
15. *Measure*	'Vertical'
16. *Type*	For a list of antenna types, see the *TSC1 Asset Surveyor Software User Guide*
17. *Confirm*	Select 'Per feature', 'Per file', or 'Never'
18. To accept	Press

GPS rover options menu

19. To return to the *Configuration* menu	Press

Configuration menu

20. *Communication options*	Press
21. *Real-time input options*	Press

Real-time input options screen

22. RTCM age limit	5 or 10 (depending on your radio)
23. To accept	Press
24. To return to the *Configuration* menu	Press

Configuration menu

25. To exit the *Configuration* menu	Press

1.4.1 Data Collection

Use the following procedure to set up your system for rover data collection.

Main menu

1. Select *Data collection* and press Enter

Data collection menu

2.	Create a data file	Select *Create new file*: Press Enter and then press Enter
	-or- Open an existing data file	-or- Select *Open existing file*. Press Enter Select an existing file to append to or update, and press Enter
3.	To exit *Data collection*	Press Esc and press "Yes" to confirm exit

1.5 Base Station Configuration

Use the following procedure to set up your system in a base station configuration.

Main menu

1.	*Configuration*	Highlight *Configuration* then press the Enter key

Configuration menu

2.	*GPS base station options*	Press Enter
3.	*Logging options*	Press Enter

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Logging options screen

4.	*Measurements*	One to five seconds (depending on rover interval and free space)
5.	To accept	Press
6.	To return to the *Configuration* menu	Press

Configuration menu

7.	To exit the *Configuration* menu	Press

1.5.1 Base Station Data Collection

Use the following procedure to set up your system for base station data collection.

Main menu

1.	*Data collection*	Press

Data collection menu

2.	*Create base file*	Press

Create File screen

3.	Create file	Press

Antenna options screen

4.	*Height*	Height to antenna's phase center
5.	*Measure*	'Vertical'
6.	*Type*	For a list of antenna types, see the *TSC1 Asset Surveyor Software User Guide*
7.	To accept	Press

TSC Asset Surveyor Operation Ma al
Trimble

Reference Position screen

8.	Enter reference position	Type lat/lon (or north/east) and altitude, and press Enter
	-or-	-or-
	Use an existing waypoint	Press WpPt, select the waypoint and press Enter
	-or-	-or-
	Use an approximate position	Press Here and press Enter
	-or-	-or-
	Leave as is and set in the Pathfinder Office software	Press Enter

Base Station screen

9.	To exit *Base station*	Press Esc and press Yes to confirm exit.

Key Symbols

The Asset Surveyor software uses both *hard* (that is, physical) keys on a keypad and *soft* (that is, visual) keys on the datalogger's screen.

Hard (physical) keys on the TSC1 keypad are indicated as follows:

, , , and so on.

Softkeys on the TSC1 screen are indicated as follows:

, and so on.

A softkey is activated by pressing the corresponding function key (...) on the TSC1 keypad.

Warnings, Cautions, Notes, and Tips

Warnings, cautions, notes, and tips draw attention to important information, and indicate its nature and purpose.

Warning – Warnings alert you to situations that could cause personal injury or unrecoverable data loss.

Caution – Cautions alert you to situations that could cause hardware damage or software error.

Note – Notes give additional significant information about the subject to increase your knowledge, or guide your actions.

Tip – Tips indicate a shortcut or other time- or labor-saving hint that can help you make better use of the product.

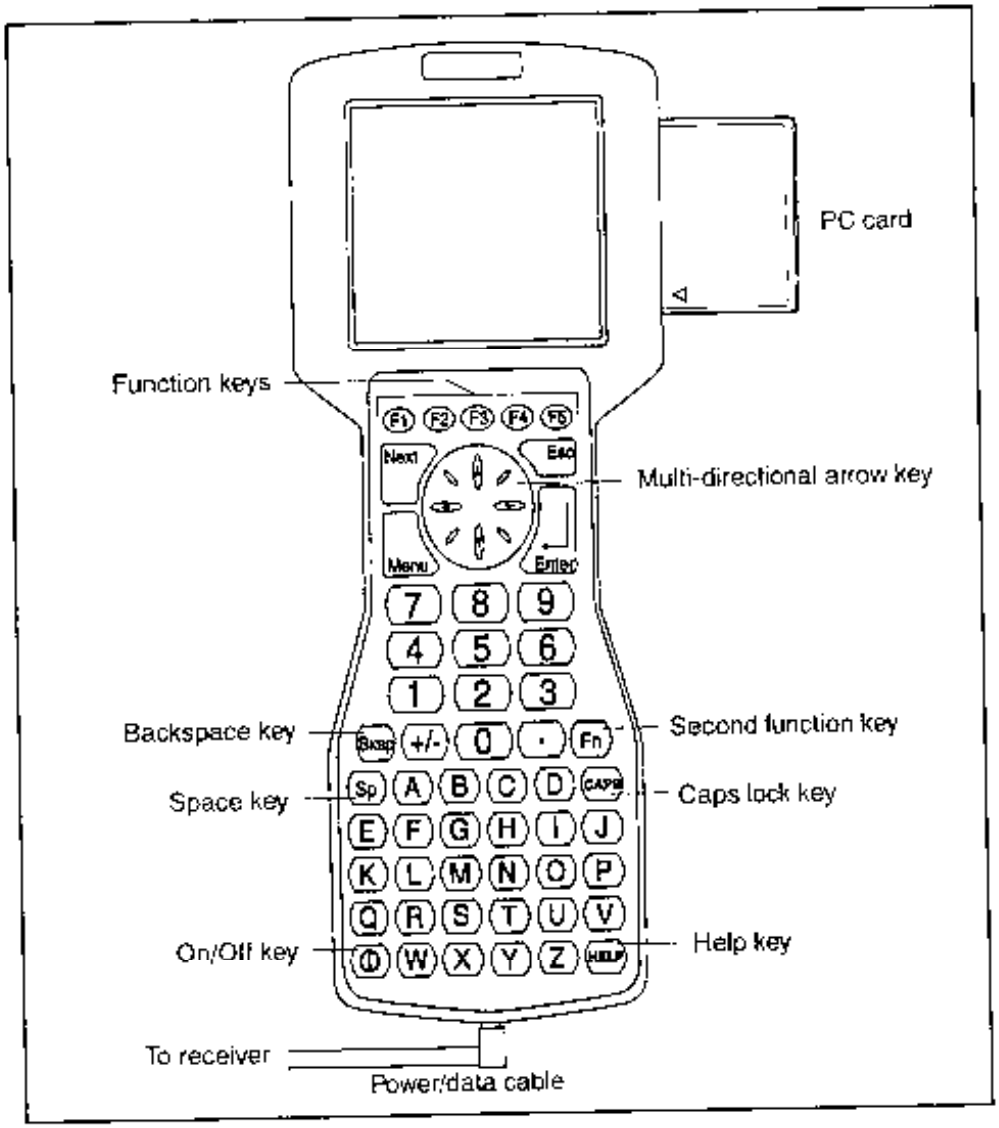

Figure 3-1 Front View of the TSC1 Datalogger

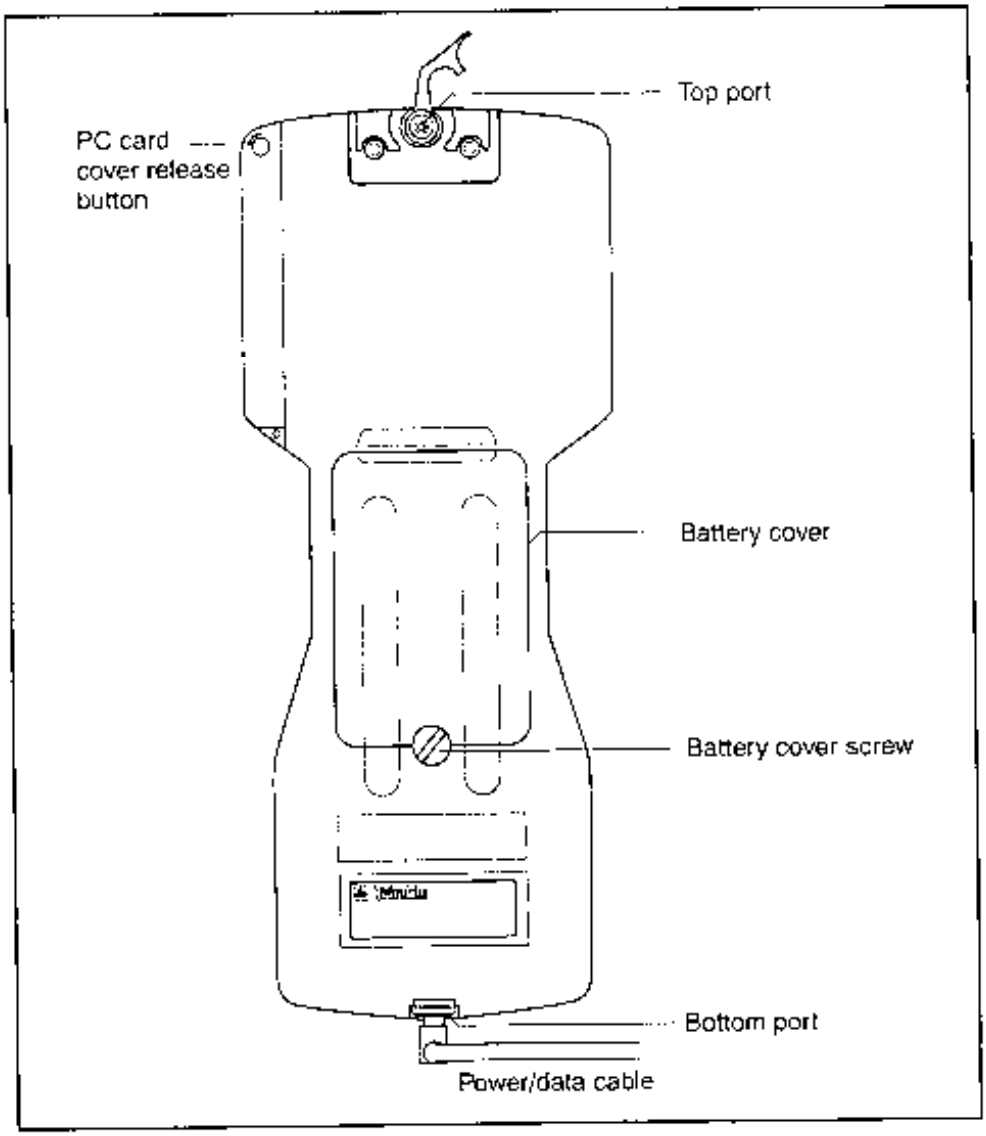

Figure 3-2 Back View of the TSC1 Datalogger

3.2 Turning the TSC1 Datalogger On and Off

To turn on the TSC1 datalogger, make sure that power is supplied (see Power Sources, page 3-11). Then press the green on/off key marked [⏻].

To turn off the TSC1, hold down [⏻] for one second.

Tip – For the location of the [⏻] key and other keys on the TSC1 datalogger's keypad, refer to Figure 3-1.

3.2.1 Hard Keys

Hard keys are the physical keys on the TSC1 keypad, such as [1], [A], [Enter], [⇦], [⇨], and [Esc]. Use these keys to enter data and to access different screens.

3.2.2 Alternate Keys

Alternate keys give some hard keys a second function. Some of the second functions are displayed on the hard keys in small yellow lettering. To use a second function, press the [Fn] hard key and then press the alternate hard key.

Table 3-1 shows some of the functions that you can access using alternate keys.

Table 3-1 Useful Second Functions

Keys	Function
[Fn] [⇩]	Page down
[Fn] [⇧]	Page up
[Fn] [⇦]	Home
[Fn] [⇨]	End
[Fn] [Esc]	Previous screen
[Fn] [E]	Contrast up
[Fn] [F]	Contrast down

3.2.3 Softkeys

Softkeys are displayed on the bottom line of the TSC1 screen. A softkey corresponds to the adjacent hard key: F1, F2, F3, F4, F5. Press the hard key to activate the softkey on the screen. To activate the Pause softkey, for example, press F1. See Figure 3-3.

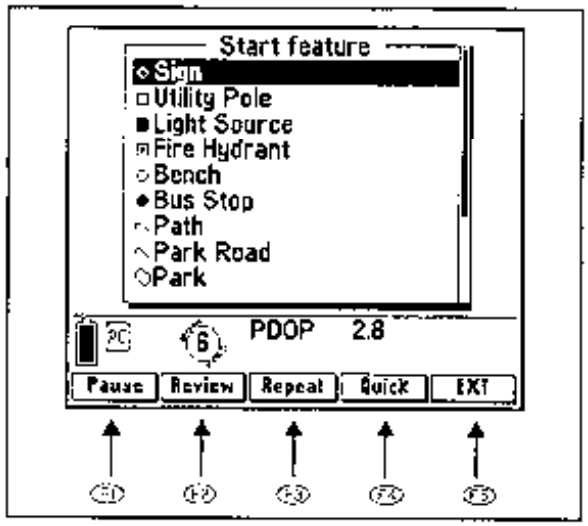

Figure 3-3 How Function Keys Correspond to Softkeys

Softkeys relate to particular forms or fields and only appear when these forms or fields are accessed. For example, the Seg softkey only appears when a line feature is opened for data collection, as this functionality applies to line features only.

3.2.4 Menu Key

To return to the *Main menu* at any time, press the Menu hard key. Use this key in conjunction with the Esc key to move around the Asset Surveyor screens quickly.

3.2.5 Next Key

To simplify the task of moving around menus, the [NEXT] hard key offers quick access to open screens (windows).

3.2.6 Help Key

Press the [HELP] hard key at any time to obtain further information about a topic. When you press it, the *Help* menu appears. To exit *Help*, press [ESC] from the *Help* menu.

3.3 Screen

The TSC1 has an LCD screen. This screen responds to heat, and prolonged exposure to full sunlight can cause it to darken. If the screen does darken, turn it away from direct sunlight until it returns to normal.

Caution – Repeated exposure to direct sunlight can cause the screen to degrade.

3.3.1 Contrast

To increase the screen contrast, press [Fn] [F].

To decrease the screen contrast, press [Fn] [F].

3.3.2 Backlight

To toggle the screen backlight on and off, press [Fn] [L].

TSC1 Asset Surveyor Operation Manual Trimble

Pro XR/XRS

Receiver Manual

Trimble

Pro XR/XRS

Receiver Manual

Part Number 31172-20-ENG

Revision A

May 1998

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Mapping and GIS Systems Division
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1-800-827-8000 in North America
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Fax: +1-408-481-7744
www.trimble.com

4 Pro XR/XRS System Equipment

This chapter provides details of the equipment associated with the Pro XR and Pro XRS receivers and shows how to assemble the equipment.

4.1 Pro XR Receiver Front Panel

The Pro XR receiver, shown in Figure 4-1, is mounted in a weatherproof housing.

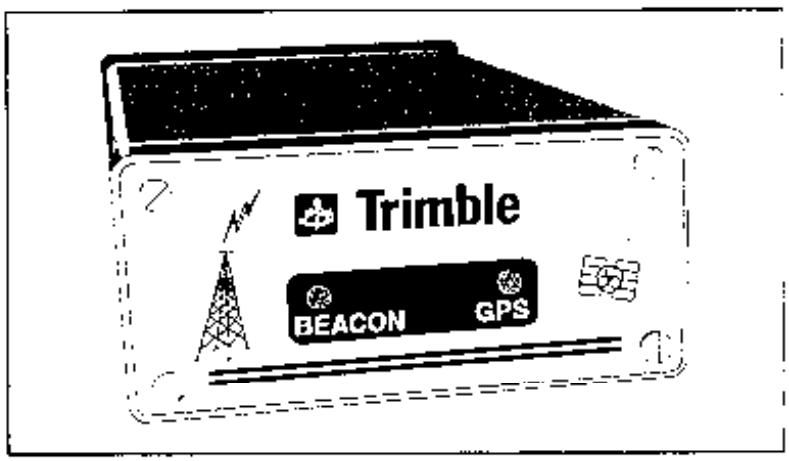


Figure 4-1 Pro XR Receiver Front Panel

4.2.1 Pro XR Status Lights

The two status lights on the front panel of the Pro XR receiver provide the status information listed in Table 4-1.

Table 4-1 Pro XR Status Lights

	GPS	Beacon
OFF	Unit not powered up	Unit not powered up or beacon function is disabled
FAST FLASH	Searching for satellites	Searching for MSK signals
SLOW FLASH	Found one or more satellites. Not enough for a position fix.	Found MSK signal. RTCM data has not been sent to GPS receiver.
ON	Performing position fixes	Good RTCM data is being provided to the GPS receiver

4.3 Back Panel

The Pro XR and Pro XRS receivers have two serial communications ports (RS232) and an antenna cable port. The serial communications ports, shown in Figure 4-3, are 12-pin(m) bulkhead connectors located on the back panel of the Pro XR and Pro XRS receivers.

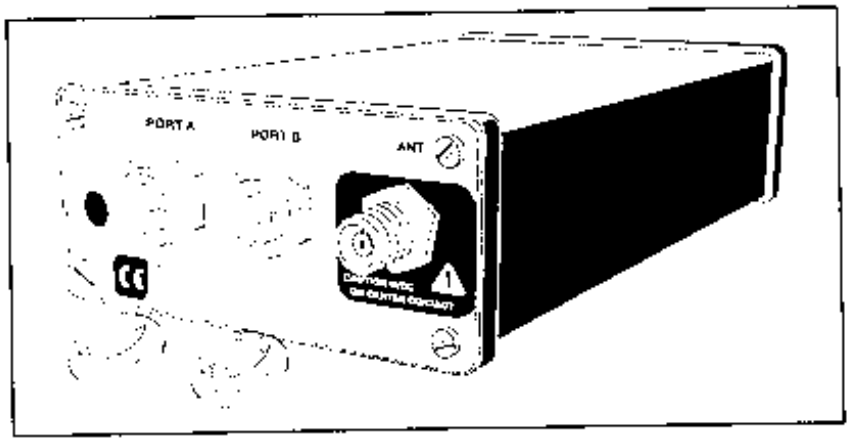


Figure 4-3 Pro XR/XRS Receiver Back Panel

4.3.1 Port A

Port A offers RS232 communication standards. It is designed for NMEA-0183 output and RTCM input.

4.3.2 Port B

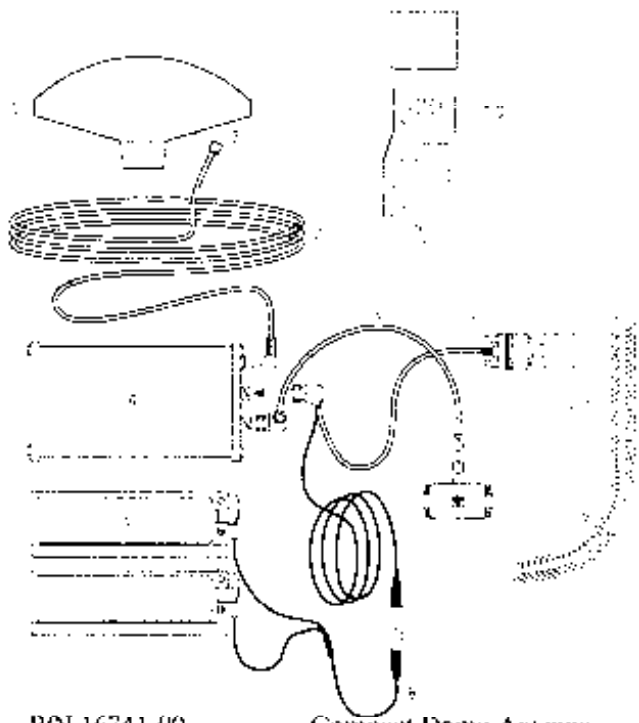
Port B also offers RS232 communication standards. It is designed for two-way data flow, external sensor input and power.

4.3.3 Antenna Port

The antenna connector is a TNC(f) connector located on the far right on the back panel of the Pro XR or Pro XRS receiver.

4.4 GPS Pro XR Cabling

To use the TSC1 handheld with a GPS Pro XR receiver, connect the system as shown in Figure 4-4.



1	P/N 16741-00	Compact Dome Antenna
2	P/N 22628	Antenna Cable
3	P/N 31180	Antenna Cable Adapter
4	P/N 29654-11	12 channel Pro XR receiver
5	P/N 17466	Camcorder Batteries
6	P/N 30232-00	NMEA/RTCM Cable
7	P/N 30231-00	Data/Power Cable
8	P/N 24333	Dual Battery Cable
9	P/N 32287-00	TSC1 Data/ESP Cable
10	P/N 29673-50	TSC1 Handheld

Figure 4-4 GPS Pro XR / TSC1 Connection Diagram

4.7 Pro XR/XRS System Hip Pack

The Pro XR and Pro XRS systems come equipped with an ergonomic hip pack carrying system, see Figure 4-18. The receiver, batteries and antenna are carried in the field using this hip pack/strapping system.

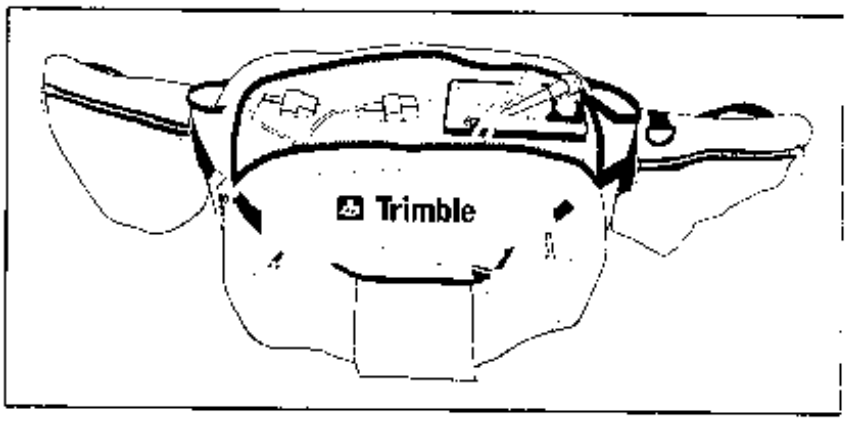


Figure 4-18 Pro XR/XRS System Hip Pack

4.7.1 Pro XR/XRS Hip Pack Contents

The Pro XR and Pro XRS systems are packed so that they are almost ready for use. The items not included in the hip pack are three 1-foot antenna poles, one 6-inch antenna pole and the data collector cable (P/N 30233-00 for TDC1, P/N 30234 for TDC2, or P/N 30236 for Field Computer/MC-V). These are located inside the shipping case.

The large interior of the hip pack contains: the Pro XR or Pro XRS receiver, two camcorder batteries, the power/data cable, and the camcorder power cable. All of these are set up inside the pack and ready for use. The exterior pocket of the hip pack contains a 3-meter antenna cable attached to the receiver and routed through a passage between the large interior pocket and exterior pocket. Both the data collector cable and antenna are routed out of the exterior pocket through the double zipper.

To route the data collector cable:

1. Locate the data collector cable and connect it to the data power cable, DE-9 connector labeled TO RECEIVER.
2. Once connected, feed the coiled cable through the passage and into the exterior pocket.

4.7.2 Wearing and Adjusting the Hip Pack

The Pro XR/XRS hip pack, once adjusted to suit, is comfortable and easy to use. See Figure 4-19.

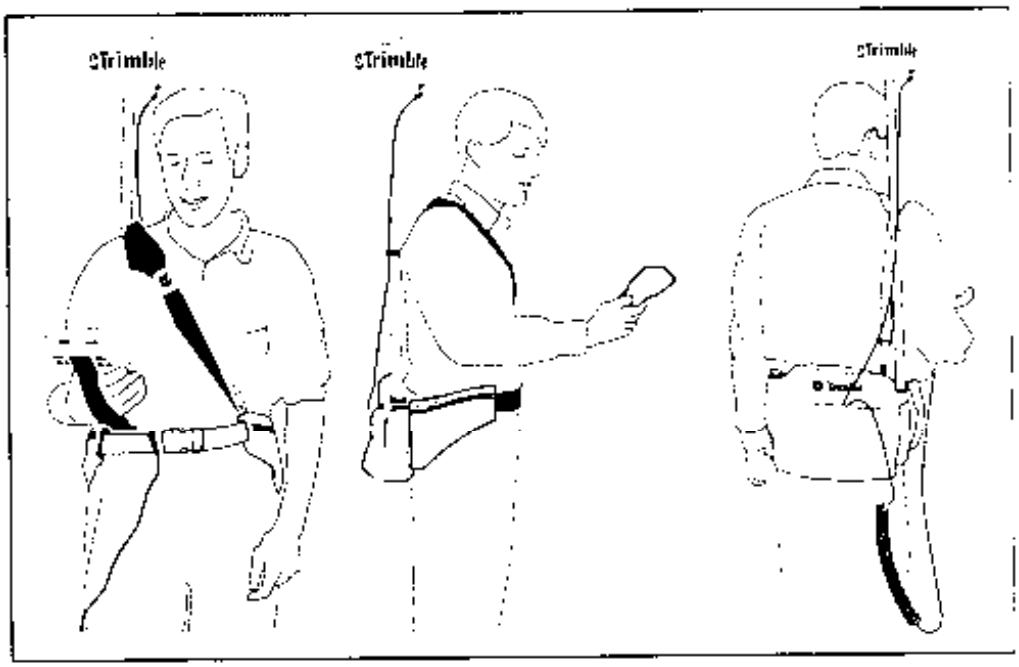


Figure 4-19 View of Hip Pack Setup

Antenna

When wearing the hip pack, the antenna height should be 3-4 inches above your head. The number of antenna pole sections required varies depending on your height. For example, if you are 5'5" tall, you may need two 1-foot and one 6-inch pole sections. If you are 6'2" tall, you may need three 1-foot poles. Try out different pole heights.

To set up the antenna with the hip pack:

1. Attach the pole sections together and connect the antenna onto the top of the pole sections.
2. Attach the pole/antenna to the hip pack.
3. Choose the side of your body that you prefer the antenna to be on and slide the pole sections into the small sleeve on that side of the hip pack.

Hip Pack and Strap

To adjust the hip pack and strap:

1. Connect the strap to the rear D-ring on the side of the pack on which the antenna is located.
2. Connect the other end of the strap to the D-ring on the belt on the opposite of the bag.
3. Slide the antenna pole through the velcro connection on the strap.
4. Put the strap over your head and across your opposite shoulder.

   At this point, the shoulder strap should lead naturally from the antenna pole across your chest to the belt.
5. Buckle the hip pack around your waist/hip area so that the belt buckle is centered in the middle of your body.

   The pack should adjust to fit close to the small of your back.

6. Adjust the front and back straps so the shoulder strap is situated squarely on your shoulder.

7. Put the pack on by slipping the strap over your head and across your body and then buckling the belt of the hip pack.

   The hip pack includes side compression straps that can be pulled towards you to hold the pack firmly and comfortably against your back.

Remove the hip pack/strap by unbuckling the belt and slipping the strap over your head.

The hip pack and strap can also double as a shoulder bag. Tuck the belt portion of the pack into the webbing material on the back of the pack and hook the strap on the large D-rings of the pack. The unit can now be carried on your shoulder instead of around your waist.

The pack has extra room in the interior and exterior pockets for additional items you may need in the field. The hip pack also includes straps on the bottom of the pack to secure an extra sweater or coat while in the field.

4.8 Optional Range Poles and Tripods

Range poles and tripods are very useful when collecting carrier phase data. The height of the antenna can be accurately measured, and the antenna can be held still easily, compared to an antenna mounted from the hip pack.

APPENDIX B

FIELD DOCUMENTATION

Appendix B-1: Example of Field Sheet

Appendix B-2: Example of Chain of Custody Form (COC)

Appendix B-3: Example of Photo-Log

Appendix B-4: Example of Sample Labels

MONTEREY COUNTY WATER RESOURCES AGENCY - COASTAL GROUND WATER MONITORING PROGRAM **June 2007**

F CODE	SWID	STATUS	AQUIFER	USE	WELL NAME	METER No	PLANT No	SMPLE PT	VISIT DATE	APPT. DATE	SAMPLE DATE	SAMPLE TIME	SMPLER	REMARKS
[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	[illegible]	[illegible]	DL						[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	[illegible]	[illegible]	[illegible]						[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	[illegible]	[illegible]	DL						[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	AG		[illegible]	[illegible]	DL						[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	[illegible]		DL			[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	[illegible]		DL			[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	[illegible]	[illegible]	DL						[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	[illegible]		DL						[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	[illegible]		DL						[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	[illegible]		[illegible]						[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	[illegible]	[illegible]	DL						[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	AG	[illegible]	[illegible]		[illegible]						[illegible]

ENVIRONMENTAL ANALYSIS REQUEST FORM

MONTEREY COUNTY CONSOLIDATED CHEMISTRY LABORATORY
1270 NATIVIDAD ROAD, SALINAS, CALIFORNIA 93906 Phone (831) 755-4516

Shaded areas are for laboratory use only

Chain of Custody

Collected by (Print & sign)	Received by	Date & Time
Relinquished by	Received for Laboratory	Date & Time

Client Name

Address

City, State, Zip

Report Attention

Copy to

Phone

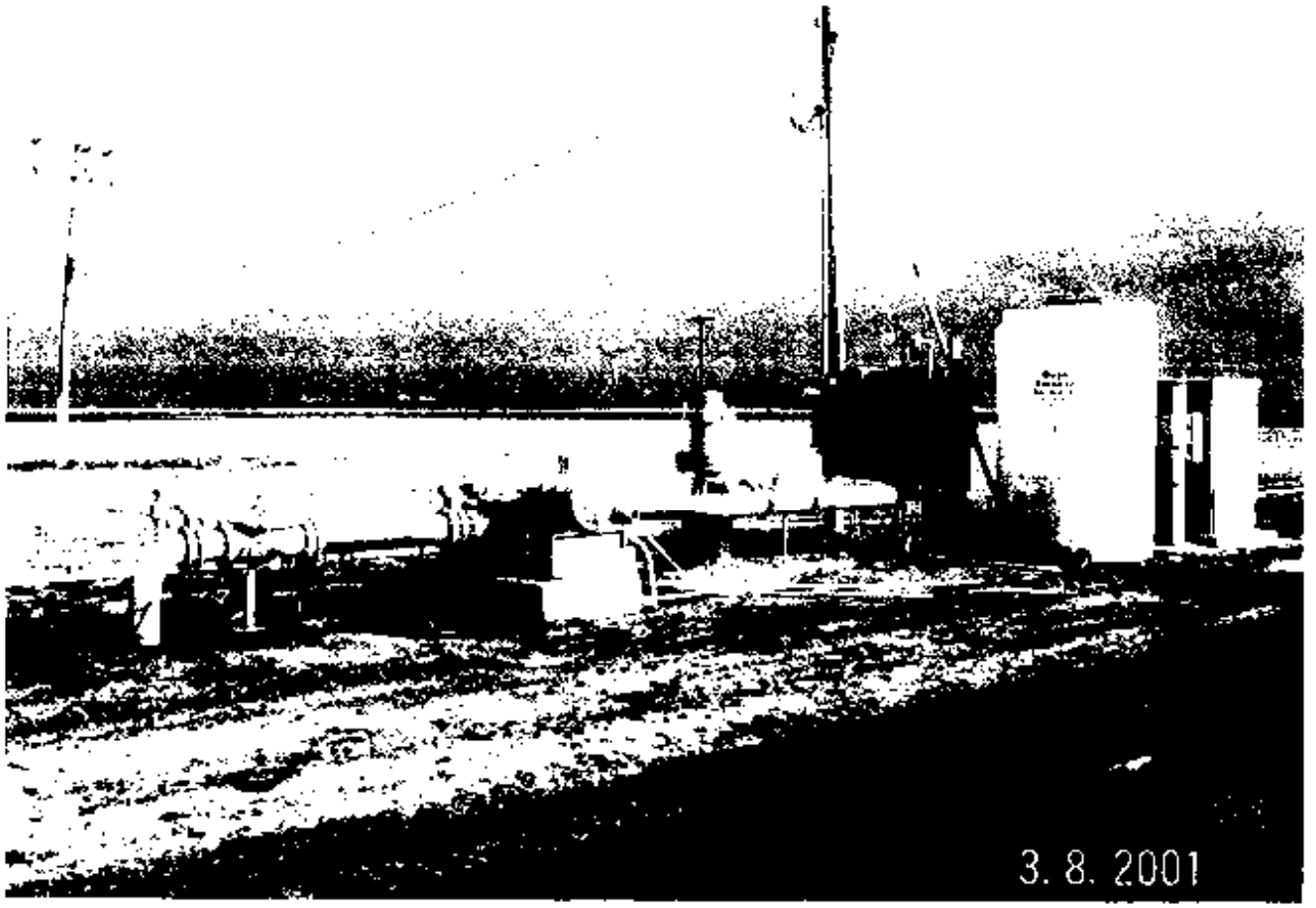
Fax

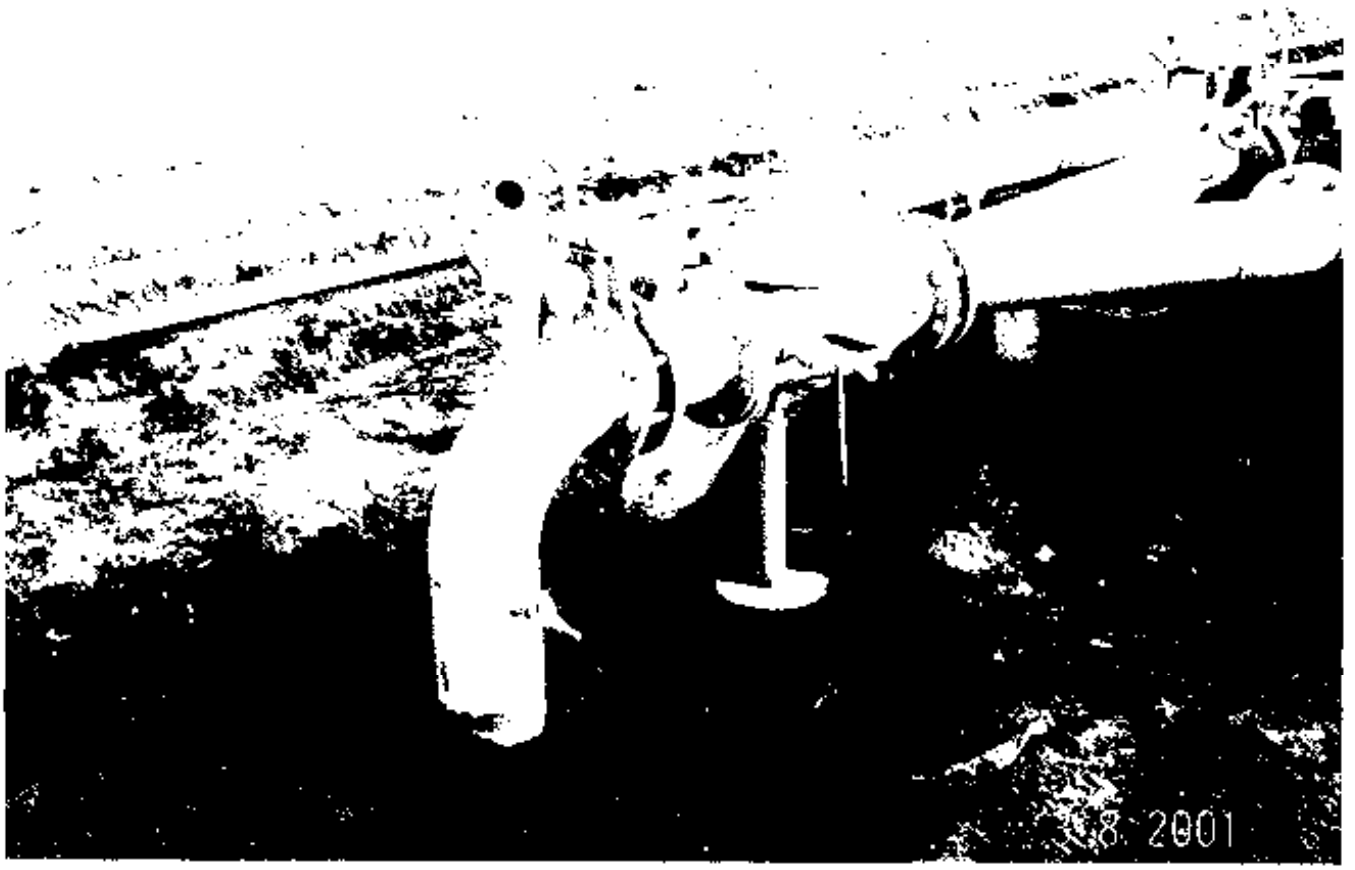
ANALYSES REQUESTED

Laboratory Number	Sample ID or System #	Sample Site or Description	Collection Date & Time	Matrix[1] 1-Routine 2-Repeat 3-Replacement	No. of Containers	Coliform	MPN Quanti Tray-D	Nitrate				

[1] D Drinking Water (Specify as routine, repeat or replacement) W Wastewater (Specify as grab or composite) O Other (identify)

[ ] Payment received with delivery	Amount	Sample comments (irregularities preservation, billing information if different from reporting)
Check	Initials	
Receipt #	Date	


3. 8. 2001


3.8. 2001

15S/04E-07A01

Sampling Date Sampler

Sampling Time

Comments
Complete General Mineral Analyses

15S/04E-08M04

Sampling Date: Sampler

Sampling Time:

Comments
Complete General Mineral Analyses

15S/04E-15D02

Sampling Date: Sampler

Sampling Time

Comments:
Complete General Mineral Analyses

15S/04E-17P02

Sampling Date Sampler

Sampling Time:

Comments:
Complete General Mineral Analyses

15S/04E-19H03

Sampling Date Sampler:

Sampling Time

Comments
Complete General Mineral Analyses

15S/04E-20B02

Sampling Date: Sampler

Sampling Time:

Comments:
Complete General Mineral Analyses

15S/04E-26G01

Sampling Date Sampler

Sampling Time

Comments:
Complete General Mineral Analyses

15S/04E-36H01

Sampling Date Sampler

Sampling Time

Comments
Complete General Mineral Analyses

APPENDIX C

REVIEW CHECKLISTS

Appendix C-1: Field Activities Review Checklist

Appendix C-2: Laboratory Data Review Checklist

Field Activities Review Checklist

Sampling Location(s):

Sampling Date:

Item	Yes	No	NA	Comment
All required information was entered into field sheets in ink, and sheets were signed and dated by the field sampler.				
Deviations from SOPs, along with any pertinent verbal approval authorizations and dates, were documented on the field sheets.				
Samples were collected at the correct sites.				
The correct number of samples for each type of analysis and the correct volume was collected (0.5 gal/ ~2L for complete mineral panel OR one pint/ ~0.5L for partial mineral panel).				
Acceptable sample containers, appropriate for the intended analysis, were used.				
Field blanks were collected, and at the correct frequency (one every 25 samples).				
Field duplicates were collected, and at the correct frequency (one every 25 samples).				
Samples were packed with double-bagged ice and transported at the proper temperature (4±2°C).				
Chain of custody (COC) documents were completed properly.				
Sample holding times were not exceeded during field operations. See Table 6 (QAPP).				

Reviewer's Name (print):

Reviewer's Signature:

Reviewer's Title:

Date of Review:

Laboratory Data Review Checklist

Sampling Location(s):

Sampling Date:

Item	Yes	No	NA	Comment
Samples arrived at the laboratory at the proper temperature (4±2°C).				
All requested analyses were performed and were documented in the analytical report.				
Analyses were performed according to the methods specified in the approved QA Project Plan.				
Holding times for extraction and analysis were not exceeded. See Table 6 (QAPP).				
Field Blanks results were below MDLs and were analyzed at a frequency of one every 25 samples.				
Field Duplicate results were ≤ 25% RPD and were analyzed at a frequency of one every 25 samples.				
Method detection limits were included in the report.				
A narrative summarizing the analyses and describing any analysis problems was included in the data report.				
Data qualifiers and flags were explained in the data report.				
Initial calibration data were within laboratory SOP defined acceptance criteria ($r^2 \geq 0.995$) for all analyses.				
Method blanks were performed at 3 per analytical batch. and were below MDL.				
Laboratory Control Sample (LCS) data were included for all analyses for every analytical batch.				
Laboratory Control Sample Results were within 80-120% recovery.				

Item	Yes	No	NA	Comment
Analytical Duplicate data were included for all analyses for every analytical batch.				
Analytical Duplicate results were < 25% RPD.				
Matrix spike data were included for all pertinent analyses for every analytical batch, and recoveries were within 75-125%.				
Matrix spike additions were at 3-10x the native.				
Matrix spike duplicates were ≤ 25% RPD.				
Continuing calibration data were within QAPP defined acceptance criteria (80-120% of initial slope) for all analyses				

Reviewer's Name (print):

Reviewer's Signature:

Reviewer's Title:

Date of Review:

APPENDIX D

MONTEREY COUNTY CONSOLIDATED CHEMISTRY LABORATORY

QA MANUAL AND STANDARD OPERATING PROCEDURES

Appendix D-1: QA Manual

Appendix D-2: Specific Conductance, based on SM 2510 B

Appendix D-3: pH, based on SM 4500-H B

Appendix D-4: Total Alkalinity, based on SM 2320 B

Appendix D-5: Metals, based on SM 3111 B

Appendix D-6: Anions, based on EPA 300.0

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ACQUISITION, REDUCTION AND VALIDATION OF REPORTING DATA.....11

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PERFORMANCE AND SYSTEM AUDITS 16

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APPENDICES

ORGANIZATION AND RESPONSIBILITY

On October 11, 1988, the Monterey County Board of Supervisors, in Resolution No. 88-508, authorized the Director of the County Health Department and the General Manager of Monterey County Flood Control and Water Conservation District (MCFC&WCD) to consolidate laboratory services for their respective programs into one facility. A Laboratory Steering Committee, comprised of representatives from both agencies, was established for the purpose of providing the planning, operation, and future development of the Consolidated Environmental Laboratory.

Each year the Steering Committee develops a Memorandum of Agreement (MOA) that describes and confirms the services to be provided by the Health Department to the Water Resources Agency (formerly the Flood Control and Water Conservation District) and defines the responsibilities of each party. In addition to providing laboratory support for the Health Department and the Water Resources Agency, the Consolidated Chemistry Laboratory provides analytical services to the Monterey Regional Water Pollution Control District, the County Department of Public Works and numerous water supply systems and wastewater treatment facilities.

The Consolidated Environmental Laboratory is accredited by the State Department of to perform tests in the following fields: 1) microbiology of drinking water and waste water; 2) inorganic chemistry and physical properties of drinking water; 3) analysis of toxic chemical elements in drinking water; 4) wastewater inorganic chemistry, nutrients and demand; and 5) toxic chemical elements in wastewater. A list of analyses and methods used in the laboratory is included in Appendix A.

The following is a brief description of the staff support for the Consolidated Chemistry Laboratory:

1. Director - Plans, organizes and controls laboratory operations. Coordinates laboratory interactions with other programs in the Health Department. Administers laboratory budget, billing and purchasing. Develops laboratory policy and procedures and supervises staff.

2. Public Health Chemist – Principal analyst. Performs complex organic and inorganic chemical analysis, evaluates and implements laboratory methods, develops and maintains quality assurance, reports results and maintains records, purchases equipment and supplies, provides technical consultation to Environmental Health and Water Resources Agency. Trains analysts and documents competency

3. Water Quality Specialist- Performs broad range of professional scientific work related to water quality and environmental issues; is proficient in

performing water quality analyses and managing the laboratory water quality database. Interpret and explain regulatory guidelines to clients.

4. Public Health Microbiologists - Assist Public Health Chemist in performing microbiological analyses and performing quality control.

5. Laboratory Assistant - Prepares culture media and reagents, assists in the processing of specimens, performs low to moderately complex environmental analyses and clinical analyses where interpretation or medical judgement is not required.

5. Laboratory Helper - Washes and sterilizes glassware and supplies. Prepares and labels mailing containers and specimen collection kits. Accession laboratory specimens. Sterilizes and disposes infectious waste. Maintains stockroom.

6. Typist-Clerk II - Enters clients and laboratory results into computer. Prints reports/forms. Prepares billing statements; receives and accounts for payments. Distributes laboratory results, and maintains laboratory files.

QUALITY ASSURANCE OJECTIVES FOR MEASUREMENT OF DATA

Quality Assurance (QA) includes all aspects of laboratory operation that affect the accuracy and reliability of sample test results. In addition to quality control of the analytical test process, quality assurance practices include: 1) proper sample collection, receiving and holding, 2) proper maintenance of equipment, 3) accurate data reduction, validation and reporting; and, 4) periodic performance and systems audits.

CUSTODY, HOLDING AND DISPOSAL OF SAMPLES

Quality assurance includes proper labeling of samples, proper completion of the chain of custody/analysis request form, proper collection, preservation and storage of samples, proper accessioning of samples, and proper disposal of the sample.

1) Sample Collection/Labeling. Sample collection is a coordinated effort between the client and the laboratory. The laboratory will provide clients with appropriate sample containers and sample collection/preservation instructions. The laboratory will also request duplicates and blanks according to client's sample plan requirements. All samples submitted for testing should be appropriately labeled. Sample containers provided by our laboratory have a suitable label which should be filled out at the time of sampling by the sample collector. The following information must be provided with all samples:

   a) Sample identification - submitters identification of sample (e.g. well number)

   b) Location - an address or brief description of the place the sample was taken.

   c) Time and date taken.

   d) Name of sample collector.

   e) Any preservatives

2) Chain of Custody/Analysis Request Form. A Chain of Custody/Analysis Request form should accompany all samples (see Appendix B). The Chain of Custody/Analysis Request form must include the following information: submitter name and address; sample identification; location of sample collection; date & time of collection; sample type; analysis to be performed; signatures of persons involved in the collection and chain of possession; and inclusive dates of possession.

3) Sample Receiving. Laboratory personnel receiving samples should assure that samples are properly collected, labeled, and the Custody/Analysis Request form has been completed:

   a) The laboratory assistant receiving the specimen must sign and date the Custody/Analysis Request form. Make sure that any special requests made by the client are recorded under the comments section of the form

   b) Assign each sample a unique laboratory identification number. Place

preprinted lab number on analysis request form and sample container. When a sample is collected in multiple containers for different analyses, each container should receive the same laboratory number. (Exception: sample containers for analytes requiring a rapid turnaround time (e.g. coliforms) may receive separate number to expedite reporting).

c) Check that the samples meet the criteria described in Table 1006:I Summary of Special Sampling or Handling Requirements in 18th ed. of *Standard Methods for the Examination of Water and Wastewater* (Appendix C)

   i) Samples should be collected in a suitable container; samples collected in bottles of unknown origin or questionable cleanliness should be brought to the attention of the Water Quality Specialist or the Public Health Chemist.

   ii) Samples should be adequately labeled

   iii) Samples should be checked for proper preservative, holding time, and holding temperature.

   iv) Samples should be adequately sealed. Notify public health chemist if there is evidence of leakage. Verify that adequate sample volume exists to perform requested analysis.

d) NOTE: Samples that are not properly identified or are otherwise unsuitable for testing (e.g. improperly preserved or exceeding holding/ transport time) are recorded on the "Sample Invalidation Log" and the Water Quality Specialist or Public Health Chemist notifies the client. Samples not meeting collection/preservation criteria may be tested only if resampling is impossible; results from such samples must be qualified on the laboratory report by comments describing sample deficiency.

4) When the sample meets criteria for acceptance by the laboratory, required preservatives are added immediately and the sample is stored under conditions specified by the analytical method to be used. For samples requiring thermal preservation, a laboratory refrigerator and freezer is available. The temperature is maintained at 4 degrees and below -10°C respectively. Temperatures are monitored each day.

5) Chain of Custody/Analysis Request forms are given to the clerk to enter into a password protected computer laboratory information management system. Refer to "Water Sample Entry" in Clerical Manual for instructions on sample log-in.

6) Disposal of samples: Upon completion of all analyses, any remaining

sample will be stored for at least one month prior to disposal. Chain-of-Custody form, worksheets and lab reports are retained for three years. NOTE: Longer retention of samples or data may be required when legal action is probable. The samples and any associated extracts or digests are disposed of following recommendations found in the book, *Prudent Practices for Disposal of Chemicals from Laboratories*, National Academy Press, Washington, D.C. 1983.

CALIBRATION PROCEDURES AND FREQUENCY

Calibration is the process for determining the correctness of the assigned values of the physical standards used or the scales of the measuring instruments. Calibration accuracy is critically dependent on the reliability of the standards used for the required comparisons. Only the highest quality chemicals are used to provide necessary standard solutions, and due care is exercised in their preparation. The concentrations of the calibration standards bracket the expected concentration of the analyte in the samples. No data is reported beyond the range of calibration of the methodology. The calibration data, when plotted graphically, is referred to as a calibration curve. The calibration must be done under the same instrumental and chemical conditions as those that will exist during the measurement process. The frequency of calibration depends on the accuracy requirements of the investigation and the stability of the instrument used for the measurements:

At a minimum, three different dilutions of the standard will be measured when an analysis is initiated. Correlation coefficient must be > 0.995. Reportable analytical results are those within the range of the standard dilutions used. Do not report values above the highest standard. The lowest reportable value is the Method Detection Limit (MDL), providing that the lowest calibration standard is less than 10 times the MDL.

1) Atomic Absorption Spectrophotometers - Two approaches are used to calibrate atomic absorption spectrophotometers. These methods are direct comparison and standard additions.

   a) Direct comparison is the simple approach, and can be used with many instruments to give a direct readout of the concentration of an element in an unknown sample. To obtain good precision (e.g., 1-2% coefficient of variation), the absorbance levels measured must be about 0.1 to 0.6 units. Standard and sample solutions should be similar in bulk matrix constituents, particularly acid and salt content. Interference suppressants are used in all solutions when required. A number of standards (usually three to five in increasing concentration) as well as a blank, are prepared to cover the concentration range. A volume of type II reagent water with the same amounts of acids as the samples and standards) will be used for calibration blank. These solutions are run in absorbance to check linearity of the calibration curve.

   b) The method of standard additions is used when samples contains severe matrix interference. In this case it is possible to add small amounts of conventional standard solutions, in increasing amounts, to aliquots of each sample. A calibration graph can then be constructed. This method will often be used in work with the graphite furnace.

2) UV-VIS Spectrophotometer - The calibration procedure for the UV-VIS spectrophotometer is similar to that for the A.A. spectrophotometers. An integration interval is not required as the signal is very stable. It is important to use blanks and allow at least 1/2 hour warm up time.

3) PH Meters - The proper calibration of pH meters requires the use of two buffer solutions and a thermometer. The two buffer solutions must cover the expected range of samples to be tested. A third buffer is used to confirm calibration. The pH meter should be calibrated each day. The temperature of the buffers must be entered into the meter.

4) Conductivity Meter - The conductivity meter does not require frequent calibration but should be checked against a known standard each day of use. Recalibrate when there is significant deviation with the value of the standard.

5) Ion Chromatograph- Calibration of the Ion Chromatograph is performed at least once each year and whenever: 1) Controls are out of range; or, 2) the column, suppressor or detector is changed.

6) Inductively Coupled Plasma/Mass Spectrometer – Calibration of the ICP-MS is performed every day of analysis and whenever controls are out of range. See the SOP for more information.

ANALYTICAL PROCEDURES

The laboratory employs only methods approved by Environmental Laboratory Accreditation Program. Analysts must conduct sufficient preliminary tests using the methodology and typical samples to demonstrate competence in the use of the measurement procedure.

Each time an analytical procedure is performed controls are included and duplicate samples and known additions are tested to insure accuracy and precision. Results are not reported unless all controls are within acceptance limits referenced in Standard Methods 18th Edition, 1992.

To monitor reliability of analytical measurements, data is periodically obtained on detection limits, accuracy, precision and recovery.

ACQUISITION, REDUCTION, VALIDATION OF REPORTING DATA

The analytical chemist is responsible for describing and reporting the data in an appropriate manner. In order to insure the accurate transcription, calculation and reporting of analytical data, the chemist will adhere to the following quality assurance procedures.

1) Use documented procedures and record all significant experimental details in such a way that the measurements could be reproduced by a competent analyst at a later date.

2) All measurements are made so that results are representative of the matrix (soil, water, etc.) and conditions being measured.

3) Report data only to the number of significant figures consistent with their limits of uncertainty.

4) Report data with the proper units of concentration. Units should be chosen which clearly indicate whether the concentration is in terms of weight by weight, weight by volume or volume by volume. Unless otherwise specified, all data are calculated and reported in standard units to allow comparison with data reported by other laboratories.

5) The analytical methodology used will be cited. The raw data for each sample, along with reagent blanks, control, and spiked samples will be suitably identified if included in the report. If average values are reported, an expression of the precision, including the number of measurements, must be included.

6) The report should include date and place of sampling, sampling point, the name of the sample collector, identification as to type of sample, date and time of submittal to the lab, date of analysis, name of the analyst, and the result. Any conditions which may effect the interpretation of the data should be noted in the report.. All results will be reviewed by a Water Quality Specialist or Public Health Chemist before a final report is released.

7) Laboratory records will be retained in a permanent file for three years.

8) Retain samples for one month after issuing final report and retain data and documentary evidence for three years.

INTERNAL QUALITY CONTROL

Quality Control (QC) may be defined as those measures undertaken in the laboratory to maintain the analytical testing process within acceptable limits of accuracy and precision.
The Quality Control Program consists of the following elements: documentation of operator competence, recovery of known additions, analysis of externally supplied standards, analysis of method blanks, and testing of replicate samples:

1) Operator competence The principal analyst is responsible for: 1) developing a standardized training syllabus for the methods employed in the laboratory; 2) assuring that test personnel are adequately trained; 3) assessing the competency of test personnel, and 4) maintaining documentation of training and competency of all test personnel.

   a) Before test personnel are permitted to do reportable work , competency in performing the analysis is to be demonstrated. Commonly, the analyst performs replicate analysis under the supervision of the principal analyst. General limits for acceptable work are found in Standard Methods 18th Edition, 1992 in Table 1020 :I.

   b) After initial demonstration of competency, the principal analyst will assure test personnel maintain competency through testing internal or external proficiency test samples at least once each year.

2) With each batch of samples tested, controls will be tested to verify the accuracy of results as described below. Controls used with each method are outlined in Appendix D.

   a) Recovery of known additions as part of all regular analytical protocols except titrimetric and gravimetric methods. Use known additions to verify the absence of matrix effects. Spiked samples shall be analyzed with a minimum frequency of ten percent of the samples per matrix per batch of samples. Spike recovery must be between 80-120% for potable water (75-125% for waste water). When a spike sample fails to meet this criteria, retest all samples following the last acceptable spike sample. Spike recovery calculated as % of the known addition recovered.

   b) Analyze control standards with a minimum frequency of ten percent of the samples per matrix, per batch of samples. If there are less than 10 samples in a batch, at least one per matrix per batch must be analyzed. The concentration of the sample shall be within the working range of the method. Sources of these samples include but are not limited to: performance evaluation samples from the EPA, commercially available standards, or standards prepared in-house but from sources different

from calibration standard. Control standards must be within the published acceptance range (for external controls). If the control standard does not have a published acceptance range, recovery of the control should be within 10% of the known value. When a control standard fails to meet this criteria, retest all samples following the last acceptable control.

c) Method blanks will be analyzed with each batch of samples. The use of method blanks provides a measurement of laboratory contamination. Blanks cannot exceed the minimum detection level. See Appendix A.

d) Replicate samples will be analyzed with a minimum frequency of ten percent of samples per matrix, per batch of samples for drinking water. For wastewater the requirement is 5%. If there are less than ten samples per batch, at least one sample per matrix per batch must be analyzed. If the analyte is not detected, replicate matrix spike samples will be analyzed. The percent difference between replicate samples must be within 20% for potable water (25% for wastewater). When a replicate sample fails to meet this criteria, retest all samples following the last acceptable replicates. Duplicate % difference calculated as the difference as a percent of the mean. |100(X1-X2)/avg|.

e) In addition to the control standards tested with each run, an external reference standard for each analyte will be tested at least once each quarter.

All of the quality assurance control procedures will be followed in the laboratory. All documentation for these checks should be available for inspection by laboratory management.

PREVENTIVE MAINTENANCE

As part of the QA plan, the laboratory has a comprehensive preventive maintenance program. Balances, spectrophotometers, and other instruments undergo routine maintenance and accuracy checks by a manufacturer's representative or by laboratory personnel as described below. All preventive maintenance performed in-house is documented on preventive maintenance forms. Instrument s which undergo routine professional maintenance have labels affixed to indicate date of last servicing. Manufacturer's instructions and service manuals are readily accessible.

Adequate spare parts are kept on hand to perform routine maintenance and minimize downtime. The spectrophotometers have maintenance contracts that provide for immediate servicing in the event of malfunction. Equipment records documenting preventive maintenance and emergency servicing/repairs are kept for a minimum of three years.

1) Thermometer/temperature-reading instruments: Accuracy of thermometers or recording instruments are checked annually against a certified National Bureau of Standards (NBS) thermometer or one traceable to NBS and conforming to NBS specifications. All thermometers a relabeled with date calibrated and correction factor.

2) Balance: Balance accuracy is verified each week using ASTM type 1 reference weights. Accuracy checks are documented on preventive maintenance chart. Balances are serviced and certified annually through a maintenance contract. Type 1 weights are re-certified at least every five years.

3) pH meter: pH meters are standardized with at least two NIST traceable standard buffers (pH 4.0, 7.0, or 10.0) and compensated for temperature before each series of tests. A third buffer is used to confirm calibration. Date buffer solutions when opened and discard buffer after expiration date on bottle. Buffers prepared from powders are replaced after four weeks.

4) Water deionization unit: Conductivity of the RO and Nanopure water is checked each month. A heterotrophic plate count on Nanopure water is also performed monthly. Filters are changed as indicated by conductivity readings and heterotrophic plate count. Records are maintained on preventive maintenance chart. Water is tested annually for bacteriologic quality and heavy metals.

5) Autoclave: Autoclave charts are used to document date, time, temperature and contents of each load. Chem-di indicators and heat sensitive tape are used with each load to identify materials that have been autoclaved; results are recorded on autoclave chart. Autoclave performance is

checked each month with biological indicator (e.g. spore suspension). Autoclaves are serviced quarterly under maintenance contract. The accuracy of autoclave recording thermometer is checked annually. The autoclave operating temperature is monitored on a weekly basis.

6) Refrigerator: Temperatures are recorded daily and units defrosted and cleaned as needed. All media and reagents stored in the refrigerator are labeled.

7) Freezer: Temperatures are recorded daily. Identify and date materials stored. Defrost and clean semiannually; discard outdated materials.

8) Ultraviolet sterilization lamps: Unit is cleaned monthly by wiping lamps with a soft cloth moistened with ethanol. Test lamps quarterly with UV light meter and replace if they emit less than 70 % of initial output or if agar spread plates containing 200 to 250 microorganisms, exposed to the light for 2 minutes, do not show a count reduction of 99%.

9) Water bath: Fecal coliform water bath is checked twice daily. All other water baths are checked each day of use.

10) Incubator: Check and record temperature twice daily (morning and afternoon) on the shelf areas in use. Locate incubator where room temperature is in the range of 16 to 27O C.

11) Fume hoods/Biological Safety Cabinets: Fume hoods are checked once each month using a velometer; readings are recorded on preventive maintenance chart. Hoods and safety cabinets are certified annually through service contract.

PERFORMANCE AND SYSTEMS AUDITS

Corrective action is required when data is outside of predetermined limits for acceptability. The corrective actions can be triggered by the following quality assessment activities: Control Chart analysis; proficiency evaluation testing; and QA audits.

1) CONTROL CHART ANALYSIS:
The laboratory's quality assessment techniques will be used to maintain the precision and accuracy of all laboratory analyses within a state of statistical control. Precision and accuracy measurements are the best way to assess analytical performance. Precision is the degree of reproducibility of a particular analytical procedure. Accuracy is a measure of the agreement between an experimental determination and the true value.

a) PRECISION - Assess precision by replicate analysis, by repeated analysis of a stable standard, or by analysis of known additions to samples. Precision is specified by the standard deviation of the results. The formula for determining standard deviation (SD) is:

$$SD = \sqrt{\Sigma (X1-X)^2/(N-1)}$$

X1 is the value of the individual measurements; X is the mean of all measurements for a given sample and N is the number of measurements.

The purpose of determining precision is to establish the typical variance of the method in the absence of any matrix influence. In the course of determining precision, there are two cases that indicate there is a problem with the precision data:

i) The measured values show wide variation from one to another for a given day.

ii) The measured values show little variance from one to another for a given day, but the mean and standard deviation show wide variation from one day to another.

If either of the above occurs, factors such as sample homogeneity, instrument calibration, or analyst error should be checked, documented, and corrected. The precision measurements should then be repeated.

b) ACCURACY - The best method to determine accuracy is to spike an aliquot of reagent water with a known amount of the constituent being measured and analyze the sample. The amount spiked should be at least five to ten times greater than the analytical detection limit.

To evaluate the data accuracy, the percent recovery of the spike must be determined. The formula for determining percent recovery is:

$$\% \text{ recovery} = [100(S - S1) \div S2]$$

Where S is the concentration of the spiked sample; S1 is the concentration of the unspiked sample; S2 is the concentration of the spike added to the sample.

If the percent recovery deviates significantly from 100% and the method has not demonstrated significant bias, the problem must be detected and corrected prior to continuing the analysis. Sources of this problem include incorrect standard or spike solution concentration or a problem in the procedural detection system.

Precision, accuracy, and detection limits for all methods used in the laboratory is comparable to values referenced in Standard Methods 18th Edition, 1992 and EPA Methods for Chemical Analysis of Water and Wastes, March 1983.

2) PERFORMANCE EVALUATION SAMPLES: The laboratory director is responsible for enrolling the laboratory in ELAP approved proficiency testing program(s) and assuring that proficiency testing is performed for all regulated tests. The principal analyst (Public Health Chemist) will conduct and document internal proficiency testing at least once a year for tests where proficiency testing is not available. Proficiency test samples are treated in the same manner as routine samples (ie. tested the same number of times, tested using personnel who routinely perform testing, tested using routine methods and tested during patient testing).

3) QUALITY ASSURANCE AUDIT: The quality assurance program will be audited quarterly and any deviations from the program will signal corrective action to be taken. Quality assurance audit will be documented in a written report. The audit will include the following aspect:

   a) Competency of test personnel must be evaluated annually and be documented

   b) Evidence of the systematic use of control samples, replicate measurements and reference materials all in conjunction with control charts.

   c) Proper labeling of reagents and samples.

   d) Use of approved methods.

e) Results on blind samples.

f) Acceptable safety equipment and procedures.

g) Quality assurance reports generated on a regular basis.

h) Documentation on equipment performance and maintenance.

i) Training records.

j) All relevant files accessible and organized.

k) Laboratory personnel following good laboratory practices.

l) Laboratory personnel following good measurement practices

The Public Health Chemist will be responsible for initiating and documenting any corrective action necessary. Corrective action will be documented on the appropriate control chart, performance evaluation report, or QA audit report. No data shall be reported until the cause of the problem is located and corrected or the laboratory demonstrates the cause was a random event and no longer affects data. Although the elimination of events requiring corrective action may not be achieved, a reduction in the repetition of these events is the objective of this program.

REFERENCES FOR QUALITY ASSURANCE DOCUMENT

1) Standard Method for the Examination of Water and Wastewater, 18th edition, 1992.

2) Handbook for Analytical Quality Control in Water and Wastewater Laboratories. EPA-600/4-79-019, March 1979, USEPA.

3) Manuals for the Certification of Laboratories Analyzing Drinking Water Criteria and Procedures/Quality Assurance. EPA QAMS-005/80, Interim Guidelines, EPA-570/9-82-009, USEPA.

4) Methods for Chemical Analysis for Water and Waste. EPA-600/4-79-020, March 1983.

Written by: Gerry Guibert & David Holland

Date: May 1993

Revised: January 1999
Revised: September 21, 2004

Approved by: _____

(Laboratory Director's Signature)

Appendix A

Monterey County
Consolidated Chemistry Laboratory

ANALYTICAL METHODS FOR WATER ANALYSIS

PARAMETER	HOLD TIMES	METHOD REFERENCE	MDL	UNITS
Free Chlorine	.25 h; ASAP	SM 4500-Cl G	0.02	mg/L
Total Chlorine	.25 h; ASAP	SM 4500-Cl G	0.05	mg/L
Enterococcus	8 h	IDEXX	1/100 ml	
Heterotrophic Plate Count	8 h	SM 9215 B	1	CFU
E. coli – MPN	6 h waste 8 h source 30 h potable	SM 9221 B	2/100 ml	
Fecal Coliform – MPN	6 h waste 8 h source 30 h potable	SM 9221 B	1/100 ml	
Total Coliform – MPN	6 h waste 8 h source 30 h potable	SM 9221 B	2/100 ml	
Total Coliform – Quantitray	6 h waste 8 h source 30 h potable	SM 9223	1/100 ml	
E. coli – Presence/Absence	30 h potable	SM 9223	1/100 ml	
Total Coliform – P/A	30 h potable	SM 9223	1/100 ml	
pH	.25 h; ASAP	SM4500H B		pH units
Bicarbonate	ASAP (with pH)	SM 2320 B	10	mg/L
Calcium Carbonate	ASAP (with pH)	SM 2320 B	1	mg/L
Carbonate	ASAP (with pH)	SM 2320 B	1	mg/L
Solids	24 h	SM 2540 F	0.1	ml/L
Color Determination	48 h	SM 2120 B	2	CU
Odor	NS; 48 h (rec 6h)	SM 2150 B	1	TON
Turbidity	48 h	SM 2130 B	0.05	NTU
Nitrate	48 h	EPA 300.0	1	mg/L
Nitrite as (N)	48 h	SM 4500 NO2-B	10	ug/L
Total Dissolved Solids	7 d	SM 2540 C	5	mg/L
Total Suspended Solids	7 d	SM 2540 D	5	mg/L
Alkalinity	14 d	SM 2320 B	1.0	mg/L, CaCO3
Bromide	28 d	EPA 300.0	1	mg/L
Chloride	28 d	EPA 300.0	1	mg/L
Fluoride	28 d	EPA 300.0	0.02	mg/L
Sulfate	28 d	EPA 300.0	1	mg/L
Conductivity	28 d	SM 2510 B	1	umhos at 25C
Ammonia (N)	28 d	SM 4500 NH3 F	0.05	mg/L
Orthophosphate	NS; 28 d	SM 4500 P E	0.03	mg/L
Total Phosphorus	28 d	SM 4500 P E	0.03	mg/L

PARAMETER	HOLD TIMES	METHOD REFERENCE	MDL	UNITS
Aluminum	6 months	EPA 200.8	5	ug/L
Antimony	6 months	EPA 200.8	0.5	ug/L
Arsenic	6 months	EPA 200.8	1	ug/L
Barium	6 months	EPA 200.8	0.5	ug/L
Beryllium	6 months	EPA 200.8	0.5	ug/L
Cadmium	6 months	EPA 200.8	0.5	ug/L
Chromium	6 months	EPA 200.8	5	ug/L
Copper	6 months	EPA 200.8	0.5	ug/L
Iron	6 months	SM 3111B	100	ug/L
Lead	6 months	EPA 200.8	0.5	ug/L
Manganese	6 months	EPA 200.8	0.5	ug/L
Mercury	6 months	EPA 200.8	0.25	ug/L
Nickel	6 months	EPA 200.8	0.5	ug/L
Selenium	6 months	EPA 200.8	5	ug/L
Silver	6 months	EPA 200.8	5	ug/L
Thallium	6 months	EPA 200.8	0.5	ug/L
Zinc	6 months	EPA 200.8	5	ug/L
Calcium	6 months	SM 3111B	1.0	mg/L
Magnesium	6 months	SM 3111B	0.1	mg/L
Potassium	6 months	SM 3111B	0.1	mg/L
Sodium	6 months	SM 3111B	0.1	mg/L
Hardness as CaCO3	6 months	SM 2340 B	1.0	mg/L
Boron	6 months	SM 4500 B B	0.1	mg/L

Appendix B

ENVIRONMENTAL ANALYSIS REQUEST FORM

MONTEREY COUNTY CONSOLIDATED CHEMISTRY LABORATORY
1270 NATIVIDAD ROAD, SALINAS, CALIFORNIA 93906 Phone (831) 755-4516

Shaded areas for laboratory use only

Chain of Custody

Collected by (Print & sign)	Received by	Date & Time
Relinquished by:	Received for Laboratory	Date & Time

Client Name _____ Report Attention _____

Address _____ Copy to _____

City, State, Zip _____ Phone _____ Fax _____

ANALYSES REQUESTED

Laboratory Number	Sample ID or System #	Sample Site or Description	Collection Date & Time	Matrix[1] 1-Routine 2-Repeat 3-Replacement	No. of Containers	Coliform	MMO Quanti Tray (D)	Nitrate				

[1] D Drinking Water (Specify as routine, repeat or replacement) W Wastewater (Specify as grab or composite) O Other (identify)

[ ] Payment received with delivery	Amount	Sample comments (irregularities preservation, billing information if different than reporting)
Check	Initials	
Receipt #	Date	

SPECIFIC CONDUCTANCE
EPA 120.1/SM 2510 B
umhos at 25°C

Scope and Application:
This method is applicable to drinking, surface and saline waters, domestic and industrial wastes and acid rain.

Summary of Method:
The specific conductance of a sample is measured by use of a self-contained conductivity meter, the YSI Model 32. The conductivity meter is used in the temperature compensated mode.

Sample Criteria & Acceptability:
A minimum of 100 ml sample should be submitted in a clean container provided by the laboratory. Samples can be stored for up to 28 days at 4oC. The samples must be brought to room temperature before testing. If the sample does not meet the above criteria, document it on the worksheet but perform the test.

Reagents:
0.02 Molar Standard Potassium Chloride Solution:

1. Dry 0.85 g of Reagent Grade Potassium Chloride (KCl) for 4 hours at 105°C. Use immediately or store in a desiccator until use.
2. Dissolve 0.7456g of pre-dried potassium chloride in a 1 liter Class A volumetric flask using deionized water.
3. Label the flask with Potassium Standard Solution, 0.7456 g KCl/L, date made, outdate of 3 months, and initial.
4. Alternately, order two 500 ml containers of the Traceable Conductivity Calibration Standard near the 1414 micromho/cm range; from Fisher Scientific, Cat No. 09-328-11.

Control

1. Check deionized water. It should read less than 1 umho. If the reading is higher, clean cell and repeat reading of deionized water. If reading is still high, notify the Chemist.
2. Use current Quality Control sample with each run. The control must be in range before proceeding with specimens. The 0.01 M KCl can be used as control.

Conductance Meter Maintenance:

1. Store cell in deionized water. If the cell has been stored dry, soak in deionized water for 24 hours.
2. Check the platinum black coating on the electrode. If the coating appears thin or if it is flaking off the electrode, the cell should be cleaned and the electrodes replatinized. See "Instruction Manual YSI Model 32 Conductance Meter" pages 11 and 12 for instructions.
3. The electrode should be cleaned and replatinized every four months. Record the preventative maintenance on the "PM Worksheet".

Conductance Meter Calibration Check:

Instrument must be standardized with KCl solution before daily use.

1. Pour 50 ml of the standard potassium chloride solution into a 250 ml beaker. Alternately, immerse the conductivity cell and thermometer in the Rinse Bottle, then transfer to the Read Bottle for actual reading
2. Immerse conductivity cell in sample. The electrodes must be submerged and the electrode chamber must be free of trapped air. Tap the cell to remove any bubbles, and dip it two or three times to assure proper wetting.
3. Rotate the Range Switch to the lowest range position that gives a reading (within range) on the display. An over-range value is indicated by a "1" followed by blanks. An under-range value is indicated by a reading followed by a small letter "u". Readings may be in error when operating in the under range conditions. On the 0.1 – 2 micromho range; allow extra time to stabilize.
4. The conductance value of the solution is displayed on the meter. The units in which it is to be read are determined by the Range Switch, either in mU or in uU (or milli and micro siemens).

   2 uU, 20 uU, 200 uU reading = final result
   2 mU, 20 mU, 200 mU readings x 1000 = final result

5. Use the table below to check accuracy of cell constant:

Conductivity of 0.01 M KCl

Temperature in Centigrade	Micro-ombos cm
21	1305
22	1332
23	1359
24	1386
25	1413
26	1441
27	1468
28	1496

6. If the standard is within range, rinse the cell three times with deionized water, and start testing unknowns as described in steps 2-4.

Reporting:

Report results to three significant figures. Report in units of micromhos per centimeter at 25 °C

References:

1. Instruction Manual YSI Model 32 Conductance Meter", Item 060818, PN A32018 R, October 88 EP
2. Methods for Chemical Analysis of Water and Wastes", EPA- 600: 4-79-020, March 1983, pages 120.1-1 to 120.1-3.
3. "Standard Methods for the Examination of Water and Wastewater", 18th Edition. 1992.

Written by: David Perez. Date: February 1993
Revised: January 12, 2007

Approved by:_____
Chemist

pH
SM 4500-H B
Electrometric

Scope and Application
Application to drinking, surface, ground and saline waters as well as acid rain, and wastewater (domestic and industrial.

Principle of Operation
pH is defined as the negative logarithm of the hydrogen ion concentration in moles per liter. The pH scale goes from zero to fourteen with a value of seven units to be considered neutral. Values below seven are acid; values above seven are basic. It is important to note that a one-unit change in pH represents a ten-fold change in the concentration of the hydrogen ion.

pH has a great impact on almost all biological and chemical processes used for water and wastewater treatment, and proper measurement of this value is critical. pH is measured using a pH meter consisting of a potentiometer, glass pH electrode, reference electrode and temperature compensating device. When calibrating the instrument, use two buffers that bracket the expected pH value for greatest accuracy.

Specimen collection and Handling
Collect sample in plastic or glass container. Test sample immediately upon receiving and/or within two hours after collection.

Instrument Calibration:
Two buffer calibration:

1. Fill a 50 ml beaker with up to 30 ml of pH 7 buffer. Add a stir bar and set the knob on the magnetic stirrer to the second line on the dial (slow spin). Place the electrode in the pH 7 buffer; make sure that the reference electrode is filled with KCl and is open. Allow the electrode to equilibrate for 5 minutes.

2. Release Standby button and press the pH button. Measure the temperature of the buffer solution and set the temperature control. Turn the large slope knob to 100 and the inner know fully clockwise.

3. Adjust the calibration control until the readout displays 7.00. Press the mv button and record the mv reading on the worksheet. Remove electrodes from the buffer and rinse with deionized water.

4. Fill a 50 ml beaker with up to 30 ml of pH 4 buffer. Add a stir bar and set the knob n the magnetic stirrer to the second line on the dial (slow spin). Place the electrode in the pH 4 buffer and allow the electrode to equilibrate for 5 minutes. Press the pH button.

5. Adjust the slope knob until the readout displays 4.00. Press the mv button and record the mv reading on the worksheet. Remove electrodes from the buffer and rinse with deionized water.

6. Fill a 50 ml beaker with up to 30 ml of pH 6.86 buffer. Add a stir bar and set the knob n the magnetic stirrer to the second line on the dial (slow spin). Place the electrode in the pH 6.86 buffer and allow the electrode to equilibrate for 5 minutes. Press the pH button and record the result on the worksheet and quality control graph. PH should be 6.86 ± 0.1; notify chemist if out of range.

7. Rinse the electrodes with deionized water.

8. Record mv readings of calibration buffers. Calculate change in millivolts and divide by 3. The result should be 58 ± 2 mv.

9. If the slope is within limits, begin testing unknowns. If the slope is out of range, re-calibrate the pH meter. If the second calibration slope is out of range, notify the chemist.

Controls

1. Run every tenth specimen in duplicate. The duplicates should be within 20% of each other.

2. Check the 6.86 control buffer after every tenth specimen. Record the results on the worksheet and quality control chart.

Procedure

Once the pH meter has been calibrated, the unknown samples can be tested.

1. Pour 30 ml of unknown (or 50 ml of unknown if also testing for alkalinity) into a 150 ml beaker containing a small stir bar. Start the stirrer. Keep the automatic stirrer at a constant moderate rate (The speed is marked on the dial by a pen marking).
2. Allow the display to stabilize, and record the results on the worksheet.
3. Rinse the electrode with deionized water between specimens. Blot dry with a 'kimwipe'. Do not rub the electrode; the static electricity can alter readings.

Reporting

Report the result to the nearest tenth (0.1).

References:

1. "Method for Chemical analysis of Water and Wastes", EPA 600/4-79-020, Revised March 1983.
2. Standard Methods for the Examination of Water and Wastewater 18th edition 1992

Written by: David Perez
Date: December 1994

Approved by: _____
Chemist

Total Alkalinity
SM 2320 B
Titration

Principle

Total alkalinity is defined as the acid-neutralizing capability of water. It is reported as due to bicarbonate (HCO3), carbonate (CO3), and hydroxide (OH). Unaltered sample is titrated potentiometrically to pH 8.3 endpoint for "carbonate" alkalinity and 4.5 endpoint for "bicarbonate" alkalinity.

Note: Samples with a pH less than 8.3 (i.e. most drinking water samples) are reported as having non-detectable hydroxide and carbonate alkalinity; for these samples total alkalinity is due entirely to the bicarbonate content of the water. Bicarbonate alkalinity (as HCO3) can be calculated from total alkalinity (as CaCO3) by multiplying by a factor of 1.22.

Applicable to drinking and surface waters, domestic and industrial wastes, and saline waters.

Sample Criteria & Acceptability

Samples should be submitted in clean containers provided by the laboratory. A minimum of 100ml of sample should be submitted for testing. Samples, which cannot be tested within 24 hours of collection, should be stored at 4°C and tested within 14 days. If any sample does not meet the above criteria, document it on the worksheet but perform the test.

Equipment

1. pH meter that can read to 0.05 pH units.
2. Two 1,000 ml Class A volumetric flasks.
3. Magnetic stirrer and magnetic stir bars.
4. Two 100 mL beakers.
5. One 250 mL flask
6. One 50 mL graduated cylinder

Reagents

The day before preparing standardize sulfuric acid, dry 0.1 g of Tris Buffer for at least 3 hours at 103 C (overnight is acceptable). After drying, immediately weigh out the Tris buffer. If that is not possible, store the reagent in the desiccators until used.

1. Standardized 0.02 N H_2SO_4 (sulfuric acid) ± 0.004 units:

   The concentrated H_2SO_4 and stock 1.0 N H2SO4 may be found in acid cabinet below hood.

   a. Prepare a 1.0 N H H_2SO_4 Stock Solution: Fill a 1,000 ml Class A volumetric flask three quarters full with deionized water. Carefully add 28.0 mL of concentrated H_2SO_4 using a 25 mL and 3 mL Class A volumetric pipette. Fill to the mark with deionized water and mix. Transfer to plastic bottle and label as 1.0 N H_2SO_4 Stock Solution, date made, outdate of 1 year, and initial. Cap tightly.

   b. Prepare a standardized 0.02 N H_2SO_4.
      1. Fill a 1,000 mL Class A volumetric flask three quarters full with deionized water. Carefully add 20.0 mL of the Stock H_2SO_4 using a 20 mL Class A pipette. Fill to mark and mix thoroughly.
      2. Weigh out between 0.0700 to 0.0800 g of Tris buffer using the analytical balance. Record the weight of the Tris Buffer to four places in the "Standard & Reagent Preparation" notebook. Add the buffer to 250 mL flask containing 25 mL of deionized water and stir bar; mix.

3. Add 3 drops of Hach Brom Cresol Green-Methyl Red indicator solution (Hach cat. number 451) to the Tris buffer solution.
4. Fill the titrating buret with the 0.02 N H_2SO_4 solution. Titrate the solution until a stable pink color is reached. Record the volume of reagent used.
5. Calculations:
   Normality of H_2SO_4 = Wt of Tris Buffer (g) ÷ (0.121137 g/meq Tris X mL of 0.02 N H_2SO_4 used)
   <u>Example</u>:
   0.0879 g Tris Buffer ÷ (0.121137 g/meq Tris X 35.7 ml H_2SO_4) = 0.0203 N H H_2SO_4
6. Transfer the 0.02 N H_2SO_4 to a one liter plastic bottle. Record the normality on the bottle, date made, outdate of 3 months, and initial. Store at room temperature.

2. Alternatively, order 0.02 N H_2SO_4, already prepared and standardized from a vendor such as Fisher Scientific. Record lot on QC worksheet.

Controls

1. Run deionized water as blank. Value of blank should be less than 2 mg/L of calcium carbonate (approximately 0.1 mL of H_2SO_4).

2. Use one quality control standard. This is a solution of sodium bicarbonate (100 mg/l). Run once with each set of samples and record results on control chart. Consult chemist if out of control situation exists.

3. Run every 10th specimen in duplicate. Calculate the relative standard deviation (RSD) of the replicates using the following formula: RSD=SD ÷ mean x 100. The RSD should be less than 10% If the replicates are outside of this range, repeat the specimen a third time. Check with the chemist for instructions.

4. Each quarter an external reference sample is to be analyzed. In the case of results exceeding acceptance values, document corrective action. Place any corrective action records in proficiency file

Procedure:

If applicable, standardize the pH meter each day of use (see supplemental procedure). Record slope with offset on worksheet.

Run the blank and control first. If the control is within range (range found in the "QC Inorganic True Value" binder), run the samples. Repeat the control if it is out of range. Notify the chemist if the control is out of range a second time.

1. Add 50 mL of control or sample to a 100 ml beaker containing a magnetic stir bar. Set magnetic stirrer at low speed.

2. Carefully lower pH probe into the solution. **If the pH is above 8.3 consult principal analyst!**

3. Fill the titrating buret to the zero mark with the standardized H2SO4. Carefully add the H2SO4 to the sample until a pH of 4.5 ± 0.05 is reached.

4. Record the volume of H_2SO_4 added to the sample, to the nearest tenth, on the chemistry worksheet.

5. Rinse the pH electrode with deionized water. Measure out the next sample, refill the buret, and titrate the next specimen.

Calculations:

Use the following formula to calculate the alkalinity as mg/L of calcium carbonate.

Exception: For alkalinity below 20 mg/L use low alkalinity calculation procedure (refer to SM2320B part 5)

mg/L = (mL of H_2SO_4 - 0.1) X normality of H_2SO_4 X (50,000 ÷ ml of sample)

Example (for 50 ml sample):

(28.6 ml - 0.1) X 0.02 X (50,000÷50ml) = 570 mg/L of Calcium Carbonate

or

(28.6 ml – 0.1 ml) X (20) = 570 mg/L of Calcium Carbonate

Reporting

Report in **whole** numbers: round off to 3 significant figures. Examples:
2,902.5 = 2,900; 1,125.9 = 1,130; 23.65 = 24

References

Standard Methods for the Examination of Water and Wastewater 18th edition 1992

Written by: David Perez
Date: January 1993
Revised by: G. R. Guibert
Date: August, 1998

Approved by:_____
Principal Analyst

Varian Flame AA Procedure
SM 3111B
For Ca, Mg, Na, K and Fe

Principle:
In flame atomic absorption spectrometry, a sample is aspirated into a flame and atomized. A light beam is directed through the flame, into a monochrometer and into a detector that measures the amount of light absorbed. Because each metal has its own characteristic absorption wavelength, a source lamp composed of that element is used. The amount of energy absorbed in the flame is proportional to the concentration of the element in the sample

Sample Collection/Handling:
Use metal free collection bottle to collect sample. Collect one liter of sample. Smaller volumes (not less than 200 ml) can be used if necessary. On collection, acidify samples to pH <2 with 1:1 nitric acid, usually 3ml per liter. If samples are not acidified at time of collection, add acid upon receipt in lab and hold for minimum of 16 hours before analysis.[40 CFR 141.23(K)].

Sample Preparation:
Samples containing particulate or organic material require pretreatment before analysis. Samples with a turbidity <1 NTU, no odor and single phase may be analyzed directly. Digest all other samples before determining total metals.

Digestion Procedure for total metals:
Drinking water samples with turbidity >1 NTU can be analyzed following digestion with nitric acid. See procedure SM 3030E (Nitric Acid Digestion). Wastewater samples are better digested using method SM 3030F part b (Nitric Acid-Hydrochloric Acid Digestion). Report as total recoverable metal.

Sample criteria:
Except as noted, specimens that do not meet the criteria below should be immediately reported as "no test" with an explanatory note:

1. Samples submitted in improper collection container.
2. Sample inadequately identified. (Sample has no identification, or cannot be matched to a laboratory request form).
3. Sample quantity insufficient
4. Sample container broken or leaked in transit.

Special Instructions:
All glassware and pipettes used in this procedure must be cleaned using glassware-cleaning procedure. See document in kitchen.

Reagents:

1. Nitric Acid (HNO_3). Use high purity nitric acid 1+1.
2. Lanthanum solution (1.11%): Dissolve 58.65 g lanthanum oxide in 250 ml of conc HCL. Add slowly with stirring until dissolved and dilute to about 900 ml. Allow to cool for a few hours then dilute to final 1000 ml volume. Used for Ca, Mg, Na, and K analysis.
3. Calcium solution: Dissolve 630 mg calcium carbonate, $CACO_3$, in 50 ml of 1+5 HCL. If necessary, boil gently to obtain complete solution. Cool and dilute to 1000 mL with water. Used for Fe analysis.
4. Standard Metal solutions: Standard metal solutions are prepared from 1000 mg/l AA or ICP-MS standards purchased from Ricca Chemical company, Spex Certiprep, LabChem, Fisher Scientific or VWR. A standard from EM scientific (ICP Multi-element Standard) is very convenient for calibration standards.
5. Deionized Water from Millipore system – metal free water.

Instrument Set-up:
Use the Varian Spectra 300AA operating in the flame mode with Air Acetylene burner.

1. Turn on exhaust hood. Switch is located in the corner by the Chemistry room refrigerator. Note: Turn switch until it clicks on. If you continue turning the switch after it clicks, the airflow will be reduced.

2. Turn on "Acetylene" gas cylinder located outside in the "Safety Storage" shed. The correct door housing the tank is labeled "Acetylene". Pressure should be set at 8-9 PSI.
   Note: The cylinder valve is opened by turning the handle only 1/4 turn counterclockwise. Replace cylinder when pressure in tank drops below 100 psi. This prevents acetone from entering instrument.

3. Check the Varian Spectra AA 300A unit to see if the burner is installed.

4. Check to see if the cathode lamp required is in the correct socket position, and it is lined up in the "Operating Lamp"
   Note: Lamps are stored in the top drawer located directly across from the GTA 96 Graphite Tube Atomizer (next to hood).

5. Turn on the equipment in the following order (allow a 20 minute warm-up period):
   Note: If the computer is already on, turn it off.
   a. Spectra AA 300A: switch located on lower right front of instrument.
   b. IBM PC and Printer: Turn surge suppressor on (power supply); hit reset button.

Once the unit has been set-up, program the machine for testing by:

1. Start at the "C:" prompt. Press "M" and "Enter".

2. Press "Spectra Flame"

3. Press "Index" (F10). Enter number 10. "Sequence Selection", press "Enter" key.

4. Select element to be tested

5. Press "Sequence Control" (F6). Enter number of samples to be tested.

6. Press "Index" (F10). enter number 6, "Optimization", press "Enter" key.

7. The Screen will display two signal bar graphs. Check the previous week worksheet for the "Photomultiplier voltage" reading.

8. Maximize the lamp signal of the Cathode tube using the two thumbscrews located on the back of the lamp socket (see figure 5.8).
   a. Watch the bar graph as you turn one thumbscrew. Once the value reaches .9 or greater press "Rescale" (F1).
   b. Check the Photomutiplier Voltage display on the screen, after rescaling. If the voltage is higher than the preceding week, continue adjusting and rescaling until the proper voltage is reached. If you are unable to reach the proper voltage, try adjusting the second screw.
   c. Note: Normally the voltage stays the same from week to week, but as the lamp nears the end of its usefulness, the voltage reading will go up. If a new lamp is installed, the starting voltage may be different than the previous lamp. Record millivolt reading on worksheet.

9. After adjusting for maximum signal, hit "Rescale" (F1). The photomultiplier voltage will be displayed. If the reading matches the previous week, record the voltage on the new worksheet. If it is out of range, readjust lamps. If voltage is still out of range, notify Chemist.

10. Press "Index" (F10) key and select "Standards" (number 7). Verify that the values of the standards are correct (see previous worksheet for standard values). To select a value to change, use the up and down arrows. Enter the correct value with the keyboard.

11. Check to see that drain hose, located below the Spectra 300A, is inserted into the drain bottle (empty after each use).

12. Press "Index" key, enter number 18 (Signal Graphics), and press "Enter".

13. Press "Shift" and "Instrument Zero" (F10).

14. Light burner by pressing ignite button. Aspirate DI water for about 10 minutes. This will allow burner temperature to stabilize.

Standard and Sample Preparation:
Required sample preparation depends on the metal form being measured.

Procedure for Ca, Mg, Na, and K

1. Label the 10 ml beakers with the standard value; label the sample beakers with the last three numbers of the tiny tab number. Using the adjustable pipette, pipette 1.0 ml of sample or standard into each disposable beakers.

2. Add 9.0 ml of 1.11% lanthanum to each sample or standard using the adjustable pipette.

3. Repeat the process once again by diluting 1 ml of the diluted sample to 10 ml with the 1.11% Lanthanum. The samples have now been diluted 1:10 and 1:100. Alternatively use proportionally smaller volumes (i.e. .5 ml sample and 4.5 ml of 1.11% lanthanum).

4. The standards are prepared from stock solutions that when diluted 1:10 will give the necessary concentrations for calibration. The stock solutions are prepared from 1000 ppm standard metal solutions purchased from Ricca Chemical Co. Record dates of preparation and expiration (3 months) in sample prep manual.

5. The final concentration of calibration standards will be.

    1. Ca: 1.00, 3.00, 5.00 and 10.00 mg/l
    2. Mg 0.10, 0.50, 1.00 and 1.50 mg/l
    3. Na 0.10, 0.50, 1.00, 1.50 and 2.50 mg/l
    4. K 0.10, 0.50, 1.00, 1.50 and 2.50 mg/l

6. Set report format: Go back to index by pressing the "Index" (F10) key, then select the "Report Format" (number 13). Here you can enter the name of the operator, batch name, and date. No other changes are usually necessary.

7. Start program: Press the "Start" (F11). The screen will show the message "Select Lamp 3"; press "Start" (F11). The program will now run to completion.

8. Calibration of other Metals besides Fe/Mn: The other metals tested by flame AA does not require an ionization suppressor and can be directly aspirated. See specific method on computer for required calibration standards.

Standard and Sample Preparation: Procedure for Fe:

1. Label the sample beakers with the last three numbers of the tiny tab number. Using the adjustable pipette, pipette 1.0 ml of Ca solution into each disposable beakers.

2. Add 4.0 ml of sample to each beaker using the adjustable pipette.

3. The standards are prepared from 1000 ppm standard metal solutions purchased from LabChem or Spex Certiprep. Add 20 ml Ca solution and 1 ml conc HNO_3 to each 100 ml of standard prepared. Record dates of preparation and expiration (3 months) in sample prep manual.

4. The final concentration of Fe calibration standards will be: 0.3, 0.5, 1.0, and 3.00 mg/l

5. Set report format: Go back to index by pressing the "Index" (F10) key, then select the "Report Format" (number 13). Here you can enter the name of the operator, batch name, and date. No other changes are usually necessary.

6. Start program: Press the "Start" (F11). The screen will show the message "Select Lamp 3": press "Start" (F11). The program will now run to completion.

Quality Control:

1. Analyze a Blank after every 10 samples to verify baseline stability. Rezero when necessary.
2. Duplicate Spikes - replicate spikes are to be performed on 10% of samples. Recovery of spike in drinking water should be between 80% and 120% with a precision of 20%. Recovery of spike in wastewater should be between 75-125% with a precision of 25%. Spike level should not exceed MCL for analyte. Spiking solutions are available from Cresent Chemical Co.or SPEX.
3. External Reference Sample - Analyze a known reference sample after initial calibration and after every ten samples to confirm the test is in control.
4. See Table 3111:III in Standard Methods for recommended concentrations of standards to be run, limits of acceptability, and reported single operator precision data.
5. Analyze External Reference Sample on quarterly basis. Solutions available from APG, ERA or SPEX.

CRITERIA FOR ACCEPTABILITY OF RUN

1. Recoveries of spikes and controls are within acceptable range.
2. Blank values below detection levels.
3. Acceptable levels of precision.

NOTE: If any of the acceptance criteria are not met, the analyst must stop the run, correct the problem and and retest the samples.

OUT OF CONTROL PLAN

No sample should be reported until the all acceptance criteria have met. Or the out-of-control condition has been corrected and any problems or departure from protocol identified.

Trouble Shooting:

1. PROBLEM - poor precision,
   Check alignment of hollow cathode lamp. Check that capillary hose is not clogged. Make sure burner is clean and flame appears smooth and even. Replace pinched or crimped capillary tubing.

2. PROBLEM - error message
   Refer to instrument service manual

3. PROBLEM - Contamination

Check supplies associated with sample collection for contamination. Check rinse water, sample diluent, pipettes, sample cups. Make sure work area is free from dust.

Shutdown Procedure:

Turn off acetylene, IBM PC and AA300, and exhaust hood, in that order.

Calculations:

The results will be printed and should be recorded on a worksheet. The dilution factor must be shown and considered in the calculations.

Reporting:

1. The data from the printout should be transferred to the worksheet. Verify that controls were within acceptable range and that duplicates are within range.

2. The lab clerk enters the results into the computer. Results are reported in units and number of significant figures consistent with MDL of method.

References:

1. "Analytical Methods for Flame Atomic Absorption Spectrometry" Varian Techtron Pty. Limited. 1989.

2."Standard Methods for the Examination of Water and Wastewater"
18th Edition 1992 by APHA, AWWA, and the WEF.

Written by: David Holland
Date: January 1999

Approved by: _____
Laboratory Director

DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY (EPA METHOD 300.0) USING THE DIONEX DX-80 ION ANALYZER

PRINCIPLE

This method determines the following inorganic anions: fluoride, chloride, nitrite, bromide, nitrate, phosphate and sulfate.

A small volume of sample (approx. 1 ml) is loaded into the ion chromatograph. The injection valve injects 10 ul of the sample into the flow of eluent. The eluent (a NaHCO3 - Na2CO3 solution) flows continuously through the IC and serves as a carrier for the 10 ul of sample and facilitates in the separation process.

The anions of interest are separated using suppressed conductivity detection, and are identified and quantified by comparing data to those obtain from a standard solution. The major parts of the system are the liquid eluent, high pressure pump, sample injector, guard column, the separator column, the chemical suppressor and the conductivity detector. The guard column protects the separator column, which separates the anions based on their size and charge. The function of the suppressor is to chemically reduce the background conductivity of the electrolytes in the eluent, and to convert the sample anions into a more conductive form. The detector then detects the conductivity of the solution, which varies depending on the concentrations of the anions (higher conductivity indicates a greater concentration of the anion).

SAMPLE CRITERIA

The holding times for drinking water samples are as follows:

F^-	28 days
Cl^-	28 days
NO_2^-	48 hours
NO_3^-	48 hours
SO_4^-	28 days
Br^-	28 days

Samples submitted for IC testing routinely should be run within 48 hours of collection, especially for nitrite and nitrate. If testing needs to be delayed, the sample can be preserved with sulfuric acid; preserved samples can be held for up to 28 days and the nitrate results reported as combined Nitrate/Nitrite. Any samples not tested within specified holding times should be identified on the worksheet.

Samples bottles dedicated for IC testing only are placed on the IC bench. As soon as a sample is setup, place it on the white tray for easier storage. After 6 weeks the containers should be emptied and discarded. Nondedicated samples (i.e. those also submitted for additional testing) should be returned to the designated cart after IC testing.

QUALITY ASSURANCE

Operator competency - Ion chromatography may be performed only by analysts who have been trained and who have demonstrated competency with the procedure. One check consists of preparing the calibration standards and calibrating the I.C. An r-value of 0.995 or higher (correlation coefficient of 99.95%) in the linear fit type must be attained for each analyte of interest. Another way to demonstrate competence is to run a minimum of four replicate analyses of an independently prepared sample. Each analyte of interest in the sample should have a known concentration between 5 and 50 times the MDL.

Blank - A blank consisting of nanopure water should be included at the beginning of each run. The results for the blank must be below the MDL for each analyte.

Control standard(s) - Controls representing two concentration levels for each analyte (ICMIX HIGH & ICMIX LOW) must be analyzed as described below. The source of the analytes used to prepare these controls must be different from the source used to prepare the calibration standards. An ICMIX HIGH stock solution of the 7 anions with the following final concentrations:

Anion	*Final Conc*	*Preparation in 500 ml volumetric flask*
F-	20 ppm	10 ml of 1000 ppm Fl std
Cl-	100 ppm	50 ml of 1000 ppm Cl std
NO2	65.5 ppm	10 ml of 1000 ppm NO2-N std
Br-	20 ppm	10 ml of 1000 ppm Br std
NO3	100 ppm	50 ml of 1000 ppm NO3 std
PO4	100 ppm	50 ml of 1000 ppm PO4 std
SO4	100 ppm	50 ml of 1000 ppm SO4 std

should be kept on hand. Use this undiluted at the beginning of the run and after every tenth sample. Each week, prepare an ICMIX LOW solution from the ICMIX HIGH solution as follows: Using a 100 ml volumetric flask add 1 ml if ICMIX HIGH using the 1 ml volumetric pipet and fill to mark with nanopure water. Record date made in the IC logbook under Quality Control. Run the IC LOW at the beginning of the days run and after every 10th sample after the IC HIGH. The percent recovery for each anion should be between 90 and 110%.

Duplicate spikes Duplicate spikes should be run after every tenth sample. The spike should not be less than four times the MDL and it should increase each anion concentration by more than 25% of the background value. A suitable spike can be prepared by adding one part ICMIX HIGH to three parts sample. The average percent recovery for each anion should be between 80 and 120%. The duplicate spikes should be within 10% of each other. Record average percent recovery of spikes and duplicate percent difference on worksheets. Note: if the concentration of the spike is less than 25% of the background concentration, the spike recovery should not be calculated.

If any of the above control criteria are not met, do not report sample results until the problem has been resolved.

External controls & chart analysis - In addition to the control standards tested with each batch of samples, an external reference standard (i.e. SPEX IC standard or WS proficiency sample) should be tested on a quarterly basis; however we like to run one at the end of each run.

CALIBRATION FOR GOUNDWATER (DRINKING WATER AND MONITORING WELLS):

Calibration for groundwater samples is described below. Calibration should be performed whenever: 1) controls are out of range; 2) a new batch/lot of eluent/regenerant is made or 3) when a column, suppressor or detector is changed.

1. Prepare 1/10, 1/100, 1/1000 dilutions of the calibration standard ordered from Dionex, which contains 20 mg/l fluoride, 100mg/l chloride, 100 mg/L nitrite, 100 mg/L bromide, 100 mg/l nitrate, 200 mg/L phosphate and 100 mg/l sulfate.

2. Run calibration standards beginning with the highest dilution (1/1000) first.

3. Create calibration sequence: File – New – Sequence – Standards – Next. Skip section on Choosing Timebase – name the sequence *calibMMDDYEAR* and initials – Next – Done.

4. Add sequence to batch file before starting

5. After all four calibration standards have been ran, check the calibration curve.

   a) Double click on any of the calibration standards (Cal Std 1). You will get a chromatograph

   b) Click on Calibration Plot icon, upper right corner or click on VIEW – Calibration Plot. You will see a graph of the first analyte along with the correlation coefficient percentage for each analyte. Only anaytes with percentage of 99.5 or greater are acceptable. Generally try for a 99.98% for an average of all seven analytes to pass quality control checks. See the principle analyst if the result is a lesser value.

   c) The mean retention times and detection range are automatic on the DX-80 Ion Analyzer and can not be changed or edited.

PREPARE MDL STUDY

The Method Detection Limit is the lowest concentration of a substance that can be identified with accuracy and confidence by a certain method or analysis.

1) Prepare a Cal Std 1 level each analyte separately using the secondary standards (not Dionex mix)
2) Make seven replicates of this dilution and run through the Ion Analyzer under the Unknown Method.
3) Collect data and calculate the standard deviation for the seven replicates. Multiply the standard deviation values by 3.143. This number will be the Method Detection Limit.

GENERATE BACKLOG REPORT:

1) On a network computer – not the Instrument computer. Double click on LABWORKS icon. Enter password. Click on OK. Click on backlog. Click on analysis code. Click on OK. Type in #ICANION. Click on OK. Click on display report. Click on print. Click on exit until you are out.

2) Check the clipboard to see if a worksheet has been initiated listing samples that need repeat testing; if so, append worksheet with samples on backlog report.
   a) Account for all specimens on backlog report
      i) Samples may have been tested in a previous run but not recorded. Record these results and give to the clerk.
      ii) If a sample appears on the backlog but needs to be tested by a different method (i.e. wastewater), inform the clerk so that the analysis ordered can be modified.
   b) Include any "new" samples on the I.C. bench that have not yet been entered into the computer.

SAMPLE PREPARATION

Groundwater (drinking water and monitoring wells) should be filtered through 0.45 um membrane filters before injection:

1) Rinse the syringe once with the sample water. Then fill syringe with about 10 ml of sample water.
2) Filter a minimum of 2 ml of sample through the 0.45 membrane into a labeled autosampler vial discarding the first few drops.
3) Place autosampler cap on vial and press down using the provided tool. Make sure the cap goes in straight and remove any air bubbles seen in the vial (invert or knock gently).
4) Place sample in autosampler rack. The order in the rack must match that on the schedule. Note: If you suspect the result of a sample to be above that of the calibration standard for an analyte, make an appropriate dilution. Check by measuring conductivity -- anything greater than 700 uS will need to be diluted.
5) Include duplicate spikes for every 10th sample. Add 1 part ICMIX high to 3 parts filtered sample. Then IC HIGH, LRB, IC LOW. The laboratory reagent blank (LRB) is necessary to minimize carry over as the IC low is 100 times less than the High. Double check any samples where analyte concentrations are low after a high sample to verify analyte is even detected.

Samples which may contain high concentrations of chloride or organic contaminants (Carmel Area Wastewater District and ESF), are run on the DX-100 and require additional filtering through Dionex OnGuard P, Dionex OnGuard Ag, and Dionex OnGuard H filters before injection. See supplemental procedures.

SYSTEM START-UP:

1) Ensure the **eluent** bottle is at least ¾ full. If it is less, depending on size of run, prepare new eluent (and regenerant):
   a) Prepare 2 liters of a final eluent concentration of 8.0 mM Sodium Carbonate and 1.0 mM Sodium Bicarbonate by diluting one Dionex AS 14A Eluent Concentrate bottle (P/N 057060) into two 1L-volumetric flasks. Bring each to volume (1000 ml) with nanopure water. Makes 2 liters.
   b) Use the designated filter/vacuum flask, a filter funnel, a clean 0.45um membrane filter, and a large magnetic stir bar to degas the eluent. Pour the eluent into the filter funnel and turn on the vacuum. Set the magnetic sticker at medium to high speed. Once all the eluent has been filtered, keep the vacuum and magnetic stirrer on for 15-20 minutes, allowing the eluent to degas.
   c) Turn off the magnetic stirrer and the vacuum. Remove the filter funnel. Carefully decant the degassed eluent into the eluent bottle, without aerating. Make sure the cap is on tightly, and the tubes are securely attached.

2) Whenever new eluent is prepared, new **regenerant** must also be made.
   a) Prepare 2 liters of a final anion regenerant concentration of 72 mN Sulfuric Acid by adding one Dionex Anion Regenerant Concentrate bottle (P/N 057559) to two liters of nanopure water.
   b) Mix in the regenerant in the designated filter flask using the stir bar and degas for 15-20 minutes.
   c) Turn off the magnetic stirrer and the vacuum. Remove the filter funnel. Carefully decant the degassed regenerant into the REGEN bottle, without aerating. Make sure the cap is on tightly, and the tubes are securely attached.

DX-80 OPERATION

1) Turn on nitrogen gas cylinder (main knob only), autosampler (rear right hand corner), ion analyzer (rear panel right hand side) and computer.

2) Double click on Peaknet to open computer program. **File – Panels\Dionex DX-80 System** for the Control Panel.

3) Under the DX-80 Status click on **CONNECT** to connect analyzer to computer

4) Turn on the pump by clicking the **ON** button on the DX-80 Control Panel. **Prime** the pump by turning the pump head waste valve knob counter clockwise and leaving it open for about 5 seconds. Close the pump valve knob by turning clockwise until secure. After changing to new eluent, it is a good idea to leave pump valve open until all air bubbles have been purged – look for the air bubbles coming out the eluent bottle until it reaches the waste line at the pump. This will allow any air bubbles to be pumped to waste instead of through the columns.
5) Allow the system to **equilibrate** for 30 minutes minimum, generally one hour if new eluent is used. Once ready, the **operating pressure** should be 2000 -- 300 psi (usu 2100

psi); and the operating **total conductivity** background should be < 30 uS (usually 25.00uS). You can offset the background and zero the reading by clicking the Autozero button on the Control Panel.

6) To begin a run, create a sequence worksheet by clicking on **File – New – Sequence**. (May have to do this twice if worksheet is not already open.)
   a. It will then prompt you to choose Standard or Unknowns. Choose **Unknowns - Next**
   b. Skip **next** screen where it prompts you to specify timebase.
   c. **Estimate** number of unknowns (you can always add or delete samples from sequence when done.
   d. Fill out file name you wish to save the file We save under ***MMDDYEAR*** and **initials**: *(05052002tl)* and press **enter.**
   e. Press **Done** when prompted to exit wizard.
   f. A worksheet will appear where sample identifications can be added after the calibration data (line #5). Follow printed worksheet -- first include a *blank, ic low, ic high, lrb*, then the samples. Note for the first set, the lrb is listed as a sample. *Duplicate spikes* are required for every 10th sample or a minimum of 10% of samples. Finish off sequence with a known quality control standard, usually a proficiency standard such as *WS 60* or Ultra QC and another blank (LRB).
   g. Change *dilution factor* if sample was diluted; default is one. Save by pressing the SAVE icon (floppy disk).

7) To start the run – click on **Batch – Edit – Add** – double click on the newly created sequence, or the one you want run – then **Start** to begin.

8) Make sure autosampler vials are in order and the green light is on 'Run' not 'Hold'.

9) Record date, total conductivity and pressure in the log notebook at which the run has started.

10) During or after the run, verify that the blank and QCs (IC HIGH, IC LOW, IC CHECK) are within range. If not stop the run by clicking on **Batch – Stop - after current sample**, and notify principal analyst to investigate and solve the problem before resuming the run.

REPORTING RESULTS

1) When run is complete the analyst performing the run is responsible for recording and reporting results. Review each chromatogram to verify that the peaks were properly identified. Retention times may shift if there was a sudden change in pressure. Changes to the peak name can be made by a right click on the peak and choosing the correct analyte then save.

2) The results are found on the worksheet next to the sample ID and can be exported to an excel file for accuracy calculation:
   a) Click on any sample cell -- i.e. ic low, cell will be outlined.

b) Click on **File – Batch Report – Export** (unclick the Printout option- computer is not connected to any printer) **Excel file format**
c) For sheets to be exported, choose only " **Summary – INJ vs. Area, Ht, Amt**." Unclick the Integration, Calibration, Peak analysis, Summary-INJ vs. Anion, and Audit Trail options as they are extra and rarely needed for our purpose.
d) Click on **Finish** then **OK** on batch menu. Status will appear and when transfer is complete, press **OK** to exit.

3) To copy exported file onto a floppy, right click on Start icon on lower left screen and choose EXPLORE for Windows Explorer. Under **C:\Chromel\Export** folders are the files just exported. Highlight the correct sequence and drag to **A:** drive to copy file. (Make sure you have a floppy disk inserted).

4) Open exported file under an EXCEL program -- the instrument computer does not have one so use a network computer. You will see three types of charts: first- Sample vs. Area, second - Sample vs. Height, and third - Sample vs. Amount. Copy all of the **Sample vs. Amount** table to an old/previous excel file.

5) The Excel Results worksheet is permanently saved under **G:\Laboratory\Data\Water\IC Data\2002** under the correct month. It is also saved in Tess' computer under **C:\My Documents\IC Data** and correct year and month. Easiest way to create the worksheet is to open a previously saved file (of the same year and month) and then cut and paste the data. There are two worksheets in each file, one for the complete results, the other for the raw data (the Sample vs Amount table exported from peaknet).
a) Before any changes are made, save the file under a new name: MMDDYY and initials
b) On RAW worksheet, delete old table and replace with recently ran sequence data. Add a column between Sample ID and Fluoride Amount for the dilution factor.
c) Change Date Analyzed and Analyst if applicable. Calibrations are generally done once a month with the most recent noted under Date of Calibration -- change if necessary.
d) **Copy** and paste data results from raw worksheet onto Results worksheet under correct sample name. Use the **Paste Special option – Values** - to retain similar fonts on results worksheet. **% Recoveries** will be automatically calculated as will **% Differences**, and **Averages** for the duplicate spikes but references to certain cells may need to be changed for the correct result.
e) Verify that all QC are accurate before entering into labworks.

6) For drinking water, results should be recorded as ND – Not Detected for levels below DLR (Detection Limit for Reporting) as follows:
a) Fluoride 0.1 mg/l.
b) Nitrate 2.0 mg/l.
c) Sulfate 0.5 mg/l.
d) Bromide 0.1 mg/l.
e) Chloride, Nitrite, Phosphate 1.0 mg/l.

f) Any samples with readings above the calibration range (20 mg/l. fluoride, 100 mg/l chloride, nitrite, bromide, nitrate, sulfate, and 200 mg/l phosphate) needs to be diluted and

repeated in the next run. List these samples on a new worksheet with the appropriate dilution and place the worksheet on the clipboard.

7) Do not report results if control/spike values do not fall within limits (refer to section on quality control). If controls, spikes, etc. are out of range, notify the principal analyst. If controls are within limits, date and initial the worksheet and give the worksheet to the clerk for data entry. When the worksheet and backlog are returned place them in the binder.

SHUT DOWN

After the run is complete the Ion Analyzer can be shut down. The IC should be shut down on weekends if the system is not in operation on Friday night so as not to damage the suppressor unit:

1) On the Control Panel screen of Peaknet - turn **OFF** pump and **DISCONNECT** DX-80
2) Close Peaknet.
3) Turn off DX-80, autosampler and close nitrogen cylinder valve.

PREVENTIVE MAINTENANCE:

1) Each quarter, replace the bed supports on guard column
2) Maintain the following spare parts. These items are considered consumables:
   a) Anion Refill Kit (Part No. 057069) contains 4 bottles each of AS14A eluent and anion regenerant concentrate.
   b) AS14A anion separator column, 3 mm (Part No. 056901)
   c) AS14G anion guard column (Part No. 056899)
   d) AMMS III suppressor (Part No. 056751)
   e) DS5 Detection Stabilizer (Part No. 057290T)

DOS AND DON'TS

* Try to make additions, changes, and deletions to the sequence during the middle of a run and then save immediately. If the changes are not saved immediately, the program may get confused on which sequence to use and will freeze. If this happens, wait until the current sample is completed, turn off all equipment and wait for about 15 minutes before restarting.

* Be gentle when loading samples onto the autosampler, especially the first rack. If racks are installed too roughly, conveyor belt may get stuck and samples will not be injected in the proper sequence.

REFERENCES:

1) DX-80 Ion Chromatograph with SRS Control Operator's Manual, Dionex Corporation, 2002.
2) Methods for the Determination of Inorganic Substances in Environmental Samples. Method Number 300.0. Determination of Inorganic Anions by Ion Chromatography. John D. Pfaff, U.S. Environmental Protection Agency. 1993.
3) Standard Methods, 18th Edition. 1992. Part 4110.

Originally written by: Johanna Rosen for DX-100
Date: 12-96
Updated by: Theresa Lam for DX-80 Ion Analyzer
Date: 05-02

Approved by: _____
(Lab Director's signature)

APPENDIX 7D

CONTOURING PROTOCOLS FOR CHLORIDE ISOCONTOUR MAPS

WATER RESOURCES AGENCY

M E M O R A N D U M

Monterey County

DATE: April 17, 2018

FROM: Sean Noble

TO: Water Quality

SUBJECT: How to Contour SWI in ArcGIS

Background

The purpose of this memo is to describe the process of creating the initial seawater intrusion contours using ArcGIS. This is an attempt to standardize the process. Contours are based on chloride (Cl) data sampled from coastal wells in the Pressure 400-Foot and Pressure 180-Foot Aquifers. This data for comes from three primary sources. First, coastal wells are sampled twice each summer by Agency staff. Second, monitoring wells are sampled once each summer, using a portable pump. Finally, data from outside sources are pulled in to supplement the data and create better geospatial coverage. Historically contours are generated on every odd year, using even year data to fill any data gaps. Data is used to create contours that are then added to the historical seawater intrusion maps. The maps are as follows:

P180 Sea Water Intrusion Map
P400 Sea Water Intrusion Map
(In the future the deep aquifer may be added to the process)

After reviewing all the data and uploading it to the WRAIMS database, we are ready to move on to ArcGIS.

**** The 2017 year Pressure 400 will be used as an example ****

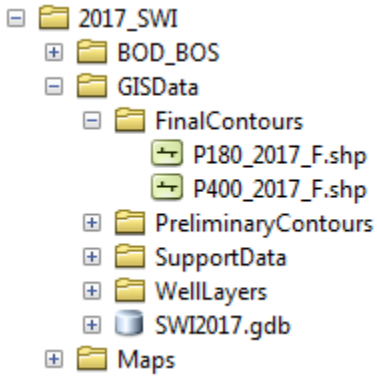
ArcCatalog

Open ArcCatalog and navigate to R:\Workspace\Common\WaterQuality\SWI. Notice that the folders are labeled by year with the exception of the CommonDirectories. This folder stores GIS data that can be used for any year that is contoured. It contains commonly used boundaries, databases, and layers.

In ArcCatalog copy/paste folder of the last year contoured (2015_SWI) and rename current year (2017_SWI).

This will be the naming convention for naming files:

Aquifer_Year _Version(if applicable), examples:



Within each year there are two main folders:

GISData

FinalContours, storage of approved shapefiles

PreliminaryContours – primary exported contour shapefiles

SupportData – secondary export shapefiles, database tables, and imagery

Maps

Stores final project maps and products

ArcMap

Step 1 – Project Formatting

Rename the ArcMap contour projects stored in the Maps folder:

R:\Workspace\Common\WaterQuality\SWI\2017_SWI\Maps**P400_2015.mxd** ->
R:\Workspace\Common\WaterQuality\SWI\2017_SWI\Maps**P400_2017.mxd**

By using the previous project, all of the background shapefiles can stay and be reused for the new project.

Step 2 – Database Formatting

Navigate to:
R:\Workspace\Common\WaterQuality\SWI\CommonDirectories\Databases
And open the **SWIContours (Current).mdb** database
First, make sure that all relevant data has been reviewed and loaded to WRAIMS. Open the **_Contouring_Start_** table and edit the year to the year being contoured.

Run the macro: **SWI_ContourTables**

The macro SWI_ContourTables runs four make table queries to produce these tables:

SWI180_ALL
SWI400_ALL
SWI_180_CONTOUR_WELLS

SWI_400_CONTOUR_WELLS

The '…_ALL' tables include all wells that are in the Monthly Water Quality program and in the appropriate aquifers. Some wells have the aquifer designation PRESSURE BOTH. These well are included in both '…_ALL' tables, but are not included in the contouring. The
'…_CONTOUR_WELLS' tables are a subsection of the '…_ALL' tables and only include wells to be used in contouring for the respective aquifers.

If certain wells need to be excluded, modify the **tblExcludedWells** table. Wells are excluded based on facility code and aquifer (180 or 400), so make sure both of those fields are filled out correctly. This table is used dictate which wells are excluded and to document which wells have been excluded and why. It should be kept updated as changes to the dataset are made. After adding new wells to tblExcludedWells, rerun the macros to update the tables.

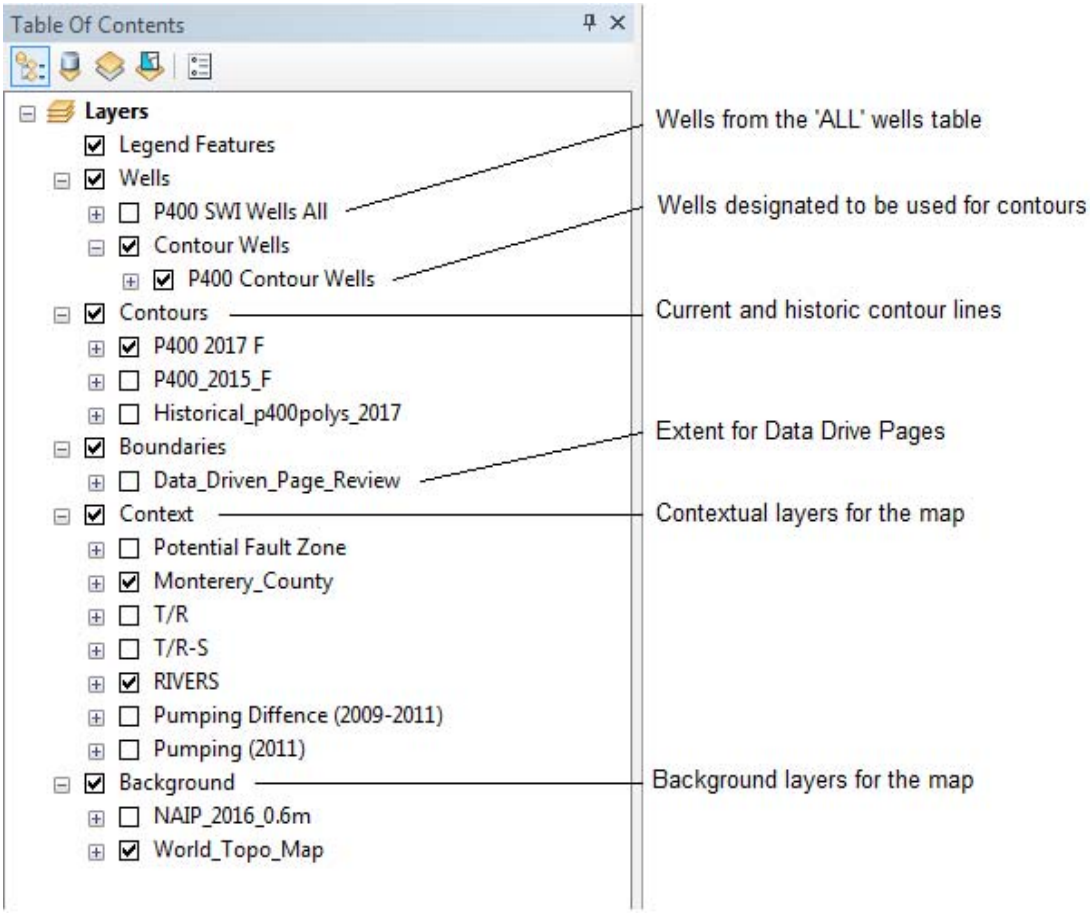
The **ExternalData** table can be used to add data that is not stored in WRAIMS but has been approved to be used for contouring. In the 2017 example, the data from the Monterey Peninsula Water Supply Project monitoring wells was added this way. Only wells with a
FACILITY_CODE and in the WellsAll GIS layer can be utilized in this manner (R:\Workspace\Common\MapElements\WellsAll.lyr).

The tables include both present and past measurements and automatically include data
ear if the current year is missing data.

Field Name	Description
FACILITY_CODE	Facility Code of the well
FACILITY_NAME	State Well ID based on township and range
BASIN_NAME	Aquifer designation
ContourValue	Value used to contour as a year average of all samples taken during the most recent year
ContourValYr	Year that the value used to contour was sampled
ConYrCl	Contour year average of Cl data
ConYrStDev	Contour year standard deviation of Cl data
1yrBackCl	Previous year average of Cl data (2016)
1YrStDev	Previous year standard deviation of Cl data (2016)
2yrBackCl	Two years prior average of Cl data (2015)
2YrStDev	Two years prior standard deviation of Cl data (2015)
3yrBackCl	Three years prior average of Cl data (2014)
3YrStDev	Three years prior standard deviation of Cl data (2014)
PERF_START	Start of recorded perforation in well casing
PERF_END	End of recorded perforation in well casing
Use	Abbreviation of the wells primary uses
WATER_USE_DESCRIPTION	Description of the wells primary uses
FACILITY_STATUS_NAME	The status of the well

Step 3 – Data Labeling & Symbology

In ArcGIS:
All of the well layers in the ArcMap projects should automatically update to the 'Current' database values. The projects should be laid out in similar formats as demonstrated below. Compare the values and dates of various wells with recorded values in WRAIMS to ensure the correct data is being used.



Step 4 – Draft 1

To generate profiles run the tool
ArcToolbox -> SWIContouringTools -> SWI_Spline_Coastal_Contouring

And fill out the fields

Contour Wells:	Wells\Contour Wells\P180 Contour Wells
Z value field:	SWI_400_CONTOUR_WELLS.ContourValue
Spline type:	TENSION
Number of points:	4
Weight:	0.01

Contour Output:
R:\Workspace\Common\WaterQuality\SWI\2017_SWI\GISData\PreliminaryContours\p400_2017_v1.shp

In Layout view change any labels and titles to match the current year and draft, and make any appropriate changes to the legends.

Export to PDF, R:\Workspace\Common\WaterQuality\SWI\2017_SWI\GISData\PreliminaryContours\p400_2017_V1.pdf. From PDF, print to 11x17 and review. If all the data is there and the labels and symbology are correct then Print to Plotter, 30x30.

Steps Summary

Version 1 is the computers attempt to contour the data based on all the data that has been collected and reviewed for the appropriate aquifer. The next set of versions are created through careful examination of the data to establish what wells will be excluded from the contouring. Use past exclusion to help with wells with ambiguous aquifer designations and refer to well logs, well measurement histories, piper diagrams, and sample notes for wells that don't seem to fit the general trend. Once the list of wells to exclude is agreed upon, run the tool again. This process is iterated until **tblExcludedWells** is agreed to be final by the project supervisor. The next step is to generate the last set of computer generated lines (AT_2017_F) and edit them to match previous contours and represent the general trend of seawater intrusion.

Editing Contour Lines

The computer generated AT_2017_F needs to stay intact incase it has to be referenced at some point. The first thing to do is copy/paste AT_2017_F into the R:\Workspace\Common\WaterQuality\SWI\2017_SWI\GISData\FinalContours folder (this will be the version you edit). In ArcGIS:

Right click on the layer you wish to edit
Go to **Edit Features**
Click **Start Editing**

It sometimes makes editing easier to make the edited layer the only selectable layer.

Right click on layer
Go to **Selection**
Click on **Make This The Only Selectable Layer**

Double-click on the contour line you wish to modify. Many vertices will appear on the line as boxes. These are the points to drag in order to modify the line. When adding lines remember to edit the attribute table to add the appropriate contour value. Due to the limited data the contours will have to be heavily edited to achieve a general representation of sea water intrusion into the aquifers. As a general rule, lines will not recede approved by the project lead. Unless otherwise

directed, lines that are seaward of past contours will default to the furthest inland historical extent (use the historical contour lines). Judgement will have to be used to decide how to alter lines to represent general seawater intrusion: work with the project lead on hand kriging and editing.

Final Clean Up

Once the list of excluded wells has been finalized copy the “Current” database and rename it with the contour year. This creates a backup and documents which wells were used and what values. Similarly, ensure that all shape files are in the correct places and properly labeled, especially the final contours.

APPENDIX 7E

DEPARTMENT OF DRINKING WATER SUPPLY WELLS FOR WATER QUALITY MONITORING NETWORK

GAMA Groundwater Quality Monitoring Network Wells

GAMA Well ID	Water System Name	Well Screen Info			Coordinates		Monitoring Date Range	
		Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Screen Length (ft)	Latitude (NAD83)	Longitude (NAD83)	First Year	Last Year
2700547-001	DESMOND RD WS #03	248	288	40	36.8030	-121.7005	2003	2018
2700548-001	DOLAN RD MWC	246	321	75	36.7959	-121.7371	1997	2019
2700577-001	ELKHORN SCHOOL WS	N/A	N/A	N/A	36.7971	-121.7181	1998	2019
2700579-001	ELKHORN RD WS #04	140	150	10	36.8400	-121.7206	2002	2019
2700594-001	HIDDEN VALLEY WA	404	444	40	36.8372	-121.7041	2004	2018
2700624-001	LEAFWOOD COMMUNITY WA	240	296	56	36.8084	-121.7046	2002	2018
2700674-002	PARADISE LAKE MUTUAL WATER CO.	398	438	40	36.8164	-121.7055	2004	2019
2700674-003	PARADISE LAKE MUTUAL WATER CO.	340	400	60	36.8164	-121.7055	2004	2019
2700842-002	BAUMANN RD WS #01	290	310	20	36.7870	-121.7214	2003	2018
2700850-001	Not Available	225	580	355	36.7465	-121.6945	2003	2019
2700992-001	MILLER'S LODGE WS	14	24	10	36.6242	-121.6300	2003	2018
2701057-001	Not Available	325	378	53	36.5713	-121.5222	2004	2016
2701109-001	ASSOCIATED TAGLINE WS	N/A	N/A	N/A	36.7156	-121.7191	1987	2018
2701152-001	FLORICULTURA PACIFIC WS	508	580	72	36.5931	-121.5390	2003	2018
2701153-001	GROWERS TRANSPLANTING WS	410	485	75	36.7355	-121.6848	2001	2018
2701202-002	CAL AM WATER COMPANY - CHUALAR	750	900	150	36.5703	-121.5150	1998	2019
2701202-004	CAL AM WATER COMPANY - CHUALAR	760	900	140	36.5696	-121.5137	2002	2019
2701214-001	FIRESTONE BUSINESS PARK WS	524	548	24	36.6267	-121.5929	1987	2015
2701214-002	FIRESTONE BUSINESS PARK WS	517	545	28	36.6267	-121.5930	2003	2019
2701232-001	OLD NATIVIDAD RD WS #01	390	490	100	36.6591	-121.6229	1986	2018
2701325-001	SAN CLEMENTE RANCHO WS	N/A	N/A	N/A	36.5042	-121.5067	2002	2018
2701364-001	PEDRAZZI MWC	474	508	34	36.6000	-121.6300	1999	2018
2701452-002	MONTEREY DUNES MWA	1323	1383	60	36.7694	-121.7953	2002	2018
2701452-004	MONTEREY DUNES MWA	N/A	N/A	N/A	36.7582	-121.8010	2008	2018
2701498-001	HARBOR VIEW WA	220	230	10	36.8173	-121.7153	1997	2018
2701515-001	MOSS LANDING HARBOR WS	400	750	350	36.7988	-121.7457	1986	2018
2701542-001	GONZALES GAS STATION WS	332	392	60	36.5231	-121.4645	2004	2016
2701575-001	BUENA VISTA CENTER WS	N/A	N/A	N/A	36.5889	-121.6048	1987	2015
2701575-002	BUENA VISTA CENTER WS	N/A	N/A	N/A	36.5903	-121.6064	2018	2018
2701622-001	Not Available	N/A	N/A	N/A	36.8000	-121.7000	2001	2017
2701630-001	PRUNEDALE CHEVRON WS	N/A	N/A	N/A	36.5889	-121.6048	2001	2018
2701647-001	GREEN ACRES WA	220	260	40	36.7963	-121.7324	1998	2019
2701820-001	CORDA RD WS	520	560	40	36.5181	-121.4604	2003	2018
2701825-001	GLEN OAKS WS #01	N/A	N/A	N/A	36.5181	-121.4604	2003	2015
2701897-001	BERRY DR WS #02	408	600	192	36.6000	-121.6317	1998	2018
2701926-001	MORO RD WS #09	445	485	40	36.8030	-121.7005	2002	2016
2702121-001	ROSEHART INDUSTRIAL PARK WS	520	572	52	36.6961	-121.7007	2002	2018
2702135-001	FOOTHILL WA	N/A	N/A	N/A	36.5606	-121.5628	2005	2019
2702180-001	GRAVES SCHOOL WS	370	430	60	36.6961	-121.7007	1987	2018
2702226-002	CDFW ELKHORN SLOUGH ECOLOGICAL RESERVE	350	490	140	36.8240	-121.7358	1990	2018
2702320-001	HITCHCOCK RD WS #01	560	640	80	36.6643	-121.7008	2003	2018
2702431-001	FOOTHILL RD WS #01	200	N/A	N/A	36.5604	-121.5639	2003	2019
2702444-001	RIVER RD WS #28	430	N/A	N/A	36.5967	-121.6242	2004	2018
2702452-001	EL CAMINO MACHINE & WELDING WS	N/A	N/A	N/A	36.6367	-121.6019	2004	2018
2702452-002	EL CAMINO MACHINE & WELDING WS	N/A	N/A	N/A	36.6365	-121.6018	2013	2018
2702453-001	MARINA LANDFILL WS	40	250	210	36.7127	-121.7691	2002	2019
2702456-001	MONTEREY ONE WATER (FORMERLY MRWPCA)	N/A	N/A	N/A	36.7054	-121.7692	2017	2018
2702456-002	MONTEREY ONE WATER (FORMERLY MRWPCA)	670	750	80	36.6365	-121.6018	2004	2017
2702466-001	SAN VICENTE MWC	60	100	40	36.6367	-121.6019	2003	2018
2702482-001	COLOR SPOT NURSERY WS #02	300	400	100	36.7456	-121.6866	2002	2018
2702484-003	GROWERS SERVICE ASSN WS (ICE)	604	632	28	36.6511	-121.6322	2003	2019
2702704-001	HARRIS RD WS #10	N/A	N/A	N/A	36.6242	-121.6300	2009	2019
2710003-001	Not Available	224	360	136	36.7719	-121.7392	1974	2015
2710003-004	Not Available	180	340	160	36.7720	-121.7391	2002	2015
2710005-003	CASTROVILLE COMMUNITY SERVICES DISTRICT	N/A	N/A	300	36.7712	-121.7543	1986	2019
2710005-004	CASTROVILLE COMMUNITY SERVICES DISTRICT	N/A	N/A	160	36.7554	-121.7438	1986	2019
2710005-005	CASTROVILLE COMMUNITY SERVICES DISTRICT	N/A	N/A	85	36.7568	-121.7366	1986	2019
2710007-004	GONZALES, CITY OF	400	660	260	36.4990	-121.4359	1987	2019
2710007-006	GONZALES, CITY OF	440	660	220	36.5056	-121.4464	1998	2019
2710010-009	CWSC SALINAS	357	437	80	36.6611	-121.6607	1983	2019
2710010-015	CWSC SALINAS	330	393	63	36.6508	-121.6201	1982	2019
2710010-017	CWSC SALINAS	451	517	66	36.6646	-121.6702	1983	2019
2710010-019	CWSC SALINAS	360	504	144	36.6504	-121.6307	1982	2019
2710010-020	CWSC SALINAS	462	523	61	36.7026	-121.6635	1983	2019
2710010-023	CWSC SALINAS	330	465	135	36.6702	-121.6795	1983	2019

GAMA Groundwater Quality Monitoring Network Wells

GAMA Well ID	Water System Name	Well Screen Info			Coordinates		Monitoring Date Range	
		Top of Screen Depth (ft bgs)	Bottom of Screen Depth (ft bgs)	Screen Length (ft)	Latitude (NAD83)	Longitude (NAD83)	First Year	Last Year
2710010-026	CWSC SALINAS	420	580	160	36.6975	-121.6670	1983	2019
2710010-027	CWSC SALINAS	350	540	190	36.6654	-121.6806	1984	2018
2710010-028	CWSC SALINAS	420	600	180	36.6910	-121.6643	1983	2016
2710010-030	CWSC SALINAS	490	640	150	36.6883	-121.6659	1986	2019
2710010-077	CWSC SALINAS	385	605	220	36.6551	-121.6488	2002	2018
2710012-002	CWSC SALINAS HILLS	413	465	52	36.6049	-121.6394	1984	2019
2710012-003	CWSC SALINAS HILLS	410	730	320	36.6023	-121.6386	1983	2018
2710012-009	CWSC SALINAS HILLS	360	740	380	36.6238	-121.6659	1991	2018
2710012-016	CWSC SALINAS HILLS	453	489	36	36.6002	-121.6317	2002	2018
2710012-017	CWSC SALINAS HILLS	N/A	N/A	N/A	36.6012	-121.6334	1997	2018
2710019-001	CWSC OAK HILLS	300	600	300	36.7813	-121.7081	1982	2018

APPENDIX 7F

CENTRAL COAST AG ORDER 3.0 MONITORING AND REPORTING PROGRAM

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

MONITORING AND REPORTING PROGRAM
ORDER NO. R3-2017-0002-01

TIER 1

DISCHARGERS ENROLLED UNDER
CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR
DISCHARGES FROM IRRIGATED LANDS

This Monitoring and Reporting Program Order No. R3-2017-0002-01 (MRP) is issued pursuant to California Water Code (Water Code) sections 13267 and 13269, which authorize the California Regional Water Quality Control Board, Central Coast Region (hereafter Central Coast Water Board) to require preparation and submittal of technical and monitoring reports. Water Code section 13269 requires a waiver of waste discharge requirements to include as a condition the performance of monitoring and the public availability of monitoring results. *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands*, Order No. R3-2017-0002 (Order) includes criteria and requirements for three tiers. This MRP sets forth monitoring and reporting requirements for **Tier 1 Dischargers** enrolled under the Order. A summary of the requirements is shown below.

SUMMARY OF MONITORING AND REPORTING REQUIREMENTS FOR TIER 1:

Part 1: Surface Receiving Water Monitoring and Reporting *(cooperative or individual)*
Part 2: Groundwater Monitoring and Reporting *(cooperative or individual)*

Pursuant to Water Code section 13269(a)(2), monitoring requirements must be designed to support the development and implementation of the waiver program, including, but not limited to, verifying the adequacy and effectiveness of the waiver's conditions. The monitoring and reports required by this MRP are to evaluate effects of discharges of waste from irrigated agricultural operations and individual farms/ranches on waters of the state and to determine compliance with the Order.

MONITORING AND REPORTING BASED ON TIERS

The Order and MRP include criteria and requirements for three tiers, based upon those characteristics of individual farms/ranches at the operation that present the highest level of waste discharge or greatest risk to water quality. Dischargers must meet conditions of the Order and MRP for the appropriate tier that applies to their land and/or the individual farm/ranch. Within a tier, Dischargers comply with requirements based on the

specific level of discharge and threat to water quality from individual farms/ranches. The lowest tier, Tier 1, applies to dischargers who discharge the lowest level of waste (amount or concentration) or pose the lowest potential to cause or contribute to an exceedance of water quality standards in waters of the State or of the United States. The highest tier, Tier 3, applies to dischargers who discharge the highest level of waste or pose the greatest potential to cause or contribute to an exceedance of water quality standards in waters of the State or of the United States. Tier 2 applies to dischargers whose discharge has a moderate threat to water quality. Water quality is defined in terms of regional, state, or federal numeric or narrative water quality standards. Per the Order, Dischargers may submit a request to the Executive Officer to approve transfer to a lower tier. If the Executive Officer approves a transfer to a lower tier, any interested person may request that the Central Coast Water Board conduct a review of the Executive Officer's determination.

PART 1. SURFACE RECEIVING WATER MONITORING AND REPORTING REQUIREMENTS

The surface receiving water monitoring and reporting requirements described herein are generally a continuation of the surface receiving water monitoring and reporting requirements of Monitoring and Reporting Program Order No. 2012-0011-01, as revised August 22, 2016, with the intent of uninterrupted regular monitoring and reporting during the transition from Order No. R3-2012-0011-01 to Order No. R3-2017-0002-01.

Monitoring and reporting requirements for surface receiving water identified in Part 1.A. and Part 1.B. apply to Tier 1 Dischargers. Surface receiving water refers to water flowing in creeks and other surface waters of the State. Surface receiving water monitoring may be conducted through a cooperative monitoring program on behalf of Dischargers, or Dischargers may choose to conduct surface receiving water monitoring and reporting individually. Key monitoring and reporting requirements for surface receiving water are shown in Tables 1 and 2.

A. Surface Receiving Water Quality Monitoring

1. Dischargers must elect a surface receiving water monitoring option (cooperative monitoring program or individual receiving water monitoring) to comply with surface receiving water quality monitoring requirements, and identify the option selected on the Notice of Intent (NOI).

2. Dischargers are encouraged to choose participation in a cooperative monitoring program (e.g., the existing Cooperative Monitoring Program or a similar program) to comply with receiving water quality monitoring requirements. Dischargers not participating in a cooperative monitoring program must conduct surface receiving water quality monitoring individually that achieves the same purpose.

3. Dischargers (individually or as part of a cooperative monitoring program) must conduct surface receiving water quality monitoring to a) assess the impacts of their waste discharges from irrigated lands to receiving water, b) assess the status of receiving water quality and beneficial use protection in impaired waterbodies dominated by irrigated agricultural activity, c) evaluate status, short term patterns and long term trends (five to ten years or more) in receiving water quality, d) evaluate water quality impacts resulting from agricultural discharges (including but not limited to tile drain discharges), e) evaluate stormwater quality, f) evaluate condition of existing perennial, intermittent, or ephemeral streams or riparian or wetland area habitat, including degradation resulting from erosion or agricultural discharges of waste, and g) assist in the identification of specific sources of water quality problems.

Surface Receiving Water Quality Sampling and Analysis Plan

4. **By March 1, 2018, or as directed by the Executive Officer**, Dischargers (individually or as part of a cooperative monitoring program) must submit a surface receiving water quality Sampling and Analysis Plan (SAAP) and Quality Assurance Project Plan (QAPP); this requirement is satisfied if an approved SAAP and QAPP addressing all surface receiving water quality monitoring requirements described in this Order has been submitted pursuant to Order No. R3-2012-0011 and associated Monitoring and Reporting Programs. Dischargers (or a third party cooperative monitoring program) must develop the Sampling and Analysis Plan to describe how the proposed monitoring will achieve the objectives of the MRP and evaluate compliance with the Order. The Sampling and Analysis Plan may propose alternative monitoring site locations, adjusted monitoring parameters, and other changes as necessary to assess the impacts of waste discharges from irrigated lands to receiving water. The Executive Officer must approve the Sampling and Analysis Plan and QAPP.

5. The Sampling and Analysis Plan must include the following minimum required components:
    a. Monitoring strategy to achieve objectives of the Order and MRP;
    b. Map of monitoring sites with GIS coordinates;
    c. Identification of known water quality impairments and impaired waterbodies per the 2010 Clean Water Act 303(d) List of Impaired Waterbodies (List of Impaired Waterbodies);
    d. Identification of beneficial uses and applicable water quality standards;
    e. Identification of applicable Total Maximum Daily Loads;
    f. Monitoring parameters;
    g. Monitoring schedule, including description and frequencies of monitoring events;

h. Description of data analysis methods;

6. The QAPP must include receiving water and site-specific information, project organization and responsibilities, and quality assurance components of the MRP. The QAPP must also include the laboratory and field requirements to be used for analyses and data evaluation. The QAPP must contain adequate detail for project and Water Board staff to identify and assess the technical and quality objectives, measurement and data acquisition methods, and limitations of the data generated under the surface receiving water quality monitoring. All sampling and laboratory methodologies and QAPP content must be consistent with U.S. EPA methods, State Water Board's Surface Water Ambient Monitoring Program (SWAMP) protocols and the Central Coast Water Board's Central Coast Ambient Monitoring Program (CCAMP). Following U.S. EPA guidelines[1] and SWAMP templates[2], the receiving water quality monitoring QAPP must include the following minimum required components:
    a. Project Management. This component addresses basic project management, including the project history and objectives, roles and responsibilities of the participants, and other aspects.
    b. Data Generation and Acquisition. This component addresses all aspects of project design and implementation. Implementation of these elements ensures that appropriate methods for sampling, measurement and analysis, data collection or generation, data handling, and quality control activities are employed and are properly documented. Quality control requirements are applicable to all the constituents sampled as part of the MRP, as described in the appropriate method.
    c. Assessment and Oversight. This component addresses the activities for assessing the effectiveness of the implementation of the project and associated QA and QC activities. The purpose of the assessment is to provide project oversight that will ensure that the QA Project Plan is implemented as prescribed.
    d. Data Validation and Usability. This component addresses the quality assurance activities that occur after the data collection, laboratory analysis and data generation phase of the project is completed. Implementation of these elements ensures that the data conform to the specified criteria, thus achieving the MRP objectives.

[1] USEPA. 2001 (2006) USEPA Requirements for Quality Assurance Project Plans (QA/R-5) Office of Environmental Information, Washington, D.C. USEPA QA/R-5
[2] http://waterboards.ca.gov/water_issues/programs/swamp/tools.shtml#qa

7. The Central Coast Water Board may conduct an audit of contracted laboratories at any time in order to evaluate compliance with the QAPP.

8. The Sampling and Analysis Plan and QAPP, and any proposed revisions are subject to approval by the Executive Officer. The Executive Officer may also revise the Sampling and Analysis Plan, including adding, removing, or changing monitoring site locations, changing monitoring parameters, and other changes as necessary to assess the impacts of waste discharges from irrigated lands to receiving water.

Surface Receiving Water Quality Monitoring Sites

9. The Sampling and Analysis Plan must, at a minimum, include monitoring sites to evaluate waterbodies identified in Table 1, unless otherwise approved by the Executive Officer. The Sampling and Analysis Plan must include sites to evaluate receiving water quality impacts most directly resulting from areas of agricultural discharge (including areas receiving tile drain discharges). Site selection must take into consideration the existence of any long term monitoring sites included in related monitoring programs (e.g. CCAMP and the existing CMP). Sites may be added or modified, subject to prior approval by the Executive Officer, to better assess the pollutant loading from individual sources or the impacts to receiving waters caused by individual discharges. Any modifications must consider sampling consistency for purposes of trend evaluation.

Surface Receiving Water Quality Monitoring Parameters

10. The Sampling and Analysis Plan must, at a minimum, include the following types of monitoring and evaluation parameters listed below and identified in Table 2:

    a. Flow Monitoring;
    b. Water Quality (physical parameters, metals, nutrients, pesticides);
    c. Toxicity (water and sediment);
    d. Assessment of Benthic Invertebrates.

11. All analyses must be conducted at a laboratory certified for such analyses by the State Department of Public Health (CDPH) or at laboratories approved by the Executive Officer. Unless otherwise noted, all sampling, sample preservation, and analyses must be performed in accordance with the latest edition of *Test Methods for Evaluating Solid Waste*, SW-846, U.S. EPA, and analyzed as specified herein by the above analytical methods and reporting limits indicated. Certified laboratories can be found at the web link: http://www.cdph.ca.gov/certlic/labs/Documents/ELAPLablist.xls

12. Water quality and flow monitoring is used to assess the sources, concentrations, and loads of waste discharges from individual farms/ranches and groups of Dischargers to surface waters, to evaluate impacts to water quality and beneficial uses, and to evaluate the short term patterns and long term trends in receiving water quality. Monitoring data must be compared to existing numeric and narrative water quality objectives.

13. Toxicity testing is to evaluate water quality relative to the narrative toxicity objective. Water column toxicity analyses must be conducted on 100% (undiluted) sample. At sites where persistent unresolved toxicity is found, the Executive Officer may require concurrent toxicity and chemical analyses and a Toxicity Identification Evaluation (TIE) to identify the individual discharges causing the toxicity.

Surface Receiving Water Quality Monitoring Frequency and Schedule

14. The Sampling and Analysis Plan must include a schedule for sampling. Timing, duration, and frequency of monitoring must be based on the land use, complexity, hydrology, and size of the waterbody. Table 2 includes minimum monitoring frequency and parameter lists. Agricultural parameters that are less common may be monitored less frequently. Modifications to the receiving water quality monitoring parameters, frequency, and schedule may be submitted for Executive Officer consideration and approval. At a minimum, the Sampling and Analysis Plan schedule must consist of monthly monitoring of common agricultural parameters in major agricultural areas, including two major storm events during the wet season (October 1 – April 30).

15. Storm event monitoring must be conducted within 18 hours of storm events, preferably including the first flush run-off event that results in significant increase in stream flow. For purposes of this MRP, a storm event is defined as precipitation producing onsite runoff (surface water flow) capable of creating significant ponding, erosion or other water quality problem. A significant storm event will generally result in greater than 1-inch of rain within a 24-hour period.

16. Dischargers (individually or as part of a cooperative monitoring program) must perform receiving water quality monitoring per the Sampling and Analysis Plan and QAPP approved by the Executive Officer.

B. Surface Receiving Water Quality Reporting

Surface Receiving Water Quality Data Submittal

1. Dischargers (individually or as part of a cooperative monitoring program) must submit water quality monitoring data to the Central Coast Water Board electronically, in a format specified by the Executive Officer and compatible with SWAMP/CCAMP electronic submittal guidelines, each January 1, April 1, July 1, and October 1.

Surface Receiving Water Quality Monitoring Annual Report

2. **By July 1, 2017,** and every July 1 annually thereafter, Dischargers (individually or as part of a cooperative monitoring program) must submit an Annual Report, electronically, in a format specified by the Executive Officer including the following minimum elements:
    a. Signed Transmittal Letter;
    b. Title Page;
    c. Table of Contents;
    d. Executive Summary;
    e. Summary of Exceedance Reports submitted during the reporting period;
    f. Monitoring objectives and design;
    g. Monitoring site descriptions and rainfall records for the time period covered;
    h. Location of monitoring sites and map(s);
    i. Tabulated results of all analyses arranged in tabular form so that the required information is readily discernible;
    j. Summary of water quality data for any sites monitored as part of related monitoring programs, and used to evaluate receiving water as described in the Sampling and Analysis Plan.
    k. Discussion of data to clearly illustrate compliance with the Order and water quality standards;
    l. Discussion of short term patterns and long term trends in receiving water quality and beneficial use protection;
    m. Evaluation of pesticide and toxicity analyses results, and recommendation of candidate sites for Toxicity Identification Evaluations (TIEs);
    n. Identification of the location of any agricultural discharges observed discharging directly to surface receiving water;
    o. Laboratory data submitted electronically in a SWAMP/CCAMP comparable format;
    p. Sampling and analytical methods used;
    q. Copy of chain-of-custody forms;
    r. Field data sheets, signed laboratory reports, laboratory raw data;
    s. Associated laboratory and field quality control samples results;
    t. Summary of Quality Assurance Evaluation results;

u. Specify the method used to obtain flow at each monitoring site during each monitoring event;
v. Electronic or hard copies of photos obtained from all monitoring sites, clearly labeled with site ID and date;
w. Conclusions.

PART 2. GROUNDWATER MONITORING AND REPORTING REQUIREMENTS

Groundwater monitoring may be conducted through a cooperative monitoring and reporting program on behalf of growers, or Dischargers may choose to conduct groundwater monitoring and reporting individually. Qualifying cooperative groundwater monitoring and reporting programs must implement the groundwater monitoring and reporting requirements described in this Order, unless otherwise approved by the Executive Officer. An interested person may seek review by the Central Coast Water Board of the Executive Officer's approval or denial of a cooperative groundwater monitoring and reporting program.

Key monitoring and reporting requirements for groundwater are shown in Table 3.

A. Groundwater Monitoring

1. Dischargers must sample private domestic wells and the primary irrigation well on their farm/ranch to evaluate groundwater conditions in agricultural areas, identify areas at greatest risk for nitrogen loading and exceedance of drinking water standards, and identify priority areas for follow up actions.

2. Dischargers must sample at least one groundwater well for each farm/ranch on their operation, including groundwater wells that are located within the property boundary of the enrolled county assessor parcel numbers (APNs). For farms/ranches with multiple groundwater wells, Dischargers must sample all domestic wells and the primary irrigation well. For the purposes of this MRP, a "domestic well" is any well that is used or may be used for domestic use purposes, including any groundwater well that is connected to a residence, workshop, or place of business that may be used for human consumption, cooking, or sanitary purposes. Groundwater monitoring parameters must include well screen interval depths (if available), general chemical parameters, and general cations and anions listed in Table 3.

3. Dischargers must conduct two rounds of monitoring of required groundwater wells during calendar year 2017; one sample collected during spring (**March - June)** and one sample collected during fall **(September - December)**.

4. Groundwater samples must be collected by a qualified third party (e.g., consultant, technician, person conducting cooperative monitoring) using proper sampling methods, chain-of-custody, and quality assurance/quality

control protocols. Groundwater samples must be collected at or near the well head before the pressure tank and prior to any well head treatment. In cases where this is not possible, the water sample must be collected from a sampling point as close to the pressure tank as possible, or from a cold-water spigot located before any filters or water treatment systems.

5. Laboratory analyses for groundwater samples must be conducted by a State certified laboratory according to U.S. EPA approved methods; unless otherwise noted, all monitoring, sample preservation, and analyses must be performed in accordance with the latest edition of *Test Methods for Evaluating Solid Waste*, SW-846, United States Environmental Protection Agency, and analyzed as specified herein by the above analytical methods and reporting limits indicated. Certified laboratories can be found at the web link below: http://www.waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/docs/resources4growers/2016_04_11_labs.pdf

6. If a discharger determines that water in any domestic well exceeds 10 mg/L of nitrate as N, the discharger or third party must provide notice to the Central Coast Water Board within 24 hours of learning of the exceedance. For domestic wells on a Discharger's farm/ranch that exceed 10 mg/L nitrate as N, the Discharger must provide written notification to the users within 10 days of learning of the exceedance and provide written confirmation of the notification to the Central Coast Water Board.

   The drinking water notification must include the statement that the water poses a human health risk due to elevated nitrate concentration, and include a warning against the use of the water for drinking or cooking. In addition, Dischargers must also provide prompt written notification to any new well users (e.g. tenants and employees with access to the affected well), whenever there is a change in occupancy.

   For all other domestic wells not on a Discharger's farm/ranch but that may be impacted by nitrate, the Central Coast Water Board will notify the users promptly.

   The drinking water notification and confirmation letters required by this Order are available to the public.

B. Groundwater Reporting

1. **Within 60 days of sample collection,** Dischargers must coordinate with the laboratory to submit the following groundwater monitoring results and information, electronically, using the Water Board's GeoTracker electronic deliverable format (EDF):
   a. GeoTracker Ranch Global Identification Number

b. Field point name (Well Name)
c. Field Point Class (Well Type)
d. Latitude
e. Longitude
f. Sample collection date
g. Analytical results
h. Well construction information (e.g., total depth, screened intervals, depth to water), as available

2. Dischargers must submit groundwater well information required in the electronic Notice of Intent (eNOI) for each farm/ranch and update the eNOI to reflect changes in the farm/ranch information within 30 days of the change. Groundwater well information reported on the eNOI includes, but is not limited to:

a. Number of groundwater wells present at each farm/ranch
b. Identification of any groundwater wells abandoned or destroyed (including method destroyed) in compliance with the Order
c. Use for fertigation or chemigation
d. Presence of back flow prevention devices
e. Number of groundwater wells used for agricultural purposes
f. Number of groundwater wells used for or may be used for domestic use purposes (domestic wells).

PART 3. GENERAL MONITORING AND REPORTING REQUIREMENTS

A. Submittal of Technical Reports

1. Dischargers must submit reports in a format specified by the Executive Officer. A transmittal letter must accompany each report, containing the following penalty of perjury statement signed by the Discharger or the Discharger's authorized agent:

   "In compliance with Water Code §13267, I certify under penalty of perjury that this document and all attachments were prepared by me, or under my direction or supervision following a system designed to assure that qualified personnel properly gather and evaluate the information submitted. To the best of my knowledge and belief, this document and all attachments are true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment".

2. If the Discharger asserts that all or a portion of a report submitted pursuant to this Order is subject to an exemption from public disclosure (e.g. trade secrets or secret processes), the Discharger must provide an explanation of how those portions of the reports are exempt from public disclosure. The

Discharger must clearly indicate on the cover of the report (typically an electronic submittal) that the Discharger asserts that all or a portion of the report is exempt from public disclosure, submit a complete report with those portions that are asserted to be exempt in redacted form, submit separately (in a separate electronic file) unredacted pages (to be maintained separately by staff). The Central Coast Water Board staff will determine whether any such report or portion of a report qualifies for an exemption from public disclosure. If the Central Coast Water Board staff disagrees with the asserted exemption from public disclosure, the Central Coast Water Board staff will notify the Discharger prior to making such report or portions of such report available for public inspection.

B. Central Coast Water Board Authority

1. Monitoring reports are required pursuant to section 13267 of the California Water Code. Pursuant to section 13268 of the Water Code, a violation of a request made pursuant to section 13267 may subject you to civil liability of up to $1000 per day.

2. The Water Board needs the required information to determine compliance with Order No.R3-2017-0002. The evidence supporting these requirements is included in the findings of Order No.R3-2017-0002.

_____
John M. Robertson
Executive Officer

March 8, 2017
_____
Date

Table 1. Major Waterbodies in Agricultural Areas[1]

Hydrologic SubArea	Waterbody Name	Hydrologic SubArea	Waterbody Name
30510	Pajaro River	30920	Quail Creek
30510	Salsipuedes Creek	30920	Salinas Reclamation Canal
30510	Watsonville Slough	31022	Chorro Creek
30510	Watsonville Creek[2]	31023	Los Osos Creek
30510	Beach Road Ditch[2]	31023	Warden Creek
30530	Carnadero Creek	31024	San Luis Obispo Creek
30530	Furlong Creek[2]	31024	Prefumo Creek
30530	Llagas Creek	31031	Arroyo Grande Creek
30530	Miller's Canal	31031	Los Berros Creek
30530	San Juan Creek	31210	Bradley Canyon Creek
30530	Tesquisquita Slough	31210	Bradley Channel
30600	Moro Cojo Slough	31210	Green Valley Creek
30910	Alisal Slough	31210	Main Street Canal
30910	Blanco Drain	31210	Orcutt Solomon Creek
30910	Old Salinas River	31210	Oso Flaco Creek
30910	Salinas River (below Gonzales Rd.)	31210	Little Oso Flaco Creek
30920	Salinas River (above Gonzales Rd. and below Nacimiento R.)	31210	Santa Maria River
30910	Santa Rita Creek[2]	31310	San Antonio Creek[2]
30910	Tembladero Slough	31410	Santa Ynez River
30920	Alisal Creek	31531	Bell Creek
30920	Chualar Creek	31531	Glenn Annie Creek
30920	Espinosa Slough	31531	Los Carneros Creek[2]
30920	Gabilan Creek	31534	Arroyo Paredon Creek
30920	Natividad Creek	31534	Franklin Creek

[1] At a minimum, monitoring sites must be included for these waterbodies in agricultural areas, unless otherwise approved by the Executive Officer. Monitoring sites may be proposed for addition or modification to better assess the impacts of waste discharges from irrigated lands to surface water. Dischargers choosing to comply with surface receiving water quality monitoring, individually (not part of a cooperative monitoring program) must only monitor sites for waterbodies receiving the discharge.

[2] These creeks are included because they are newly listed waterbodies on the 2010 303(d) list of Impaired Waters that are associated with areas of agricultural discharge.

Table 2. Surface Receiving Water Quality Monitoring Parameters

Parameters and Tests	RL[3]	Monitoring Frequency[1]
Photo Monitoring		
Upstream and downstream photographs at monitoring location		With every monitoring event
WATER COLUMN SAMPLING		
Physical Parameters and General Chemistry		
Flow (field measure) (CFS) following SWAMP field SOP[9]	.25	Monthly, including 2 stormwater events
pH (field measure)	0.1	”
Electrical Conductivity (field measure) (µS/cm)	2.5	”
Dissolved Oxygen (field measure) (mg/L)	0.1	”
Temperature (field measure) (^{o}C)	0.1	”
Turbidity (NTU)	0.5	”
Total Dissolved Solids (mg/L)	10	”
Total Suspended Solids (mg/L)	0.5	”
Nutrients		
Total Nitrogen (mg/L)	0.5	Monthly, including 2 stormwater events
Nitrate + Nitrite (as N) (mg/L)	0.1	”
Total Ammonia (mg/L)	0.1	”
Unionized Ammonia (calculated value, mg/L))		”
Total Phosphorus (as P) (mg/L)	0.02	
Soluble Orthophosphate (mg/L)	0.01	”
Water column chlorophyll a (µg/L)	1.0	“
Algae cover, Floating Mats, % coverage	-	“
Algae cover, Attached, % coverage	-	“
Water Column Toxicity Test		
Algae - *Selenastrum capricornutum (*96-hour chronic; Method1003.0 in EPA/821/R-02/013)	-	4 times each year, twice in dry season, twice in wet season
Water Flea – *Ceriodaphnia dubia* (7-day chronic; Method 1002.0 in EPA/821/R-02/013)	-	”
Midge - *Chironomus spp.* (96-hour acute; Alternate test species in EPA 821-R-02-012)	-	“

Parameters and Tests	RL[3]	Monitoring Frequency[1]
Toxicity Identification Evaluation (TIE)	-	As directed by Executive Officer
Pesticides[2] /Herbicides (µg/L)		
Organophosphate Pesticides		
Azinphos-methyl	0.02	2 times in both 2017 and 2018, once in dry season and once in wet season of each year, concurrent with water toxicity monitoring
Chlorpyrifos	0.005	”
Diazinon	0.005	”
Dichlorvos	0.01	”
Dimethoate	0.01	”
Dimeton-s	0.005	”
Disulfoton (Disyton)	0.005	”
Malathion	0.005	”
Methamidophos	0.02	”
Methidathion	0.02	“
Parathion-methyl	0.02	“
Phorate	0.01	“
Phosmet	0.02	“
Neonicotinoids		
Thiamethoxam	.002	“
Imidacloprid	.002	“
Thiacloprid	.002	“
Dinotefuran	.006	“
Acetamiprid	.01	“
Clothianidin	.02	“
Herbicides		
Atrazine	0.05	“
Cyanazine	0.20	“
Diuron	0.05	“
Glyphosate	2.0	“
Linuron	0.1	“
Paraquat	0.20	“
Simazine	0.05	“
Trifluralin	0.05	“
Metals (µg/L)		
Arsenic (total) [5,7]	0.3	2 times in both 2017 and 2018, once in dry season and once in wet season of each year, concurrent with water toxicity monitoring
Boron (total) [6,7]	10	“
Cadmium (total & dissolved) [4.5,7]	0.01	“

Parameters and Tests	RL[3]	Monitoring Frequency[1]
Copper (total and dissolved) [4,7]	0.01	"
Lead (total and dissolved) [4,7]	0.01	"
Nickel (total and dissolved) [4,7]	0.02	"
Molybdenum (total) [7]	1	"
Selenium (total)[7]	0.30	"
Zinc (total and dissolved) [4.5,7]	0.10	"
Other (µg/L)		
Total Phenolic Compounds[8]	5	2 times in 2017, once in spring (April-May) and once in fall (August-September)
Hardness (mg/L as CaCO3)	1	"
Total Organic Carbon (ug/L)	0.6	"
SEDIMENT SAMPLING		
Sediment Toxicity - *Hyalella azteca* 10-day static renewal (EPA, 2000)		2 times each year, once in spring (April-May) and once in fall (August-September)
Pyrethroid Pesticides in Sediment (µg/kg)		
Gamma-cyhalothrin	2	2 times in both 2017 and 2018, once in spring (April-May) and once in fall (August-September) of each year, concurrent with sediment toxicity sampling
Lambda-cyhalothrin	2	"
Bifenthrin	2	"
Beta-cyfluthrin	2	"
Cyfluthrin	2	"
Esfenvalerate	2	"
Permethrin	2	"
Cypermethrin	2	"
Danitol	2	"
Fenvalerate	2	"
Fluvalinate	2	"
Other Monitoring in Sediment		
Chlorpyrifos (µg/kg)	2	"
Total Organic Carbon	0.01%	"
		"
Sediment Grain Size Analysis	1%	"

[1]Monitoring frequency may be used as a guide for developing alternative Sampling and Analysis Plans implemented by individual growers.
[2]Pesticide list may be modified based on specific pesticide use in Central Coast Region. Analytes on this list must be reported, at a minimum.
[3] Reporting Limit, taken from SWAMP where applicable.
[4] Holmgren, Meyer, Cheney and Daniels. 1993. Cadmium, Lead, Zinc, Copper and Nickel in Agricultural Soils of the United States. J. of Environ. Quality 22:335-348.

[5]Sax and Lewis, ed. 1987. Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. Zinc arsenate is an insecticide.
[6]Http://www.coastalagro.com/products/labels/9%25BORON.pdf; Boron is applied directly or as a component of fertilizers as a plant nutrient.
[7]Madramootoo, Johnston, Willardson, eds. 1997. Management of Agricultural Drainage Water Quality. International Commission on Irrigation and Drainage. U.N. FAO. SBN 92-6-104058.3.
[8]http://cat.inist.fr/?aModele=afficheN&cpsidt=14074525; Phenols are breakdown products of herbicides and pesticides. Phenols can be directly toxic and cause endocrine disruption.
[9]See SWAMP field measures SOP, p. 17
mg/L – milligrams per liter; ug/L – micrograms per liter; ug/kg – micrograms per kilogram;
NTU – Nephelometric Turbidity Units; CFS – cubic feet per second.

Table 3. Groundwater Sampling Parameters

Parameter	RL	Analytical Method[3]	Units
pH	0.1	Field or Laboratory Measurement EPA General Methods	pH Units
Specific Conductance	2.5		µS/cm
Total Dissolved Solids	10		mg/L
Total Alkalinity as $CaCO_3$		EPA Method 310.1 or 310.2	
Calcium	0.05	General Cations[1] EPA 200.7, 200.8, 200.9	
Magnesium	0.02		
Sodium	0.1		
Potassium	0.1		
Sulfate (SO4)	1.0	General Anions EPA Method 300 or EPA Method 353.2	
Chloride	0.1		
Nitrate + Nitrite (as N)[2] or Nitrate as N	0.1		

[1]General chemistry parameters (major cations and anions) represent geochemistry of water bearing zone and assist in evaluating quality assurance/quality control of groundwater monitoring and laboratory analysis.
[2]The MRP allows analysis of "nitrate plus nitrite" to represent nitrate concentrations (as N). The "nitrate plus nitrite" analysis allows for extended laboratory holding times and relieves the Discharger of meeting the short holding time required for nitrate.
[3]Dischargers may use alternative analytical methods approved by EPA.
RL – Reporting Limit; µS/cm – micro siemens per centimeter

Table 4. Tier 1 - Time Schedule for Key Monitoring and Reporting Requirements (MRPs)

REQUIREMENT	TIME SCHEDULE[1]
Submit Sampling And Analysis Plan and Quality Assurance Project Plan (SAAP/QAPP) for Surface Receiving Water Quality Monitoring *(individually or through cooperative monitoring program)*	By March 1, 2018, or as directed by the Executive Officer; satisfied if an approved SAAP/QAPP has been submitted pursuant to Order No. R3-2012-0011 and associated MRPs
Initiate surface receiving water quality monitoring *(individually or through cooperative monitoring program)*	Per an approved SAAP and QAPP
Submit surface receiving water quality monitoring data *(individually or through cooperative monitoring program)*	Each January 1, April 1, July 1, and October 1

Submit surface receiving water quality Annual Monitoring Report *(individually or through cooperative monitoring program)*	By July 1 2017; annually thereafter by July 1
Initiate monitoring of groundwater wells	First sample from March-June 2017, second sample from September-December 2017
Submit groundwater monitoring results	Within 60 days of the sample collection

[1] Dates are relative to adoption of this Order, unless otherwise specified.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

MONITORING AND REPORTING PROGRAM
ORDER NO. R3-2017-0002-02

TIER 2

DISCHARGERS ENROLLED UNDER
THE CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES FROM IRRIGATED LANDS

This Monitoring and Reporting Program Order No. R3-2017-0002-02 (MRP) is issued pursuant to California Water Code (Water Code) sections 13267 and 13269, which authorize the California Regional Water Quality Control Board, Central Coast Region (hereafter Central Coast Water Board) to require preparation and submittal of technical and monitoring reports. Water Code section 13269 requires a waiver of waste discharge requirements to include as a condition the performance of monitoring and the public availability of monitoring results. *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands*, Order No. R3-2017-0002 (Order) includes criteria and requirements for three tiers. This MRP sets forth monitoring and reporting requirements for **Tier 2 Dischargers** enrolled under the Order. A summary of the requirements is shown below.

SUMMARY OF MONITORING AND REPORTING REQUIREMENTS FOR TIER 2:

Part 1: Surface Receiving Water Monitoring and Reporting *(cooperative or individual)*
Part 2: Groundwater Monitoring and Reporting *(cooperative or individual)*
Total Nitrogen Applied Reporting *(required for subset of Tier 2 Dischargers if farm/ranch growing any crop with high nitrate loading risk to groundwater);*
Part 3: Annual Compliance Form

Pursuant to Water Code section 13269(a)(2), monitoring requirements must be designed to support the development and implementation of the waiver program, including, but not limited to, verifying the adequacy and effectiveness of the waiver's conditions. The monitoring and reports required by this MRP are to evaluate effects of discharges of waste from irrigated agricultural operations and individual farms/ranches on waters of the state and to determine compliance with the Order.

MONITORING AND REPORTING BASED ON TIERS

The Order and MRP include criteria and requirements for three tiers, based upon those characteristics of the individual farms/ranches at the operation that present the highest level of waste discharge or greatest risk to water quality. Dischargers must meet conditions of the Order and MRP for the appropriate tier that applies to their land and/or the individual farm/ranch. Within a tier, Dischargers comply with requirements based on the specific level of discharge and threat to water quality from individual farms/ranches. The lowest tier, Tier 1, applies to dischargers who discharge the lowest level of waste (amount or concentration) or pose the lowest potential to cause or contribute to an exceedance of water quality standards in waters of the State or of the United States. The highest tier, Tier 3, applies to dischargers who discharge the highest level of waste or pose the greatest potential to cause or contribute to an exceedance of water quality standards in waters of the State or of the United States. Tier 2 applies to dischargers whose discharge has a moderate threat to water quality. Water quality is defined in terms of regional, state, or federal numeric or narrative water quality standards. Per the Order, Dischargers may submit a request to the Executive Officer to approve transfer to a lower tier. If the Executive Officer approves a transfer to a lower tier, any interested person may request that the Central Coast Water Board conduct a review of the Executive Officer's determination.

PART 1. SURFACE RECEIVING WATER MONITORING AND REPORTING REQUIREMENTS

The surface receiving water monitoring and reporting requirements described herein are generally a continuation of the surface receiving water monitoring and reporting requirements of Monitoring and Reporting Program Order No. 2012-0011-02, as revised August 22, 2016, with the intent of uninterrupted regular monitoring and reporting during the transition from Order No. R3-2012-0011-02 to Order No. R3-2017-0002-02.

Monitoring and reporting requirements for surface receiving water identified in Part 1.A. and Part 1.B. apply to Tier 2 Dischargers. Surface receiving water refers to water flowing in creeks and other surface waters of the State. Surface receiving water monitoring may be conducted through a cooperative monitoring program on behalf of Dischargers, or Dischargers may choose to conduct surface receiving water monitoring and reporting individually. Key monitoring and reporting requirements for surface receiving water are shown in Tables 1 and 2. Time schedules are shown in Table4.

A. Surface Receiving Water Quality Monitoring

1. Dischargers must elect a surface receiving water monitoring option (cooperative monitoring program or individual receiving water monitoring) to comply with surface receiving water quality monitoring requirements, and identify the option selected on the Notice of Intent (NOI).

2. Dischargers are encouraged to choose participation in a cooperative monitoring program (e.g., the existing Cooperative Monitoring Program or a similar program) to comply with receiving water quality monitoring requirements. Dischargers not participating in a cooperative monitoring program must conduct surface receiving water quality monitoring individually that achieves the same purpose.

3. Dischargers (individually or as part of a cooperative monitoring program) must conduct surface receiving water quality monitoring to a) assess the impacts of their waste discharges from irrigated lands to receiving water, b) assess the status of receiving water quality and beneficial use protection in impaired waterbodies dominated by irrigated agricultural activity, c) evaluate status, short term patterns and long term trends (five to ten years or more) in receiving water quality, d) evaluate water quality impacts resulting from agricultural discharges (including but not limited to tile drain discharges), e) evaluate stormwater quality, f) evaluate condition of existing perennial, intermittent, or ephemeral streams or riparian or wetland area habitat, including degradation resulting from erosion or agricultural discharges of waste, and g) assist in the identification of specific sources of water quality problems.

<u>Surface Receiving Water Quality Sampling and Analysis Plan</u>

4. **By March 1, 2018, or as directed by the Executive Officer**, Dischargers (individually or as part of a cooperative monitoring program) must submit a surface receiving water quality Sampling and Analysis Plan (SAAP) and Quality Assurance Project Plan (QAPP); this requirement is satisfied if an approved SAAP and QAPP addressing all surface receiving water quality monitoring requirements described in this Order has been submitted pursuant to Order No.R3-2012-0011 and associated Monitoring and Reporting Programs. Dischargers (or a third party cooperative monitoring program) must develop the Sampling and Analysis Plan to describe how the proposed monitoring will achieve the objectives of the MRP and evaluate compliance with the Order. The Sampling and Analysis Plan may propose alternative monitoring site locations, adjusted monitoring parameters, and other changes as necessary to assess the impacts of waste discharges from irrigated lands to receiving water. The Executive Officer must approve the Sampling and Analysis Plan and QAPP.

5. The Sampling and Analysis Plan must include the following minimum required components:
    a. Monitoring strategy to achieve objectives of the Order and MRP;
    b. Map of monitoring sites with GIS coordinates;

c. Identification of known water quality impairments and impaired waterbodies per the 2010 Clean Water Act 303(d) List of Impaired Waterbodies (List of Impaired Waterbodies);
d. Identification of beneficial uses and applicable water quality standards;
e. Identification of applicable Total Maximum Daily Loads;
f. Monitoring parameters;
g. Monitoring schedule, including description and frequencies of monitoring events;
h. Description of data analysis methods;

6. The QAPP must include receiving water and site-specific information, project organization and responsibilities, and quality assurance components of the MRP. The QAPP must also include the laboratory and field requirements to be used for analyses and data evaluation. The QAPP must contain adequate detail for project and Water Board staff to identify and assess the technical and quality objectives, measurement and data acquisition methods, and limitations of the data generated under the surface receiving water quality monitoring. All sampling and laboratory methodologies and QAPP content must be consistent with U.S. EPA methods, State Water Board's Surface Water Ambient Monitoring Program (SWAMP) protocols and the Central Coast Water Board's Central Coast Ambient Monitoring Program (CCAMP). Following U.S. EPA guidelines[1] and SWAMP templates[2], the receiving water quality monitoring QAPP must include the following minimum required components:
    a. Project Management. This component addresses basic project management, including the project history and objectives, roles and responsibilities of the participants, and other aspects.
    b. Data Generation and Acquisition. This component addresses all aspects of project design and implementation. Implementation of these elements ensures that appropriate methods for sampling, measurement and analysis, data collection or generation, data handling, and quality control activities are employed and are properly documented. Quality control requirements are applicable to all the constituents sampled as part of the MRP, as described in the appropriate method.
    c. Assessment and Oversight. This component addresses the activities for assessing the effectiveness of the implementation of the project and associated QA and QC activities. The purpose of the assessment is to provide project oversight that

[1] USEPA 2001 (2006) USEPA requirements for Quality Assurance Project Plans (QA/R-5) Office of Environmental Information, Washington, D.C. USEPA QA/R-5
[2] http://waterboards.ca.gov/water_issues/programs/swamp/tools.shtml#qa

will ensure that the QA Project Plan is implemented as prescribed.

d. Data Validation and Usability. This component addresses the quality assurance activities that occur after the data collection, laboratory analysis and data generation phase of the project is completed. Implementation of these elements ensures that the data conform to the specified criteria, thus achieving the MRP objectives.

7. The Central Coast Water Board may conduct an audit of contracted laboratories at any time in order to evaluate compliance with the QAPP.

8. The Sampling and Analysis Plan and QAPP, and any proposed revisions are subject to approval by the Executive Officer. The Executive Officer may also revise the Sampling and Analysis Plan, including adding, removing, or changing monitoring site locations, changing monitoring parameters, and other changes as necessary to assess the impacts of waste discharges from irrigated lands to receiving water.

Surface Receiving Water Quality Monitoring Sites

9. The Sampling and Analysis Plan must, at a minimum, include monitoring sites to evaluate waterbodies identified in Table 1, unless otherwise approved by the Executive Officer. The Sampling and Analysis Plan must include sites to evaluate receiving water quality impacts most directly resulting from areas of agricultural discharge (including areas receiving tile drain discharges). Site selection must take into consideration the existence of any long term monitoring sites included in related monitoring programs (e.g. CCAMP and the existing CMP). Sites may be added or modified, subject to prior approval by the Executive Officer, to better assess the pollutant loading from individual sources or the impacts to receiving waters caused by individual discharges. Any modifications must consider sampling consistency for purposes of trend evaluation.

Surface Receiving Water Quality Monitoring Parameters

10. The Sampling and Analysis Plan must, at a minimum, include the following types of monitoring and evaluation parameters listed below and identified in Table 2:

    a. Flow Monitoring;
    b. Water Quality (physical parameters, metals, nutrients, pesticides);
    c. Toxicity (water and sediment);
    d. Assessment of Benthic Invertebrates.

11. All analyses must be conducted at a laboratory certified for such analyses by the State Department of Public Health (CDPH) or at laboratories approved by the Executive Officer. Unless otherwise noted, all sampling, sample preservation, and analyses must be performed in accordance with the latest edition of *Test Methods for Evaluating Solid Waste*, SW-846, U.S. EPA, and analyzed as specified herein by the above analytical methods and reporting limits indicated. Certified laboratories can be found at the web link: http://www.cdph.ca.gov/certlic/labs/Documents/ELAPLablist.xls

12. Water quality and flow monitoring is used to assess the sources, concentrations, and loads of waste discharges from individual farms/ranches and groups of Dischargers to surface waters, to evaluate impacts to water quality and beneficial uses, and to evaluate the short term patterns and long term trends in receiving water quality. Monitoring data must be compared to existing numeric and narrative water quality objectives.

13. Toxicity testing is to evaluate water quality relative to the narrative toxicity objective. Water column toxicity analyses must be conducted on 100% (undiluted) sample. At sites where persistent unresolved toxicity is found, the Executive Officer may require concurrent toxicity and chemical analyses and a Toxicity Identification Evaluation (TIE) to identify the individual discharges causing the toxicity.

Surface Receiving Water Quality Monitoring Frequency and Schedule

14. The Sampling and Analysis Plan must include a schedule for sampling. Timing, duration, and frequency of monitoring must be based on the land use, complexity, hydrology, and size of the waterbody. Table 2 includes minimum monitoring frequency and parameter lists. Agricultural parameters that are less common may be monitored less frequently. Modifications to the receiving water quality monitoring parameters, frequency, and schedule may be submitted for Executive Officer consideration and approval. At a minimum, the Sampling and Analysis Plan schedule must consist of monthly monitoring of common agricultural parameters in major agricultural areas, including two major storm events during the wet season (October 1 – April 30).

15. Storm event monitoring must be conducted within 18 hours of storm events, preferably including the first flush run-off event that results in significant increase in stream flow. For purposes of this MRP, a storm event is defined as precipitation producing onsite runoff (surface water flow) capable of creating significant ponding, erosion or other water quality problem. A

significant storm event will generally result in greater than 1-inch of rain within a 24-hour period.

16. Dischargers (individually or as part of a cooperative monitoring program) must perform receiving water quality monitoring per the Sampling and Analysis Plan and QAPP approved by the Executive Officer.

B. Surface Receiving Water Quality Reporting

Surface Receiving Water Quality Data Submittal

1. Dischargers (individually or as part of a cooperative monitoring program) must submit water quality monitoring data to the Central Coast Water Board electronically, in a format specified by the Executive Officer and compatible with SWAMP/CCAMP electronic submittal guidelines, each January 1, April 1, July 1, and October 1.

Surface Receiving Water Quality Monitoring Annual Report

2. By July 1, 2017, and every July 1 annually thereafter, Dischargers (individually or as part of a cooperative monitoring program) must submit an Annual Report, electronically, in a format specified by the Executive Officer including the following minimum elements:

a. Signed Transmittal Letter;
b. Title Page;
c. Table of Contents;
d. Executive Summary;
e. Summary of Exceedance Reports submitted during the reporting period;
f. Monitoring objectives and design;
g. Monitoring site descriptions and rainfall records for the time period covered;
h. Location of monitoring sites and map(s);
i. Tabulated results of all analyses arranged in tabular form so that the required information is readily discernible;
j. Summary of water quality data for any sites monitored as part of related monitoring programs, and used to evaluate receiving water as described in the Sampling and Analysis Plan.
k. Discussion of data to clearly illustrate compliance with the Order and water quality standards;
l. Discussion of short term patterns and long term trends in receiving water quality and beneficial use protection;
m. Evaluation of pesticide and toxicity analyses results, and recommendation of candidate sites for Toxicity Identification Evaluations (TIEs);

n. Identification of the location of any agricultural discharges observed discharging directly to surface receiving water;
o. Laboratory data submitted electronically in a SWAMP/CCAMP comparable format;
p. Sampling and analytical methods used;
q. Copy of chain-of-custody forms;
r. Field data sheets, signed laboratory reports, laboratory raw data;
s. Associated laboratory and field quality control samples results;
t. Summary of Quality Assurance Evaluation results;
u. Specify the method used to obtain flow at each monitoring site during each monitoring event;
v. Electronic or hard copies of photos obtained from all monitoring sites, clearly labeled with site ID and date;
w. Conclusions.

PART 2. GROUNDWATER MONITORING AND REPORTING REQUIREMENTS

Groundwater monitoring may be conducted through a cooperative monitoring and reporting program on behalf of growers, or Dischargers may choose to conduct groundwater monitoring and reporting individually. Qualifying cooperative groundwater monitoring and reporting programs must implement the groundwater monitoring and reporting requirements described in this Order, unless otherwise approved by the Executive Officer. An interested person may seek review by the Central Coast Water Board of the Executive Officer's approval or denial of a cooperative groundwater monitoring and reporting program.

Key monitoring and reporting requirements for groundwater are shown in Table 3.

A. Groundwater Monitoring

1. Dischargers must sample private domestic wells and the primary irrigation well on their farm/ranch to evaluate groundwater conditions in agricultural areas, identify areas at greatest risk for nitrogen loading and exceedance of drinking water standards, and identify priority areas for follow up actions.

2. Dischargers must sample at least one groundwater well for each farm/ranch on their operation, including groundwater wells that are located within the property boundary of the enrolled county assessor parcel numbers (APNs). For farms/ranches with multiple groundwater wells, Dischargers must sample all domestic wells and the primary irrigation well. For the purposes of this MRP, a "domestic well" is any well that is used or may be used for domestic use purposes, including any groundwater well that is connected to a residence, workshop, or place of business that may be used for human consumption, cooking, or sanitary purposes. Groundwater monitoring

parameters must include well screen interval depths (if available), general chemical parameters, and general cations and anions listed in Table 3.

3. Dischargers must conduct two rounds of monitoring of required groundwater wells during calendar year 2017; one sample collected during spring (**March - June)** and one sample collected during fall **(September - December)**.

4. Groundwater samples must be collected by a qualified third party (e.g., consultant, technician, person conducting cooperative monitoring) using proper sampling methods, chain-of-custody, and quality assurance/quality control protocols. Groundwater samples must be collected at or near the well head before the pressure tank and prior to any well head treatment. In cases where this is not possible, the water sample must be collected from a sampling point as close to the pressure tank as possible, or from a cold-water spigot located before any filters or water treatment systems.

5. Laboratory analyses for groundwater samples must be conducted by a State certified laboratory according to U.S. EPA approved methods; unless otherwise noted, all monitoring, sample preservation, and analyses must be performed in accordance with the latest edition of *Test Methods for Evaluating Solid Waste*, SW-846, United States Environmental Protection Agency, and analyzed as specified herein by the above analytical methods and reporting limits indicated. Certified laboratories can be found at the web link below: http://www.waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/docs/resources4growers/2016_04_11_labs.pdf

6. If a discharger determines that water in any domestic well exceeds 10 mg/L of nitrate as N, the discharger or third party must provide notice to the Central Coast Water Board within 24 hours of learning of the exceedance. For domestic wells on a Discharger's farm/ranch, that exceed 10 mg/L of nitrate as N, the Discharger must provide written notification to the users within 10 days of learning of the exceedance and provide written confirmation of the notification to the Central Coast Water Board.

   The drinking water notification must include the statement that the water poses a human health risk due to elevated nitrate concentration, and include a warning against the use of the water for drinking or cooking. In addition, Dischargers must also provide prompt written notification to any new well users (e.g. tenants and employees with access to the affected well), whenever there is a change in occupancy.

   For all other domestic wells not on a Discharger's farm/ranch but that may be impacted by nitrate, the Central Coast Water Board will notify the users promptly.

The drinking water notification and confirmation letters required by this Order are available to the public.

B. Groundwater Reporting

1. **Within 60 days of sample collection,** Dischargers must coordinate with the laboratory to submit the following groundwater monitoring results and information, electronically, using the Water Board's GeoTracker electronic deliverable format (EDF):
    a. GeoTracker Ranch Global Identification Number
    b. Field point name (Well Name)
    c. Field Point Class (Well Type)
    d. Latitude
    e. Longitude
    f. Sample collection date
    g. Analytical results
    h. Well construction information (e.g., total depth, screened intervals, depth to water), as available

2. Dischargers must submit groundwater well information required in the electronic Notice of Intent (eNOI) for each farm/ranch and update the eNOI to reflect changes in the farm/ranch information within 30 days of the change. Groundwater well information reported on the eNOI includes, but is not limited to:
    a. Number of groundwater wells present at each farm/ranch
    b. Identification of any groundwater wells abandoned or destroyed (including method destroyed) in compliance with the Order
    c. Use for fertigation or chemigation
    d. Presence of back flow prevention devices
    e. Number of groundwater wells used for agricultural purposes
    f. Number of groundwater wells used for or may be used for domestic use purposes (domestic wells).

C. Total Nitrogen Applied Reporting

1. By March 1, 2018, and by March 1 annually thereafter, Tier 2 Dischargers growing any crop with a high potential to discharge nitrogen to groundwater must record and report total nitrogen applied for each specific crop that was irrigated and grown for commercial purposes on that farm/ranch during the preceding calendar year (January through December).

    Crops with a high potential to discharge nitrogen to groundwater are: beet, broccoli, cabbage, cauliflower, celery, Chinese cabbage (napa), collard, endive, kale, leek, lettuce (leaf and head), mustard, onion (dry and green),

spinach, strawberry, pepper (fruiting), and parsley.

Total nitrogen applied must be reported on the Total Nitrogen Applied Report form as described in the Total Nitrogen Applied Report form instructions.

Total nitrogen applied includes any product containing any form or concentration of nitrogen including, but not limited to, organic and inorganic fertilizers, slow release products, compost, compost teas, manure, and extracts.

2. The Total Nitrogen Applied Report form includes the following information:
    a. General ranch information such as GeoTracker file numbers, name, location, acres.
    b. Nitrogen concentration of irrigation water
    c. Nitrogen applied in pounds per acre with irrigation water
    d. Nitrogen present in the soil
    e. Nitrogen applied with compost and amendments
    f. Specific crops grown
    g. Nitrogen applied in pounds per acre with fertilizers and other materials to each specific crop grown
    h. Crop acres of each specific crop grown
    i. Whether each specific crop was grown organically or conventionally
    j. Basis for the nitrogen applied
    k. Explanation and comments section
    l. Certification statement with penalty of perjury declaration
    m. Additional information regarding whether each specific crop was grown in a nursery, greenhouse, hydroponically, in containers, and similar variables.

PART 3. ANNUAL COMPLIANCE FORM

Tier 2 Dischargers must submit annual compliance information, electronically, on the Annual Compliance Form. The purpose of the electronic Annual Compliance Form is to provide information to the Central Coast Water Board to assist in the evaluation of threat to water quality from individual agricultural discharges of waste and measure progress towards water quality improvement and verify compliance with the Order and MRP. Time schedules are shown in Table 4.

A. Annual Compliance Form

1. **By March 1, 2018, and updated annually thereafter by March 1**, Tier 2 Dischargers must submit an Annual Compliance Form electronically, in a

format specified by the Executive Officer. The electronic Annual Compliance Form includes, but is not limited to the following minimum requirements[1]:

a. Question regarding consistency between the Annual Compliance Form and the electronic Notice of Intent (eNOI);
b. Information regarding type and characteristics of discharge (e.g., number of discharge points, estimated flow/volume, number of tailwater days);
c. Identification of any direct agricultural discharges to a stream, lake, estuary, bay, or ocean;
d. Identification of specific farm water quality management practices completed, in progress, and planned to address water quality impacts caused by discharges of waste including irrigation management, pesticide management, nutrient management, salinity management, stormwater management, and sediment and erosion control to achieve compliance with this Order; and identification of specific methods used, and described in the Farm Plan consistent with Order Provision 44.g., for the purposes of assessing the effectiveness of management practices implemented and the outcomes of such assessments;
e. Proprietary information question and justification;
f. Authorization and certification statement and declaration of penalty of perjury.

PART 5. GENERAL MONITORING AND REPORTING REQUIREMENTS

A. Submittal of Technical Reports

1. Dischargers must submit reports in a format specified by the Executive Officer. A transmittal letter must accompany each report, containing the following penalty of perjury statement signed by the Discharger or the Discharger's authorized agent:

   "In compliance with Water Code §13267, I certify under penalty of perjury that this document and all attachments were prepared by me, or under my direction or supervision following a system designed to assure that qualified personnel properly gather and evaluate the information submitted. To the best of my knowledge and belief, this document and all attachments are true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment".

[1] Items reported in the Annual Compliance Form are due by March 1, 2018, and annually thereafter, unless otherwise specified.

2. If the Discharger asserts that all or a portion of a report submitted pursuant to this Order is subject to an exemption from public disclosure (e.g. trade secrets or secret processes), the Discharger must provide an explanation of how those portions of the reports are exempt from public disclosure. The Discharger must clearly indicate on the cover of the report (typically an electronic submittal) that the Discharger asserts that all or a portion of the report is exempt from public disclosure, submit a complete report with those portions that are asserted to be exempt in redacted form, submit separately (in a separate electronic file) unredacted pages (to be maintained separately by staff). The Central Coast Water Board staff will determine whether any such report or portion of a report qualifies for an exemption from public disclosure. If the Central Coast Water Board staff disagrees with the asserted exemption from public disclosure, the Central Coast Water Board staff will notify the Discharger prior to making such report or portions of such report available for public inspection.

B. Central Coast Water Board Authority

1. Monitoring reports are required pursuant to section 13267 of the California Water Code. Pursuant to section 13268 of the Water Code, a violation of a request made pursuant to section 13267 may subject you to civil liability of up to $1000 per day.

2. The Water Board needs the required information to determine compliance with Order No. R3-2017-0002. The evidence supporting these requirements is included in the findings of Order No. R3-2017-0002.

_____
John M. Robertson
Executive Officer

March 8, 2017
_____
Date

Table 1. Major Waterbodies in Agricultural Areas[1]

Hydrologic SubArea	Waterbody Name	Hydrologic SubArea	Waterbody Name
30510	Pajaro River	30920	Quail Creek
30510	Salsipuedes Creek	30920	Salinas Reclamation Canal
30510	Watsonville Slough	31022	Chorro Creek
30510	Watsonville Creek[2]	31023	Los Osos Creek
30510	Beach Road Ditch[2]	31023	Warden Creek
30530	Carnadero Creek	31024	San Luis Obispo Creek
30530	Furlong Creek[2]	31024	Prefumo Creek
30530	Llagas Creek	31031	Arroyo Grande Creek
30530	Miller's Canal	31031	Los Berros Creek
30530	San Juan Creek	31210	Bradley Canyon Creek
30530	Tesquisquita Slough	31210	Bradley Channel
30600	Moro Cojo Slough	31210	Green Valley Creek
30910	Alisal Slough	31210	Main Street Canal
30910	Blanco Drain	31210	Orcutt Solomon Creek
30910	Old Salinas River	31210	Oso Flaco Creek
30910	Salinas River (below Gonzales Rd.)	31210	Little Oso Flaco Creek
30920	Salinas River above Gonzales Rd. and below Nacimiento R.)	31210	Santa Maria River
30910	Santa Rita Creek[2]	31310	San Antonio Creek[2]
30910	Tembladero Slough	31410	Santa Ynez River
30920	Alisal Creek	31531	Bell Creek
30920	Chualar Creek	31531	Glenn Annie Creek
30920	Espinosa Slough	31531	Los Carneros Creek[2]
30920	Gabilan Creek	31534	Arroyo Paredon Creek
30920	Natividad Creek	31534	Franklin Creek

[1] At a minimum, monitoring sites must be included for these waterbodies in agricultural areas, unless otherwise approved by the Executive Officer. Monitoring sites may be proposed for addition or modification to better assess the impacts of waste discharges from irrigated lands to surface water. Dischargers choosing to comply with surface receiving water quality monitoring, individually (not part of a cooperative monitoring program) must only monitor sites for waterbodies receiving the discharge.

[2] These creeks are included because they are newly listed waterbodies on the 2010 303(d) list of Impaired Waters that are associated with areas of agricultural discharge.

Table 2. Surface Receiving Water Quality Monitoring Parameters

Parameters and Tests	RL[3]	Monitoring Frequency[1]
Photo Monitoring		
Upstream and downstream photographs at monitoring location		With every monitoring event
WATER COLUMN SAMPLING		
Physical Parameters and General Chemistry		
Flow (field measure) (CFS) following SWAMP field SOP[9]	.25	Monthly, including 2 stormwater events
pH (field measure)	0.1	”
Electrical Conductivity (field measure) (µS/cm)	2.5	”
Dissolved Oxygen (field measure) (mg/L)	0.1	”
Temperature (field measure) (^{o}C)	0.1	”
Turbidity (NTU)	0.5	”
Total Dissolved Solids (mg/L)	10	”
Total Suspended Solids (mg/L)	0.5	”
Nutrients		
Total Nitrogen (mg/L)	0.5	Monthly, including 2 stormwater events
Nitrate + Nitrite (as N) (mg/L)	0.1	”
Total Ammonia (mg/L)	0.1	”
Unionized Ammonia (calculated value, mg/L))		”
Total Phosphorus (as P) (mg/L)	0.02	
Soluble Orthophosphate (mg/L)	0.01	”
Water column chlorophyll a (µg/L)	1.0	“
Algae cover, Floating Mats, % coverage	-	“
Algae cover, Attached, % coverage	-	“
Water Column Toxicity Test		
Algae - *Selenastrum capricornutum (*96-hour chronic; Method1003.0 in EPA/821/R-02/013)	-	4 times each year, twice in dry season, twice in wet season
Water Flea – *Ceriodaphnia dubia* (7-day chronic; Method 1002.0 in EPA/821/R-02/013)	-	”
Midge - *Chironomus spp.* (96-hour acute; Alternate test species in EPA 821-R-02-012)	-	“

Parameters and Tests	RL[3]	Monitoring Frequency[1]
Toxicity Identification Evaluation (TIE)	-	As directed by Executive Officer
Pesticides[2] /Herbicides (µg/L)		
Organophosphate Pesticides		
Azinphos-methyl	0.02	2 times in both 2017 and 2018, once in dry season and once in wet season of each year, concurrent with water toxicity monitoring
Chlorpyrifos	0.005	”
Diazinon	0.005	”
Dichlorvos	0.01	”
Dimethoate	0.01	”
Dimeton-s	0.005	”
Disulfoton (Disyton)	0.005	”
Malathion	0.005	”
Methamidophos	0.02	”
Methidathion	0.02	“
Parathion-methyl	0.02	“
Phorate	0.01	“
Phosmet	0.02	“
Neonicotinoids		
Thiamethoxam	.002	“
Imidacloprid	.002	“
Thiacloprid	.002	“
Dinotefuran	.006	“
Acetamiprid	.01	“
Clothianidin	.02	
Herbicides		
Atrazine	0.05	“
Cyanazine	0.20	“
Diuron	0.05	“
Glyphosate	2.0	“
Linuron	0.1	“
Paraquat	0.20	“
Simazine	0.05	“
Trifluralin	0.05	“
Metals (µg/L)		
Arsenic (total) [5,7]	0.3	2 times in both 2017 and 2018, once in dry season and once in wet season of each year, concurrent with water toxicity monitoring
Boron (total) [6,7]	10	“

Parameters and Tests	RL[3]	Monitoring Frequency[1]
Cadmium (total & dissolved) [4,5,7]	0.01	"
Copper (total and dissolved) [4,7]	0.01	"
Lead (total and dissolved) [4,7]	0.01	"
Nickel (total and dissolved) [4,7]	0.02	"
Molybdenum (total) [7]	1	"
Selenium (total)[7]	0.30	"
Zinc (total and dissolved) [4,5,7]	0.10	"
Other (µg/L)		
Total Phenolic Compounds[8]	5	2 times in 2017, once in spring (April-May) and once in fall (August-September)
Hardness (mg/L as CaCO3)	1	"
Total Organic Carbon (ug/L)	0.6	"
SEDIMENT SAMPLING		
Sediment Toxicity - *Hyalella azteca* 10-day static renewal (EPA, 2000)		2 times each year, once in spring (April-May) and once in fall (August-September)
Pyrethroid Pesticides in Sediment (µg/kg)		
Gamma-cyhalothrin	2	2 times in both 2017 and 2018, once in spring (April-May) and once in fall (August-September) of each year, concurrent with sediment toxicity sampling
Lambda-cyhalothrin	2	"
Bifenthrin	2	"
Beta-cyfluthrin	2	"
Cyfluthrin	2	"
Esfenvalerate	2	"
Permethrin	2	"
Cypermethrin	2	"
Danitol	2	"
Fenvalerate	2	"
Fluvalinate	2	"
Other Monitoring in Sediment		
Chlorpyrifos (µg/kg)	2	"
Total Organic Carbon	0.01%	"
		"
Sediment Grain Size Analysis	1%	"

[1]Monitoring is ongoing through all five years of the Order, unless otherwise specified. Monitoring frequency may be used as a guide for developing alternative Sampling and Analysis Plan.
[2]Pesticide list may be modified based on specific pesticide use in Central Coast Region. Analytes on this list must be reported, at a minimum.

[3] Reporting Limit, taken from SWAMP where applicable.
[4] Holmgren, Meyer, Cheney and Daniels. 1993. Cadmium, Lead, Zinc, Copper and Nickel in Agricultural Soils of the United States. J. of Environ. Quality 22:335-348.
[5] Sax and Lewis, ed. 1987. Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. Zinc arsenate is an insecticide.
[6] Http://www.coastalagro.com/products/labels/9%25BORON.pdf; Boron is applied directly or as a component of fertilizers as a plant nutrient.
[7] Madramootoo, Johnston, Willardson, eds. 1997. Management of Agricultural Drainage Water Quality. International Commission on Irrigation and Drainage. U.N. FAO. SBN 92-6-104058.3.
[8] http://cat.inist.fr/?aModele=afficheN&cpsidt=14074525; Phenols are breakdown products of herbicides and pesticides. Phenols can be directly toxic and cause endocrine disruption.
[9] See SWAMP field measures SOP, p. 17
mg/L – milligrams per liter; ug/L – micrograms per liter; ug/kg – micrograms per kilogram;
NTU – Nephelometric Turbidity Units; CFS – cubic feet per second;

Table 3. Groundwater Monitoring Parameters

Parameter	RL	Analytical Method[3]	Units
pH	0.1	Field or Laboratory Measurement EPA General Methods	pH Units
Specific Conductance	2.5		µS/cm
Total Dissolved Solids	10		mg/L
Total Alkalinity as CaCO3	1	EPA Method 310.1 or 310.2	
Calcium	0.05	General Cations[1] EPA 200.7, 200.8, 200.9	
Magnesium	0.02		
Sodium	0.1		
Potassium	0.1		
Sulfate (SO4)	1.0	General Anions EPA Method 300 or EPA Method 353.2	
Chloride	0.1		
Nitrate + Nitrite (as N)[2] or Nitrate as N	0.1		

[1] General chemistry parameters (major cations and anions) represent geochemistry of water bearing zone and assist in evaluating quality assurance/quality control of groundwater sampling and laboratory analysis.
[2] The MRP allows analysis of "nitrate plus nitrite" to represent nitrate concentrations (as N). The "nitrate plus nitrite" analysis allows for extended laboratory holding times and relieves the Discharger of meeting the short holding time required for nitrate.
[3] Dischargers may use alternative analytical methods approved by EPA.
RL – Reporting Limit; µS/cm – micro siemens per centimeter

Table4. Tier 2 - Time Schedule for Key Monitoring and Reporting Requirements (MRPs)

REQUIREMENT	TIME SCHEDULE[1]
Submit Sampling And Analysis Plan and Quality Assurance Project Plan (SAAP/QAPP) for Surface Receiving Water Quality Monitoring (*individually or through cooperative monitoring program*)	By March 1, 2018, or as directed by the Executive Officer; satisfied if an approved SAAP/QAPP has been submitted pursuant to Order No. R3-2012-0011 and associated MRPs
Initiate surface receiving water quality monitoring (*individually or through cooperative monitoring program*)	Per an approved SAAP and QAPP
Submit surface receiving water quality monitoring data (*individually or through cooperative monitoring program*)	Each January 1, April 1, July 1, and October 1
Submit surface receiving water quality Annual Monitoring Report *(individually or through cooperative monitoring program*)	By July 12017: annually thereafter by July 1
Initiate monitoring of groundwater wells	First sample from March-June 2017, second sample from September-December 2017
Submit electronic Annual Compliance Form	March 1, 2018 and every March 1 annually thereafter
Submit groundwater monitoring results	Within 60 days of the sample collection
Tier 2 Dischargers with farms/ranches growing high risk crops: Report total nitrogen applied on the Total Nitrogen Applied form	March 1, 2018 and every March 1annually thereafter

[1] Dates are relative to adoption of this Order or enrollment date for Dischargers enrolled after the adoption of this Order, unless otherwise specified.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

MONITORING AND REPORTING PROGRAM
ORDER NO. R3-2017-0002-03

TIER 3

DISCHARGERS ENROLLED UNDER
CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR
DISCHARGES FROM IRRIGATED LANDS

This Monitoring and Reporting Program Order No. R3-2017-0002-03 (MRP) is issued pursuant to California Water Code (Water Code) sections 13267 and 13269, which authorize the California Regional Water Quality Control Board, Central Coast Region (hereafter Central Coast Water Board) to require preparation and submittal of technical and monitoring reports. Water Code section 13269 requires a waiver of waste discharge requirements to include as a condition, the performance of monitoring and the public availability of monitoring results. *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands,* Order No. R3-2017-0002 (Order), includes criteria and requirements for three tiers. This MRP sets forth monitoring and reporting requirements for **Tier 3 Dischargers** enrolled under the Order. A summary of the requirements is shown below.

SUMMARY OF MONITORING AND REPORTING REQUIREMENTS FOR TIER 3:

Part 1: Surface Receiving Water Monitoring and Reporting *(cooperative or individual)*
Part 2: Groundwater Monitoring and Reporting *(cooperative or individual)*
Total Nitrogen Applied Reporting *(required for subset of Tier 3 Dischargers if farm/ranch growing any crop with high nitrate loading risk to groundwater);*
Part 3: Annual Compliance Form
Part 5: Individual Surface Water Discharge Monitoring and Reporting
Part 6: Irrigation and Nutrient Management Plan *(required for subset of Tier 3 Dischargers if farm/ranch has High Nitrate Loading Risk)*
Part 7: Water Quality Buffer Plan *(required for subset of Tier 3 Dischargers if farm/ranch contains or is adjacent to a waterbody impaired for temperature, turbidity or sediment)*

Pursuant to Water Code section 13269(a)(2), monitoring requirements must be designed to support the development and implementation of the waiver program, including, but not limited to, verifying the adequacy and effectiveness of the waiver's conditions. The monitoring and reports required by this MRP are to evaluate effects of discharges of waste from irrigated agricultural operations and individual farms/ranches on waters of the state and to determine compliance with the Order.

MONITORING AND REPORTING BASED ON TIERS

The Order and MRP includes criteria and requirements for three tiers, based upon those characteristics of the individual farms/ranches at the operation that present the highest level of waste discharge or greatest risk to water quality. Dischargers must meet conditions of the Order and MRP for the appropriate tier that applies to their land and/or the individual farm/ranch. Within a tier, Dischargers comply with requirements based on the specific level of discharge and threat to water quality from individual farms/ranches. The lowest tier, Tier 1, applies to dischargers who discharge the lowest level of waste (amount or concentration) or pose the lowest potential to cause or contribute to an exceedance of water quality standards in waters of the State or of the United States. The highest tier, Tier 3, applies to dischargers who discharge the highest level of waste or pose the greatest potential to cause or contribute to an exceedance of water quality standards in waters of the State or of the United States. Tier 2 applies to dischargers whose discharge has a moderate threat to water quality. Water quality is defined in terms of regional, state, or federal numeric or narrative water quality standards. Per the Order, Dischargers may submit a request to the Executive Officer to approve transfer to a lower tier. If the Executive Officer approves a transfer to a lower tier, any interested person may request that the Central Coast Water Board conduct a review of the Executive Officer's determination.

PART 1. SURFACE RECEIVING WATER MONITORING AND REPORTING REQUIREMENTS

The surface receiving water monitoring and reporting requirements described herein are generally a continuation of the surface receiving water monitoring and reporting requirements of Monitoring and Reporting Program Order No. 2012-0011-03, as revised August 22, 2016, with the intent of uninterrupted regular monitoring and reporting during the transition from Order No. R3-2012-0011-03 to Order No. R3-2017-0002-03.

Monitoring and reporting requirements for surface receiving water identified in Part 1.A. and Part 1.B. apply to Tier 3 Dischargers. Surface receiving water refers to water flowing in creeks and other surface waters of the State. Surface receiving water monitoring may be conducted through a cooperative monitoring program on behalf of Dischargers, or Dischargers may choose to conduct surface receiving water monitoring and reporting individually. Key monitoring and reporting requirements for surface receiving water are shown in Tables 1 and 2. Time schedules are shown in Table 5.

A. Surface Receiving Water Quality Monitoring

1. Dischargers must elect a surface receiving water monitoring option (cooperative monitoring program or individual receiving water monitoring) to comply with surface receiving water quality monitoring requirements, and identify the option selected on the Notice of Intent (NOI).

2. Dischargers are encouraged to choose participation in a cooperative monitoring program (e.g., the existing Cooperative Monitoring Program or a similar program) to comply with receiving water quality monitoring requirements. Dischargers not participating in a cooperative monitoring program must conduct surface receiving water quality monitoring individually that achieves the same purpose.

3. Dischargers (individually or as part of a cooperative monitoring program) must conduct surface receiving water quality monitoring to a) assess the impacts of their waste discharges from irrigated lands to receiving water, b) assess the status of receiving water quality and beneficial use protection in impaired waterbodies dominated by irrigated agricultural activity, c) evaluate status, short term patterns and long term trends (five to ten years or more) in receiving water quality, d) evaluate water quality impacts resulting from agricultural discharges (including but not limited to tile drain discharges), e) evaluate stormwater quality, f) evaluate condition of existing perennial, intermittent, or ephemeral streams or riparian or wetland area habitat, including degradation resulting from erosion or agricultural discharges of waste, and g) assist in the identification of specific sources of water quality problems.

<u>Surface Receiving Water Quality Sampling and Analysis Plan</u>

4. **By March 1, 2018, or as directed by the Executive Officer**, Dischargers (individually or as part of a cooperative monitoring program) must submit a surface receiving water quality Sampling and Analysis Plan (SAAP) and Quality Assurance Project Plan (QAPP); this requirement is satisfied if an approved SAAP and QAPP addressing all surface receiving water quality monitoring requirements described in this Order has been submitted pursuant to Order No.R3-2012-0011 and associated Monitoring and Reporting Programs. Dischargers (or a third party cooperative monitoring program) must develop the Sampling and Analysis Plan to describe how the proposed monitoring will achieve the objectives of the MRP and evaluate compliance with the Order. The Sampling and Analysis Plan may propose alternative monitoring site locations, adjusted monitoring parameters, and other changes as necessary to assess the impacts of waste discharges from irrigated lands to receiving water. The Executive Officer must approve the Sampling and Analysis Plan and QAPP.

5. The Sampling and Analysis Plan must include the following minimum required components:
    a. Monitoring strategy to achieve objectives of the Order and MRP;
    b. Map of monitoring sites with GIS coordinates;

c. Identification of known water quality impairments and impaired waterbodies per the 2010 Clean Water Act 303(d) List of Impaired Waterbodies (List of Impaired Waterbodies);
d. Identification of beneficial uses and applicable water quality standards;
e. Identification of applicable Total Maximum Daily Loads;
f. Monitoring parameters;
g. Monitoring schedule, including description and frequencies of monitoring events;
h. Description of data analysis methods;

6. The QAPP must include receiving water and site-specific information, project organization and responsibilities, and quality assurance components of the MRP. The QAPP must also include the laboratory and field requirements to be used for analyses and data evaluation. The QAPP must contain adequate detail for project and Water Board staff to identify and assess the technical and quality objectives, measurement and data acquisition methods, and limitations of the data generated under the surface receiving water quality monitoring. All sampling and laboratory methodologies and QAPP content must be consistent with U.S. EPA methods, State Water Board's Surface Water Ambient Monitoring Program (SWAMP) protocols and the Central Coast Water Board's Central Coast Ambient Monitoring Program (CCAMP). Following U.S. EPA guidelines[1] and SWAMP templates[2], the receiving water quality monitoring QAPP must include the following minimum required components:
    a. Project Management. This component addresses basic project management, including the project history and objectives, roles and responsibilities of the participants, and other aspects.
    b. Data Generation and Acquisition. This component addresses all aspects of project design and implementation. Implementation of these elements ensures that appropriate methods for sampling, measurement and analysis, data collection or generation, data handling, and quality control activities are employed and are properly documented. Quality control requirements are applicable to all the constituents sampled as part of the MRP, as described in the appropriate method.
    c. Assessment and Oversight. This component addresses the activities for assessing the effectiveness of the implementation of the project and associated QA and QC activities. The purpose of the assessment is to provide project oversight that

[1] USEPA. 2001 (2006) USEPA Requirements for Quality Assurance Project Plans (QA/R-5) Office of Environmental Information, Washington, D.C. USEPA QA/R-5
[2] http://waterboards.ca.gov/water_issues/programs/swamp/tools.shtml#qa

will ensure that the QA Project Plan is implemented as prescribed.

d. Data Validation and Usability. This component addresses the quality assurance activities that occur after the data collection, laboratory analysis and data generation phase of the project is completed. Implementation of these elements ensures that the data conform to the specified criteria, thus achieving the MRP objectives.

7. The Central Coast Water Board may conduct an audit of contracted laboratories at any time in order to evaluate compliance with the QAPP.

8. The Sampling and Analysis Plan and QAPP, and any proposed revisions are subject to approval by the Executive Officer. The Executive Officer may also revise the Sampling and Analysis Plan, including adding, removing, or changing monitoring site locations, changing monitoring parameters, and other changes as necessary to assess the impacts of waste discharges from irrigated lands to receiving water.

Surface Receiving Water Quality Monitoring Sites

9. The Sampling and Analysis Plan must, at a minimum, include monitoring sites to evaluate waterbodies identified in Table 1, unless otherwise approved by the Executive Officer. The Sampling and Analysis Plan must include sites to evaluate receiving water quality impacts most directly resulting from areas of agricultural discharge (including areas receiving tile drain discharges). Site selection must take into consideration the existence of any long term monitoring sites included in related monitoring programs (e.g. CCAMP and the existing CMP). Sites may be added or modified, subject to prior approval by the Executive Officer, to better assess the pollutant loading from individual sources or the impacts to receiving waters caused by individual discharges. Any modifications must consider sampling consistency for purposes of trend evaluation.

Surface Receiving Water Quality Monitoring Parameters

10. The Sampling and Analysis Plan must, at a minimum, include the following types of monitoring and evaluation parameters listed below and identified in Table 2:

    a. Flow Monitoring;
    b. Water Quality (physical parameters, metals, nutrients, pesticides);
    c. Toxicity (water and sediment);
    d. Assessment of Benthic Invertebrates.

11. All analyses must be conducted at a laboratory certified for such analyses by the State Department of Public Health (CDPH) or at laboratories approved by the Executive Officer. Unless otherwise noted, all sampling, sample preservation, and analyses must be performed in accordance with the latest edition of *Test Methods for Evaluating Solid Waste*, SW-846, U.S. EPA, and analyzed as specified herein by the above analytical methods and reporting limits indicated. Certified laboratories can be found at the web link: http://www.cdph.ca.gov/certlic/labs/Documents/ELAPLablist.xls

12. Water quality and flow monitoring is used to assess the sources, concentrations, and loads of waste discharges from individual farms/ranches and groups of Dischargers to surface waters, to evaluate impacts to water quality and beneficial uses, and to evaluate the short term patterns and long term trends in receiving water quality. Monitoring data must be compared to existing numeric and narrative water quality objectives.

13. Toxicity testing is to evaluate water quality relative to the narrative toxicity objective. Water column toxicity analyses must be conducted on 100% (undiluted) sample. At sites where persistent unresolved toxicity is found, the Executive Officer may require concurrent toxicity and chemical analyses and a Toxicity Identification Evaluation (TIE) to identify the individual discharges causing the toxicity.

Surface Receiving Water Quality Monitoring Frequency and Schedule

14. The Sampling and Analysis Plan must include a schedule for sampling. Timing, duration, and frequency of monitoring must be based on the land use, complexity, hydrology, and size of the waterbody. Table 2 includes minimum monitoring frequency and parameter lists. Agricultural parameters that are less common may be monitored less frequently. Modifications to the receiving water quality monitoring parameters, frequency, and schedule may be submitted for Executive Officer consideration and approval. At a minimum, the Sampling and Analysis Plan schedule must consist of monthly monitoring of common agricultural parameters in major agricultural areas, including two major storm events during the wet season (October 1 – April 30).

15. Storm event monitoring must be conducted within 18 hours of storm events, preferably including the first flush run-off event that results in significant increase in stream flow. For purposes of this MRP, a storm event is defined as precipitation producing onsite runoff (surface water flow) capable of creating significant ponding, erosion or other water quality problem. A

significant storm event will generally result in greater than 1-inch of rain within a 24-hour period.

16. Dischargers (individually or as part of a cooperative monitoring program) must perform receiving water quality monitoring per the Sampling and Analysis Plan and QAPP approved by the Executive Officer.

B. Surface Receiving Water Quality Reporting

Surface Receiving Water Quality Data Submittal

1. Dischargers (individually or as part of a cooperative monitoring program) must submit water quality monitoring data to the Central Coast Water Board electronically, in a format specified by the Executive Officer and compatible with SWAMP/CCAMP electronic submittal guidelines, each January 1, April 1, July 1, and October 1.

Surface Receiving Water Quality Monitoring Annual Report

2. **By July 1, 2017,** and every July 1 annually thereafter, Dischargers (individually or as part of a cooperative monitoring program) must submit an Annual Report, electronically, in a format specified by the Executive Officer including the following minimum elements:

a. Signed Transmittal Letter;
b. Title Page;
c. Table of Contents;
d. Executive Summary;
e. Summary of Exceedance Reports submitted during the reporting period;
f. Monitoring objectives and design;
g. Monitoring site descriptions and rainfall records for the time period covered;
h. Location of monitoring sites and map(s);
i. Tabulated results of all analyses arranged in tabular form so that the required information is readily discernible;
j. Summary of water quality data for any sites monitored as part of related monitoring programs, and used to evaluate receiving water as described in the Sampling and Analysis Plan.
k. Discussion of data to clearly illustrate compliance with the Order and water quality standards;
l. Discussion of short term patterns and long term trends in receiving water quality and beneficial use protection;

m. Evaluation of pesticide and toxicity analyses results, and recommendation of candidate sites for Toxicity Identification Evaluations (TIEs);
n. Identification of the location of any agricultural discharges observed discharging directly to surface receiving water;
o. Laboratory data submitted electronically in a SWAMP/CCAMP comparable format;
p. Sampling and analytical methods used;
q. Copy of chain-of-custody forms;
r. Field data sheets, signed laboratory reports, laboratory raw data;
s. Associated laboratory and field quality control samples results;
t. Summary of Quality Assurance Evaluation results;
u. Specify the method used to obtain flow at each monitoring site during each monitoring event;
v. Electronic or hard copies of photos obtained from all monitoring sites, clearly labeled with site ID and date;
w. Conclusions.

PART 2. GROUNDWATER MONITORING AND REPORTING REQUIREMENTS

Groundwater monitoring may be conducted through a cooperative monitoring and reporting program on behalf of growers, or Dischargers may choose to conduct groundwater monitoring and reporting individually. Qualifying cooperative groundwater monitoring and reporting programs must implement the groundwater monitoring and reporting requirements described in this Order, unless otherwise approved by the Executive Officer. An interested person may seek review by the Central Coast Water Board of the Executive Officer's approval or denial of a cooperative groundwater monitoring and reporting program.

Key monitoring and reporting requirements for groundwater are shown in Table 3.

A. Groundwater Monitoring

1. Dischargers must sample private domestic wells and the primary irrigation well on their farm/ranch to evaluate groundwater conditions in agricultural areas, identify areas at greatest risk for nitrogen loading and exceedance of drinking water standards, and identify priority areas for follow up actions.

2. Dischargers must sample at least one groundwater well for each farm/ranch on their operation, including groundwater wells that are located within the property boundary of the enrolled county assessor parcel numbers (APNs). For farms/ranches with multiple groundwater wells, Dischargers must sample all domestic wells and the primary irrigation well. For the purposes of this MRP, a "domestic well" is any well that is used or may be used for domestic

use purposes, including any groundwater well that is connected to a residence, workshop, or place of business that may be used for human consumption, cooking, or sanitary purposes. Groundwater monitoring parameters must include well screen interval depths (if available), general chemical parameters, and general cations and anions listed in Table 3.

3. Dischargers must conduct two rounds of monitoring of required groundwater wells during calendar year 2017; one sample collected during spring (**March - June)** and one sample collected during fall **(September - December)**.

4. Groundwater samples must be collected by a qualified third party (e.g., consultant, technician, person conducting cooperative monitoring) using proper sampling methods, chain-of-custody, and quality assurance/quality control protocols. Groundwater samples must be collected at or near the well head before the pressure tank and prior to any well head treatment. In cases where this is not possible, the water sample must be collected from a sampling point as close to the pressure tank as possible, or from a cold-water spigot located before any filters or water treatment systems.

5. Laboratory analyses for groundwater samples must be conducted by a State certified laboratory according to U.S. EPA approved methods; unless otherwise noted, all monitoring, sample preservation, and analyses must be performed in accordance with the latest edition of *Test Methods for Evaluating Solid Waste*, SW-846, United States Environmental Protection Agency, and analyzed as specified herein by the above analytical methods and reporting limits indicated. Certified laboratories can be found at the web link below: http://www.waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/docs/resources4growers/2016_04_11_labs.pdf

6. If a discharger determines that water in any domestic well exceeds 10 mg/L of nitrate as N, the discharger or third party must provide notice to the Central Coast Water Board within 24 hours of learning of the exceedance. For domestic wells on a Discharger's farm/ranch that exceed 10 mg/L nitrate as N, the Discharger must provide written notification to the users within 10 days of learning of the exceedance and provide written confirmation of the notification to the Central Coast Water Board.

   The drinking water notification must include the statement that the water poses a human health risk due to elevated nitrate concentration, and include a warning against the use of the water for drinking or cooking. In addition, Dischargers must also provide prompt written notification to any new well users (e.g. tenants and employees with access to the affected well), whenever there is a change in occupancy.

For all other domestic wells not on a Discharger's property, the Central Coast Water Board will notify the users promptly.

The drinking water notification and confirmation letters required by this Order are available to the public.

B. Groundwater Reporting

1. **Within 60 days of sample collection,** Dischargers must coordinate with the laboratory to submit the following groundwater monitoring results and information, electronically, using the Water Board's GeoTracker electronic deliverable format (EDF):
    a. GeoTracker Ranch Global Identification Number
    b. Field point name (Well Name)
    c. Field Point Class (Well Type)
    d. Latitude
    e. Longitude
    f. Sample collection date
    g. Analytical results
    h. Well construction information (e.g., total depth, screened intervals, depth to water), as available

2. Dischargers must submit groundwater well information required in the electronic Notice of Intent (eNOI) for each farm/ranch and update the eNOI to reflect changes in the farm/ranch information within 30 days of the change. Groundwater well information reported on the eNOI includes, but is not limited to:
    a. Number of groundwater wells present at each farm/ranch
    b. Identification of any groundwater wells abandoned or destroyed (including method destroyed) in compliance with the Order
    c. Use for fertigation or chemigation
    d. Presence of back flow prevention devices
    e. Number of groundwater wells used for agricultural purposes
    f. Number of groundwater wells used for or may be used for domestic use purposes (domestic wells)

C. Total Nitrogen Applied Reporting

1. By March 1, 2018, and by March 1 annually thereafter, Tier 3 Dischargers growing any crop with a high potential to discharge nitrogen to groundwater must record and report total nitrogen applied for each specific crop that was irrigated and grown for commercial purposes on that farm/ranch during the preceding calendar year (January through December).

    Crops with a high potential to discharge nitrogen to groundwater are: beet,

broccoli, cabbage, cauliflower, celery, Chinese cabbage (napa), collard, endive, kale, leek, lettuce (leaf and head), mustard, onion (dry and green), spinach, strawberry, pepper (fruiting), and parsley.

Total nitrogen applied must be reported on the Total Nitrogen Applied Report form as described in the Total Nitrogen Applied Report form instructions.

Total nitrogen applied includes any product containing any form or concentration of nitrogen including, but not limited to, organic and inorganic fertilizers, slow release products, compost, compost teas, manure, and extracts.

2. The Total Nitrogen Applied Report form includes the following information:
    a. General ranch information such as GeoTracker file numbers, name, location, acres.
    b. Nitrogen concentration of irrigation water
    c. Nitrogen applied in pounds per acre with irrigation water
    d. Nitrogen present in the soil
    e. Nitrogen applied with compost and amendments
    f. Specific crops grown
    g. Nitrogen applied in pounds per acre with fertilizers and other materials to each specific crop grown
    h. Crop acres of each specific crop grown
    i. Whether each specific crop was grown organically or conventionally
    j. Basis for the nitrogen applied
    k. Explanation and comments section
    l. Certification statement with penalty of perjury declaration
    m. Additional information regarding whether each specific crop was grown in a nursery, greenhouse, hydroponically, in containers, and similar variables.

PART 3. ANNUAL COMPLIANCE FORM

Tier 3 Dischargers must submit annual compliance information, electronically, on the Annual Compliance Form. The purpose of the electronic Annual Compliance Form is to provide information to the Central Coast Water Board to assist in the evaluation of threat to water quality from individual agricultural discharges of waste and measure progress towards water quality improvement and verify compliance with the Order and MRP. Time schedules are shown in Table 5.

A. Annual Compliance Form

1. **By March 1, 2018, and updated annually thereafter by March 1**, Tier 3 Dischargers must submit an Annual Compliance Form electronically, in a format specified by the Executive Officer. The electronic Annual Compliance Form includes, but is not limited to the following minimum requirements[1]:
    a. Question regarding consistency between the Annual Compliance Form and the electronic Notice of Intent (eNOI);
    b. Information regarding type and characteristics of discharge (e.g., number of discharge points, estimated flow/volume, number of tailwater days);
    c. Identification of any direct agricultural discharges to a stream, lake, estuary, bay, or ocean;
    d. Identification of specific farm water quality management practices completed, in progress, and planned to address water quality impacts caused by discharges of waste including irrigation management, pesticide management, nutrient management, salinity management, stormwater management, and sediment and erosion control to achieve compliance with this Order; and identification of specific methods used, and described in the Farm Plan consistent with Order Provision 44.g., for the purposes of assessing the effectiveness of management practices implemented and the outcomes of such assessments:
    e. Proprietary information question and justification;
    f. Authorization and certification statement and declaration of penalty of perjury.

PART 5. INDIVIDUAL SURFACE WATER DISCHARGE MONITORING AND REPORTING REQUIREMENTS

Monitoring and reporting requirements for individual surface water discharge identified in Part 5.A. and Part 5.B. apply to Tier 3 Dischargers with irrigation water or stormwater discharges to surface water from an outfall. Outfalls are locations where irrigation water and stormwater exit a farm/ranch, or otherwise leave the control of the discharger, after being conveyed by pipes, ditches, constructed swales, tile drains, containment structures, or other discrete structures or features that transport the water. Discharges that have commingled with discharges from another farm/ranch are considered to have left the control of the discharger. Key monitoring and reporting requirements for individual surface water discharge are shown in Tables 4A and 4B. Time schedules are shown in Table 5.

[1] Items reported in the Annual Compliance Form are due by March 1 2018, and annually thereafter, unless otherwise specified.

A. Individual Surface Water Discharge Monitoring

1. Tier 3 Dischargers must conduct individual surface water discharge monitoring to a) evaluate the quality of individual waste discharges, including concentration and load of waste (in kilograms per day) for appropriate parameters, b) evaluate effects of waste discharge on water quality and beneficial uses, and c) evaluate progress towards compliance with water quality improvement milestones in the Order.

Individual Sampling and Analysis Plan

2. **By March 1, 2018, or as directed by the Executive Officer**, Tier 3 Dischargers must submit an individual surface water discharge Sampling and Analysis Plan (SAAP) and QAPP to monitor individual discharges of irrigation water and stormwater that leaves their farm/ranch from an outfall. The Sampling and Analysis Plan and QAPP must be submitted to the Executive Officer; this requirement is satisfied if an approved SAAP and QAPP addressing all individual surface water discharge monitoring requirements described in this Order has been submitted pursuant to Order No.R3-2012-0011 and associated Monitoring and Reporting Programs.

3. The Sampling and Analysis Plan must include the following minimum required components to monitor irrigation water and stormwater discharges:
    a. Number and location of outfalls (identified with latitude and longitude or on a scaled map);
    b. Number and location of monitoring points;
    c. Description of typical irrigation runoff patterns;
    d. Map of discharge and monitoring points;
    e. Sample collection methods;
    f. Monitoring parameters;
    g. Monitoring schedule and frequency of monitoring events;

4. The QAPP must include appropriate methods for sampling, measurement and analysis, data collection or generation, data handling, quality control activities, and documentation.

5. The Sampling and Analysis Plan and QAPP, and any proposed revisions are subject to approval by the Executive Officer. The Executive Officer may require modifications to the Sampling and Analysis Plan or Tier 3 Dischargers may propose Sampling and Analysis Plan modifications for Executive Officer approval, when modifications are justified to accomplish the objectives of the MRP.

Individual Surface Water Discharge Monitoring Points

6. Tier 3 Dischargers must select monitoring points to characterize at least 80% of the estimated maximum irrigation run-off discharge volume from each farm/ranch based on that farm's/ranch's typical discharge patterns[1], including tailwater discharges and discharges from tile drains. Sample must be taken when irrigation activity is causing maximal run-off. Load estimates will be generated by multiplying flow volume of discharge by concentration of contaminants. Tier 3 Dischargers must include at least one monitoring point from each farm/ranch which drains areas where chlorpyrifos or diazinon are applied, and monitoring of runoff or tailwater must be conducted within one week of chemical application. If discharge is not routinely present, Discharger may characterize typical run-off patterns in the Annual Report. See Table 4A for additional details.

7. Tier 3 Dischargers must also monitor storage ponds and other terminal surface water containment structures that collect irrigation and stormwater runoff, unless the structure is (1) part of a tail-water return system where a major portion of the water in such structure is reapplied as irrigation water, or (2) the structure is primarily a sedimentation pond by design with a short hydraulic residence time (96 hours or less) and a discharge to surface water when functioning. If multiple ponds are present, sampling must cover at least those structures that would account for 80% of the maximum storage volume of the containment features. See Table 4B for additional details. Where water is reapplied as irrigation water. Dischargers shall document reuse in the Farm Plan.

Individual Surface Water Discharge Monitoring Parameters, Frequency, and Schedule

8. Tier 3 Dischargers must conduct monitoring for parameters, laboratory analytical methods, frequency and schedule described in Tables 4A and 4B. Dischargers may utilize in-field water testing instruments/equipment as a substitute for laboratory analytical methods if the method is approved by U.S. EPA, meets reporting limits (RL) and practical quantitation limits (PQL) specifications in the MRP, and appropriate sampling methodology and quality assurance checks can be applied to ensure that QAPP standards are met to ensure accuracy of the test.

[1] The requirement to select monitoring points to characterize at least 80% of the estimated maximum irrigation run-off based on typical discharge patterns is for the purposes of attempting to collect samples that represent a majority of the volume of irrigation run-off discharged; however the Board recognizes that predetermining these locations is not always possible and that sampling results may vary. The MRP does not specify the number or location of monitoring points to provide maximum flexibility for growers to determine how many sites necessary and exact locations are given the anticipated site-specific conditions.

9. Tier 3 Dischargers must initiate individual surface water discharge monitoring per an approved Sampling and Analysis Plan and QAPP, unless otherwise directed by the Executive Officer.

B. Individual Surface Water Discharge Reporting

Individual Surface Water Discharge Monitoring Data Submittal

By March 1, 2018, and annually thereafter by March 1, Tier 3 Dischargers must submit individual surface water discharge monitoring data and information to the Central Coast Water Board electronically, in a pdf format, containing at least the following items, or as otherwise approved by the Executive Officer:

a. Electronic laboratory data
- All reports of results must contain Ranch name and Global ID, site name(s), project contact, and date.
- Electronic laboratory data reports of chemical results shall include analytical results, as well as associated quality assurance data including method detection limits, reporting limits, matrix spikes, matrix spike duplicates, laboratory blanks, and other quality assurance results required by the analysis method.
- Electronic laboratory data reports of toxicity results shall include summary results comparable to those required in a CEDEN file delivery, including test and control results. For each test result, the mean, associated control performance, calculated percent of control, statistical test results and determination of toxicity, must be included. Test results must specify the control ID used to calculate statistical outcomes.
- Field data results, including temperature, pH, conductivity, turbidity and flow measurements, any field duplicates or blanks, and field observations.
- Calculations of un-ionized ammonia concentrations
- Calculations of total flow and pollutant loading (for nitrate, pesticides if sampled, total ammonia, and turbidity) (include formulas);

b. Narrative description of typical irrigation runoff patterns;
c. Location of sampling sites and map(s);
d. Sampling and analytical methods used;
e. Specify the method used to obtain flow at each monitoring site during each monitoring event;
f. Photos obtained from all monitoring sites, clearly labeled with location and date;
g. Sample chain-of-custody forms do not need to be submitted but must be made available to Central Coast Water Board staff, upon request.

PART 6. IRRIGATION AND NUTRIENT MANAGEMENT PLAN

Monitoring and reporting requirements related to the Irrigation and Nutrient Management Plan (INMP) identified in Part 6.A., and 6.B, apply to Tier 3 Dischargers identified by the Executive Officer that are newly enrolled in Order No. R3-2017-0002, and Tier 3 Dischargers that were subject to Irrigation and Nutrient Management Plan Requirements in Order R3-2012-0011 per MRP Order No. R3-2012-0011-03 Time schedules are shown in Table 5.

A. Irrigation and Nutrient Management Plan Monitoring

1. Tier 3 Dischargers required in Order No. R3-2012-0011 to develop and initiate implementation of an Irrigation and Nutrient Management Plan (INMP) certified by a Professional Soil Scientist, Professional Agronomist, or Crop Advisor certified by the American Society of Agronomy, or similarly qualified professional, are required to update (as necessary) and implement their INMP throughout the term of this Order.

2. The Executive Officer will assess whether an INMP is required for new Tier 3 Dischargers that enroll in Order No. R3-2017-0002 during the term of the Order. The Executive Officer will use the criteria established in Order No. R3-2012-0011 to make this assessment. If a Tier 3 Discharger is required to develop an INMP, the Tier 3 discharger must develop and initiate implementation of an Irrigation and Nutrient Management Plan (INMP) certified by a Professional Soil Scientist, Professional Agronomist, or Crop Advisor certified by the American Society of Agronomy, or similarly qualified professional, **within 18 months** of the Executive Officer's assessment of the INMP requirement.
3. The purpose of the INMP is to budget and manage the nutrients applied to each farm/ranch considering all sources of nutrients, crop requirements, soil types, climate, and local conditions in order to minimize nitrate loading to surface water and groundwater in compliance with this Order. The professional certification of the INMP must indicate that the relevant expert has reviewed all necessary documentation and testing results, evaluated total nitrogen applied relative to typical crop nitrogen uptake and nitrogen removed at harvest, with consideration to potential nitrate loading to groundwater, and conducted field verification to ensure accuracy of reporting.
4. Tier 3 Dischargers required to develop and initiate implementation an (INMP) must include the following elements in the INMP. The INMP is not submitted to the Central Coast Water Board, with the exception of the INMP Effectiveness Report:
    a. Proof of INMP certification;
    b. Map locating each farm/ranch;
    c. Identification of crop nitrogen uptake values for use in nutrient balance calculations;

d. Record keeping annually by either Method 1 or Method 2:

e. To meet the requirement to record total nitrogen in the soil,dischargers may take a nitrogen soil sample (e.g. laboratory analysis or nitrate quick test) or use an alternative method to evaluate nitrogen content in soil, prior to planting or seeding the field or prior to the time of pre-sidedressing, or at an alternative time when it is most effective to determine nitrogen present in the soil that is available for the next crop and to minimize nitrate leaching to groundwater. The amount of nitrogen remaining in the soil must be accounted for as a source of nitrogen when budgeting, and the soil sample or alternative method results must be maintained in the INMP.
f. Identification of irrigation and nutrient management practices in progress (identify start date), completed (identify completion date), and planned (identify anticipated start date) to reduce nitrate loading to groundwater to achieve compliance with this Order.
g. Description of methods Discharger will use to verify overall effectiveness of the INMP.

5. Tier 3 Dischargers must evaluate the effectiveness of the INMP. Irrigation and Nutrient Management Plan effectiveness monitoring must evaluate reduction in new nitrogen[1] loading potential based on minimized fertilizer use and improved irrigation and nutrient management practices in order to minimize new nitrogen loading to surface water and groundwater. Evaluation methods used may include, but are not limited to analysis of groundwater well monitoring data or soil sample data, or analysis of trends in new nitrogen application data.

B. Irrigation and Nutrient Management Plan Reporting

1. **By March 1, 2019**, Tier 3 Dischargers required to develop and initiate implementation of an INMP must submit an INMP Effectiveness Report to evaluate reductions in nitrate loading to surface water and groundwater based on the implementation of irrigation and nutrient management practices in a format specified by the Executive Officer. Dischargers in the same groundwater basin or subbasin may choose to comply with this requirement as a group by submitting a single report that evaluates the overall effectiveness of the broad scale implementation of irrigation and nutrient management practices identified in individual INMPs to protect groundwater. Group efforts must use data from each farm/ranch (e.g., data from individual groundwater wells, soil samples, or nitrogen application). The INMP

[1] New nitrogen is nitrogen from fertilizers, amendments, and other nitrogen sources applied other than nitrogen present in groundwater.

Effectiveness Report must include a description of the methodology used to evaluate and verify effectiveness of the INMP.

PART 7. WATER QUALITY BUFFER PLAN

Monitoring and reporting requirements related to the Water Quality Buffer Plan identified in Part 7.A. and Part 7.B. apply to Tier 3 Dischargers that have farms/ranches *that contain or are adjacent to waterbody identified on the List of Impaired Waterbodies as impaired for temperature, turbidity, or sediment).* Time schedules are shown in Table 5.

A. Water Quality Buffer Plan

1. **By 18 months following enrollment in Order No. R3-2017-0002 of a Tier 3 farm/ranch**, Tier 3 Dischargers adjacent to or containing a waterbody identified on the List of Impaired Waterbodies as impaired for temperature, turbidity or sediment must submit a Water Quality Buffer Plan (WQBP) to the Executive Officer that protects the listed waterbody and its associated perennial and intermittent tributaries. The purpose of the Water Quality Buffer Plan is to prevent waste discharge, comply with water quality standards (e.g., temperature, turbidity, sediment), and protect beneficial uses in compliance with this Order and the following Basin Plan requirement:

   Basin Plan (Chapter 5, p. V-13, Section V.G.4 – Erosion and Sedimentation, *"A filter strip of appropriate width, and consisting of undisturbed soil and riparian vegetation or its equivalent, must be maintained, wherever possible, between significant land disturbance activities and watercourses, lakes, bays, estuaries, marshes, and other water bodies. For construction activities, minimum width of the filter strip must be thirty feet, wherever possible…."*

2. The Water Quality Buffer Plan must include the following or the functional equivalent, to address discharges of waste and associated water quality impairments:

   a. A minimum 30 foot buffer (as measured horizontally from the top of bank on either side of the waterway, or from the high water mark of a lake and mean high tide of an estuary);
   b. Any necessary increases in buffer width to adequately prevent the discharge of waste that may cause or contribute to any excursion above or outside the acceptable range for any Regional, State, or Federal numeric or narrative water quality standard (e.g., temperature, turbidity);

c. Any buffer less than 30 feet must provide equivalent water quality protection and be justified based on an analysis of site-specific conditions and be approved by the Executive Officer;
d. Identification of any alternatives implemented to comply with this requirement, that are functionally equivalent to described buffer;
e. Schedule for implementation;
f. Maintenance provisions to ensure water quality protection;
g. Annual photo monitoring;

2. The WQPB must be submitted using the Water Quality Buffer Plan form, or, if an alternative to the WQBP is submitted, in a format approved by the Executive Officer.

3. **By March 1, 2019**, Tier 3 Dischargers that submitted a WQBP pursuant to Order No. R3-2012-0011 or Order No. R3-2017-0002, are required to update (as necessary) and implement their WQBP, and annually submit a WQBP Status Report of their WQBP implementation using the Water Quality Buffer Plan form, or, if an alternative to the WQBP was submitted, an Alternative to WQBP Status Report, electronically, in a format approved by the Executive Officer.

PART 8. GENERAL MONITORING AND REPORTING REQUIREMENTS

A. Submittal of Technical Reports

1. Dischargers must submit reports in a format specified by the Executive Officer (reports will be submitted electronically, unless otherwise specified by the Executive Officer). A transmittal letter must accompany each report, containing the following penalty of perjury statement signed by the Discharger or the Discharger's authorized agent:

   "In compliance with Water Code §13267, I certify under penalty of perjury that this document and all attachments were prepared by me, or under my direction or supervision following a system designed to assure that qualified personnel properly gather and evaluate the information submitted. To the best of my knowledge and belief, this document and all attachments are true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment".

2. If the Discharger asserts that all or a portion of a report submitted pursuant to this Order is subject to an exemption from public disclosure (e.g. trade secrets or secret processes), the Discharger must provide an explanation of how those portions of the reports are exempt from public disclosure. The

Discharger must clearly indicate on the cover of the report (typically an electronic submittal) that the Discharger asserts that all or a portion of the report is exempt from public disclosure, submit a complete report with those portions that are asserted to be exempt in redacted form, submit separately (in a separate electronic file) unredacted pages (to be maintained separately by staff). The Central Coast Water Board staff will determine whether any such report or portion of a report qualifies for an exemption from public disclosure. If the Central Coast Water Board staff disagrees with the asserted exemption from public disclosure, the Central Coast Water Board staff will notify the Discharger prior to making such report or portions of such report available for public inspection.

B. Central Coast Water Board Authority

1. Monitoring reports are required pursuant to section 13267 of the California Water Code. Pursuant to section 13268 of the Water Code, a violation of a request made pursuant to section 13267 may subject you to civil liability of up to $1000 per day.

2. The Water Board needs the required information to determine compliance with Order No.R3-2017-0002. The evidence supporting these requirements is included in the findings of Order No.R3-2017-0002.

_____
John M. Robertson
Executive Officer

_____
Date

Table 1. Major Waterbodies in Agricultural Areas[1]

Hydrologic SubArea	Waterbody Name	Hydrologic SubArea	Waterbody Name
30510	Pajaro River	30920	Quail Creek
30510	Salsipuedes Creek	30920	Salinas Reclamation Canal
30510	Watsonville Slough	31022	Chorro Creek
30510	Watsonville Creek[2]	31023	Los Osos Creek
30510	Beach Road Ditch[2]	31023	Warden Creek
30530	Carnadero Creek	31024	San Luis Obispo Creek
30530	Furlong Creek[2]	31024	Prefumo Creek
30530	Llagas Creek	31031	Arroyo Grande Creek
30530	Miller's Canal	31031	Los Berros Creek
30530	San Juan Creek	31210	Bradley Canyon Creek
30530	Tesquisquita Slough	31210	Bradley Channel
30600	Moro Cojo Slough	31210	Green Valley Creek
30910	Alisal Slough	31210	Main Street Canal
30910	Blanco Drain	31210	Orcutt Solomon Creek
30910	Old Salinas River	31210	Oso Flaco Creek
30910	Salinas River (below Gonzales Rd.)	31210	Little Oso Flaco Creek
30920	Salinas River (above Gonzales Rd. and below Nacimiento R.)	31210	Santa Maria River
30910	Santa Rita Creek[2]	31310	San Antonio Creek[2]
30910	Tembladero Slough	31410	Santa Ynez River
30920	Alisal Creek	31531	Bell Creek
30920	Chualar Creek	31531	Glenn Annie Creek
30920	Espinosa Slough	31531	Los Carneros Creek[2]
30920	Gabilan Creek	31534	Arroyo Paredon Creek
30920	Natividad Creek	31534	Franklin Creek

[1] At a minimum, monitoring sites must be included for these waterbodies in agricultural areas, unless otherwise approved by the Executive Officer. Monitoring sites may be proposed for addition or modification to better assess the impacts of waste discharges from irrigated lands to surface water. Dischargers choosing to comply with surface receiving water quality monitoring, individually (not part of a cooperative monitoring program) must only monitor sites for waterbodies receiving the discharge.

[2] These creeks are included because they are newly listed waterbodies on the 2010 303(d) list of Impaired Waters that are associated with areas of agricultural discharge.

Table 2. Surface Receiving Water Quality Monitoring Parameters

Parameters and Tests	RL[3]	Monitoring Frequency[1]
Photo Monitoring		
Upstream and downstream photographs at monitoring location		With every monitoring event
WATER COLUMN SAMPLING		
Physical Parameters and General Chemistry		
Flow (field measure) (CFS) following SWAMP field SOP[9]	.25	Monthly, including 2 stormwater events
pH (field measure)	0.1	”
Electrical Conductivity (field measure) (µS/cm)	2.5	”
Dissolved Oxygen (field measure) (mg/L)	0.1	”
Temperature (field measure) (^{o}C)	0.1	”
Turbidity (NTU)	0.5	”
Total Dissolved Solids (mg/L)	10	”
Total Suspended Solids (mg/L)	0.5	”
Nutrients		
Total Nitrogen (mg/L)	0.5	Monthly, including 2 stormwater events
Nitrate + Nitrite (as N) (mg/L)	0.1	”
Total Ammonia (mg/L)	0.1	”
Unionized Ammonia (calculated value, mg/L))		”
Total Phosphorus (as P) (mg/L)	0.02	
Soluble Orthophosphate (mg/L)	0.01	”
Water column chlorophyll a (µg/L)	1.0	“
Algae cover, Floating Mats, % coverage	-	“
Algae cover, Attached, % coverage	-	“
Water Column Toxicity Test		
Algae - *Selenastrum capricornutum (*96-hour chronic; Method1003.0 in EPA/821/R-02/013)	-	4 times each year, twice in dry season, twice in wet season
Water Flea – *Ceriodaphnia dubia* (7-day chronic; Method 1002.0 in EPA/821/R-02/013)	-	”
Midge - *Chironomus spp.* (96-hour acute; Alternate test species in EPA 821-R-02-012)	-	“

Parameters and Tests	RL[3]	Monitoring Frequency[1]
Toxicity Identification Evaluation (TIE)	-	As directed by Executive Officer
Pesticides[2] /Herbicides (µg/L)		
Organophosphate Pesticides		
Azinphos-methyl	0.02	2 times in both 2017 and 2018, once in dry season and once in wet season of each year, concurrent with water toxicity monitoring
Chlorpyrifos	0.005	”
Diazinon	0.005	”
Dichlorvos	0.01	”
Dimethoate	0.01	”
Dimeton-s	0.005	”
Disulfoton (Disyton)	0.005	”
Malathion	0.005	”
Methamidophos	0.02	”
Methidathion	0.02	“
Parathion-methyl	0.02	“
Phorate	0.01	“
Phosmet	0.02	“
Neonicotinoids		
Thiamethoxam	.002	“
Imidacloprid	.002	“
Thiacloprid	.002	“
Dinotefuran	.006	“
Acetamiprid	.01	“
Clothianidin	.02	
Herbicides		
Atrazine	0.05	“
Cyanazine	0.20	“
Diuron	0.05	“
Glyphosate	2.0	“
Linuron	0.1	“
Paraquat	0.20	“
Simazine	0.05	“
Trifluralin	0.05	“
Metals (µg/L)		
Arsenic (total) [5,7]	0.3	2 times in both 2017 and 2018, once in dry season and once in wet season of each year, concurrent with water toxicity monitoring
Boron (total) [6,7]	10	“
Cadmium (total & dissolved) [4.5,7]	0.01	“

Parameters and Tests	RL[3]	Monitoring Frequency[1]
Copper (total and dissolved) [4,7]	0.01	"
Lead (total and dissolved) [4,7]	0.01	"
Nickel (total and dissolved) [4,7]	0.02	"
Molybdenum (total) [7]	1	"
Selenium (total)[7]	0.30	"
Zinc (total and dissolved) [4.5,7]	0.10	"
Other (µg/L)		
Total Phenolic Compounds[8]	5	2 times in 2017, once in spring (April-May) and once in fall (August-September)
Hardness (mg/L as CaCO3)	1	"
Total Organic Carbon (ug/L)	0.6	"
SEDIMENT SAMPLING		
Sediment Toxicity - *Hyalella azteca* 10-day static renewal (EPA, 2000)		2 times each year, once in spring (April-May) and once in fall (August-September)
Pyrethroid Pesticides in Sediment (µg/kg)		
Gamma-cyhalothrin	2	2 times in both 2017 and 2018, once in spring (April-May) and once in fall (August-September) of each year, concurrent with sediment toxicity sampling
Lambda-cyhalothrin	2	"
Bifenthrin	2	"
Beta-cyfluthrin	2	"
Cyfluthrin	2	"
Esfenvalerate	2	"
Permethrin	2	"
Cypermethrin	2	"
Danitol	2	"
Fenvalerate	2	"
Fluvalinate	2	"
Other Monitoring in Sediment		
Chlorpyrifos (µg/kg)	2	"
Total Organic Carbon	0.01%	"
		"
Sediment Grain Size Analysis	1%	"

[1]Monitoring is ongoing through all five years of the Order, unless otherwise specified. Monitoring frequency may be used as a guide for developing alternative Sampling and Analysis Plan.
[2]Pesticide list may be modified based on specific pesticide use in Central Coast Region. Analytes on this list must be reported, at a minimum.
[3] Reporting Limit, taken from SWAMP where applicable.

[4] Holmgren, Meyer, Cheney and Daniels. 1993. Cadmium, Lead, Zinc, Copper and Nickel in Agricultural Soils of the United States. J. of Environ. Quality 22:335-348.
[5]Sax and Lewis, ed. 1987. Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987. Zinc arsenate is an insecticide.
[6]Http://www.coastalagro.com/products/labels/9%25BORON.pdf; Boron is applied directly or as a component of fertilizers as a plant nutrient.
[7]Madramootoo, Johnston, Willardson, eds. 1997. Management of Agricultural Drainage Water Quality. International Commission on Irrigation and Drainage. U.N. FAO. SBN 92-6-104058.3.
[8]http://cat.inist.fr/?aModele=afficheN&cpsidt=14074525; Phenols are breakdown products of herbicides and pesticides. Phenols can be directly toxic and cause endocrine disruption.
[9]See SWAMP field measures SOP, p. 17
mg/L – milligrams per liter; ug/L – micrograms per liter; ug/kg – micrograms per kilogram;
NTU – Nephelometric Turbidity Units; CFS – cubic feet per second;

Table 3. Groundwater Monitoring Parameters

Parameter	RL	Analytical Method[3]	Units
pH	0.1	Field or Laboratory Measurement EPA General Methods	pH Units
Specific Conductance	2.5		µS/cm
Total Dissolved Solids	10		mg/L
Total Alkalinity as $CaCO_3$	1	EPA Method 310.1 or 310.2	
Calcium	0.05	General Cations[1] EPA 200.7, 200.8, 200.9	
Magnesium	0.02		
Sodium	0.1		
Potassium	0.1		
Sulfate (SO_4)	1.0	General Anions EPA Method 300 or EPA Method 353.2	
Chloride	0.1		
Nitrate + Nitrite (as N)[2] *or* Nitrate as N	0.1		

[1]General chemistry parameters (major cations and anions) represent geochemistry of water bearing zone and assist in evaluating quality assurance/quality control of groundwater monitoring and laboratory analysis.
[2]The MRP allows analysis of "nitrate plus nitrite" to represent nitrate concentrations (as N). The "nitrate plus nitrite" analysis allows for extended laboratory holding times and relieves the Discharger of meeting the short holding time required for nitrate.
[3]Dischargers may use alternative analytical methods approved by EPA.
RL – Reporting Limit; µS/cm – micro siemens per centimeter

Table 4A. Individual Discharge Monitoring for Tailwater, Tile drain, and Stormwater Discharges

Parameter	Analytical Method[1]	Maximum PQL	Units	Min Monitoring Frequency
Discharge Flow or Volume	Field Measure	---	CFS	(a) (d)
Approximate Duration of Flow	Calculation	---	hours/month	
Temperature (water)	Field Measure	0.1	°Celsius	
pH	Field Measure	0.1	pH units	

Electrical Conductivity	Field Measure	100	µS/cm	
Turbidity	SM 2130B, EPA 180.1	1	NTUs	
Nitrate + Nitrite (as N)	EPA 300.1, EPA 353.2	0.1	mg/L	
Ammonia	SM 4500 NH3, EPA 350.3	0.1	mg/L	
Chlorpyrifos[2]	EPA 8141A, EPA 614	0.02	ug/L	(b) (c) (d)
Diazinon[2]				
Ceriodaphnia Toxicity (96-hr acute)	EPA-821-R-02-012	NA	% Survival	
Hyalella Toxicity in Water (96-hr acute)	EPA-821-R-02-012	NA	% Survival	

[1] In-field water testing instruments/equipment as a substitute for laboratory analysis if the method is approved by EPA, meets RL/PQL specifications in the MRP, and appropriate sampling methodology and quality assurance checks can be applied to ensure that QAPP standards are met to ensure accuracy of the test.
[2]If chlorpyrifos or diazinon is used at the farm/ranch, otherwise does not apply. The Executive Officer may require monitoring of other pesticides based on results of downstream receiving water monitoring.
(a) Two times per year during primary irrigation season for farms/ranches less than or equal to 500 acres, and four times per year during primary irrigation season for farms/ranches greater than 500 acres. Executive Officer may reduce sampling frequency based on water quality improvements.
(b) Once per year during primary irrigation season for farms/ranches less than or equal to 500 acres, and two times per year during primary irrigation season for farms/ranches greater than 500 acres.
(c) Sample must be collected within one week of chemical application, if chemical is applied on farm/ranch;
(d) Once per year during wet season (October – March) for farms/ranches less than or equal to 500 acres, and two times per year during wet season for farms/ranches greater than 500 acres, within 18 hours of major storm events;
CFS – Cubic feet per second; NTU – Nephelometric turbidity unit; PQL – Practical Quantitation Limit;
NA – Not applicable

Table 4B. Individual Discharge Monitoring for Tailwater Ponds and other Surface Containment Features

Parameter	Analytical Method[1]	Maximum PQL	Units	Minimum Monitoring Frequency
Volume of Pond	Field Measure	1	Gallons	(a) (d)
Nitrate + Nitrite (as N)	EPA 300.1, EPA 353.2	50	mg/L	

[1] In-field water testing instruments/equipment as a substitute for laboratory analysis if the method is approved by EPA, meets RL/PQL specifications in the MRP, and appropriate sampling methodology and quality assurance checks can be applied to ensure that QAPP standards are met to ensure accuracy of the test.
(a) Four times per year during primary irrigation season; Executive Officer may reduce monitoring frequency based on water quality improvements.
(d) Two times per year during wet season (October – March, within 18 hours of major storm events)

Table 5. Tier 3 - Time Schedule for Key Monitoring and Reporting Requirements (MRPs)

REQUIREMENT	TIME SCHEDULE[1]
Submit Sampling And Analysis Plan and Quality Assurance Project Plan (SAAP/QAPP) for Surface Receiving Water Quality Monitoring (*individually or*	By March 1, 2018, or as directed by the Executive Officer; satisfied if an approved SAAP/QAPP has been submitted pursuant

through cooperative monitoring program)	to Order No. R3-2012-0011 and associated MRPs
Initiate surface receiving water quality monitoring (*individually or through cooperative monitoring program*)	Per an approved SAAP and QAPP
Submit surface receiving water quality monitoring data (*individually or through cooperative monitoring program*)	Each January 1, April 1, July 1, and October 1
Submit surface receiving water quality Annual Monitoring Report (*individually or through cooperative monitoring program*)	By July 1 2017; annually thereafter by July 1
Initiate monitoring of groundwater wells	First sample from March-June 2017, second sample from September-December 2017
Submit individual surface water discharge SAAP and QAPP	By March 1, 2018 or as directed by the Executive Officer; waived if an approved SAAP and QAPP has been submitted and being implemented pursuant to Order No. R3-2012-0011.
Initiate individual surface water discharge monitoring	As described in an approved SAAP and QAPP
Submit individual surface water discharge monitoring data	March 1, 2018, and every March 1 annually thereafter
Submit electronic Annual Compliance Form	March 1, 2018 and every March 1 annually thereafter
Submit groundwater monitoring results	Within 60 days of the sample collection
Submit Water Quality Buffer Plan or alternative	Within 18 months of enrolling new Tier 3 farm/ranch in Order
Submit Status Report on Water Quality Buffer Plan or alternative	March 1, 2019
Tier 3 Dischargers with farms/ranches growing high risk crops:	
Report total nitrogen applied on the Total Nitrogen Applied form	March 1, 2018 and every March 1 annually thereafter
Submit INMP Effectiveness Report	March 1, 2019

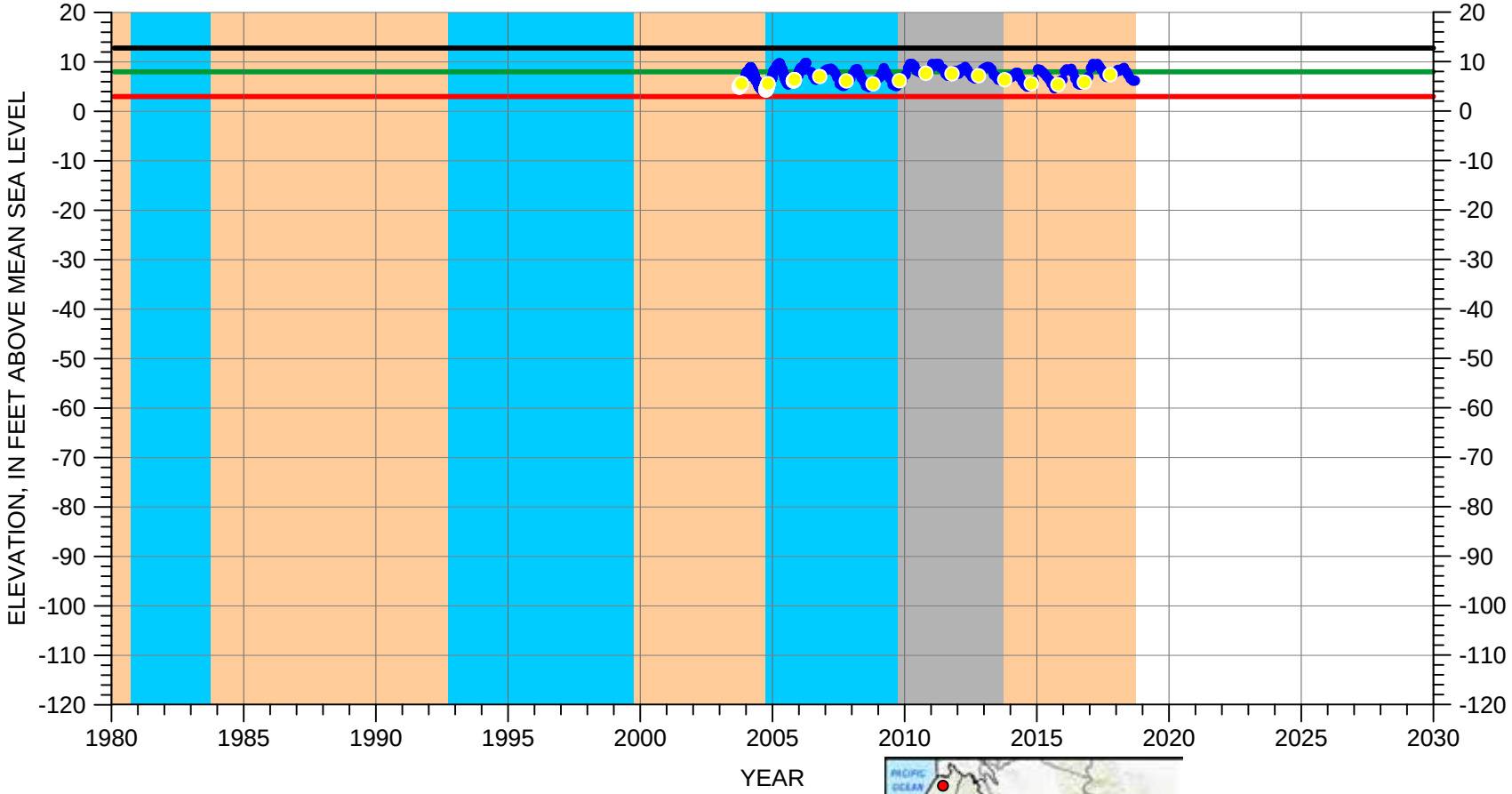
[1] Dates are relative to adoption of this Order, unless otherwise specified.

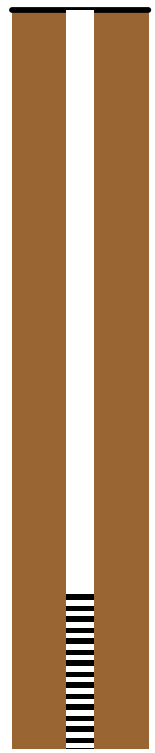
APPENDIX 8A

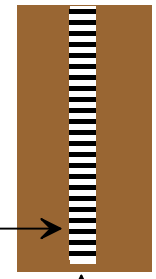
HYDROGRAPHS

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-21Q01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)







Perforated from
-92.2 to -142.2 feet msl

Well Bottom
-144.2 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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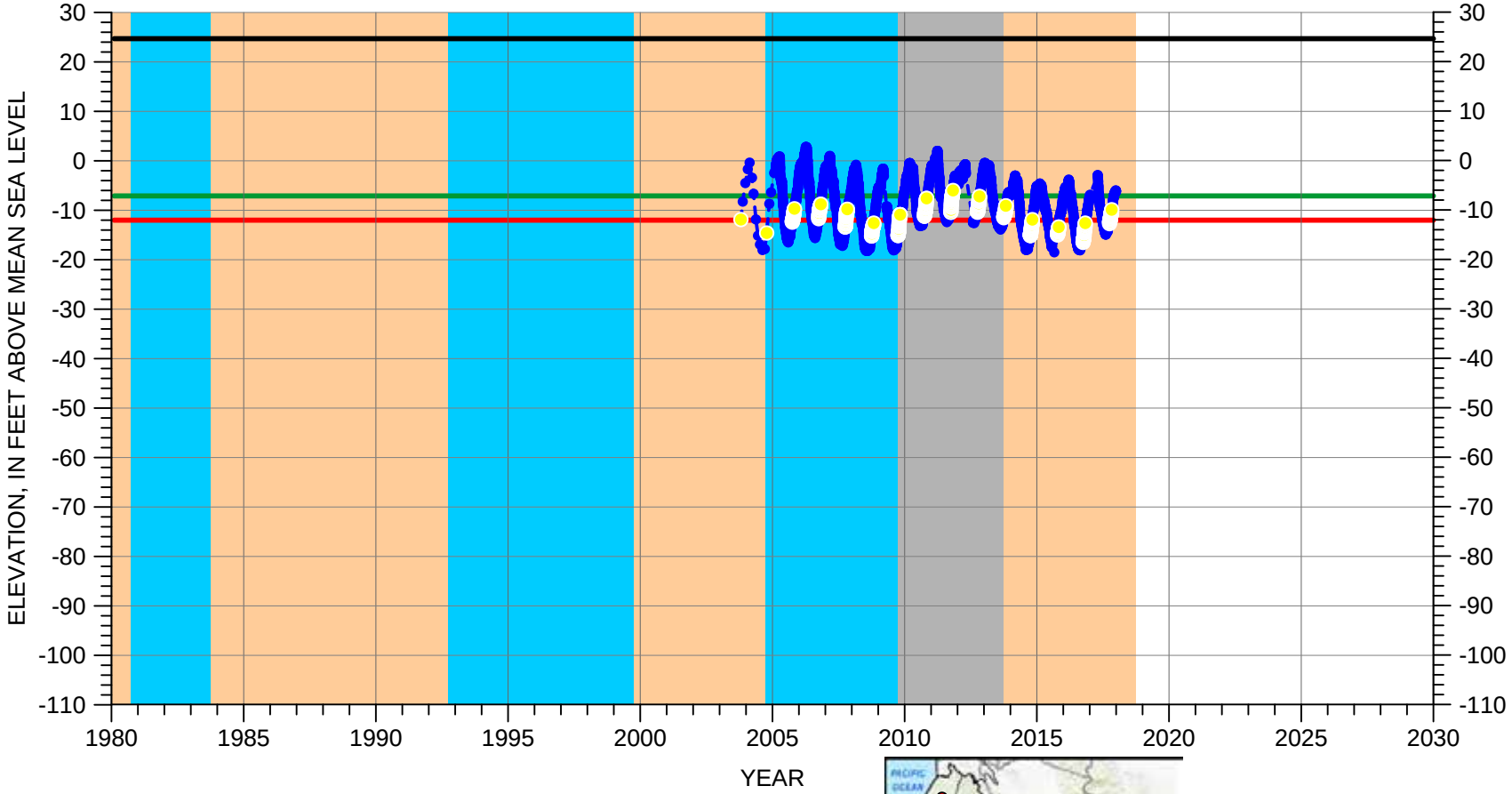
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-03F04

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



Perforated from
-129.3 to -179.3 feet msl

Well Bottom
-180.3 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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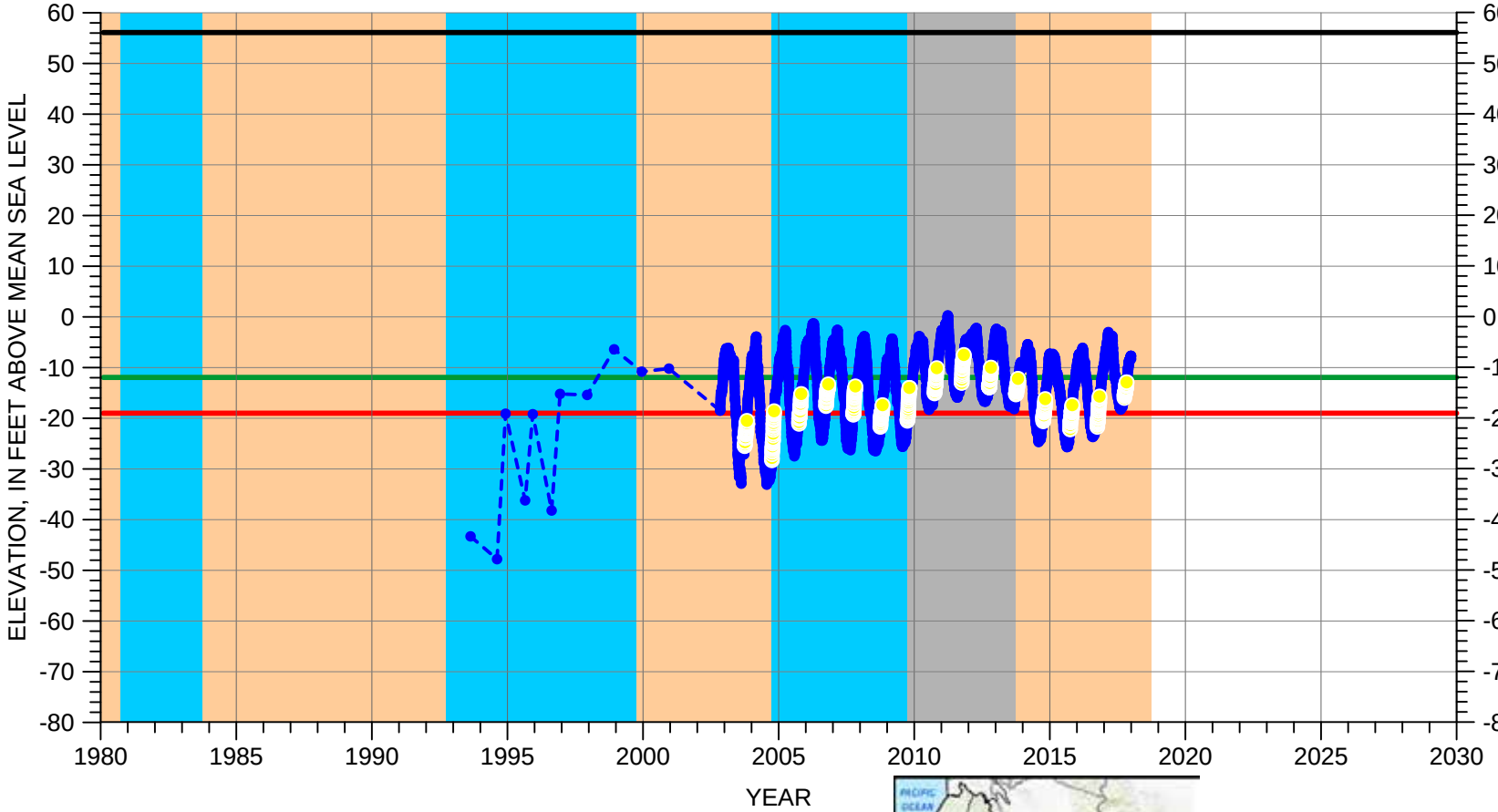
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-12B02

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



Perforated from
-153.9 to -203.9 feet msl

Well Bottom
-208.9 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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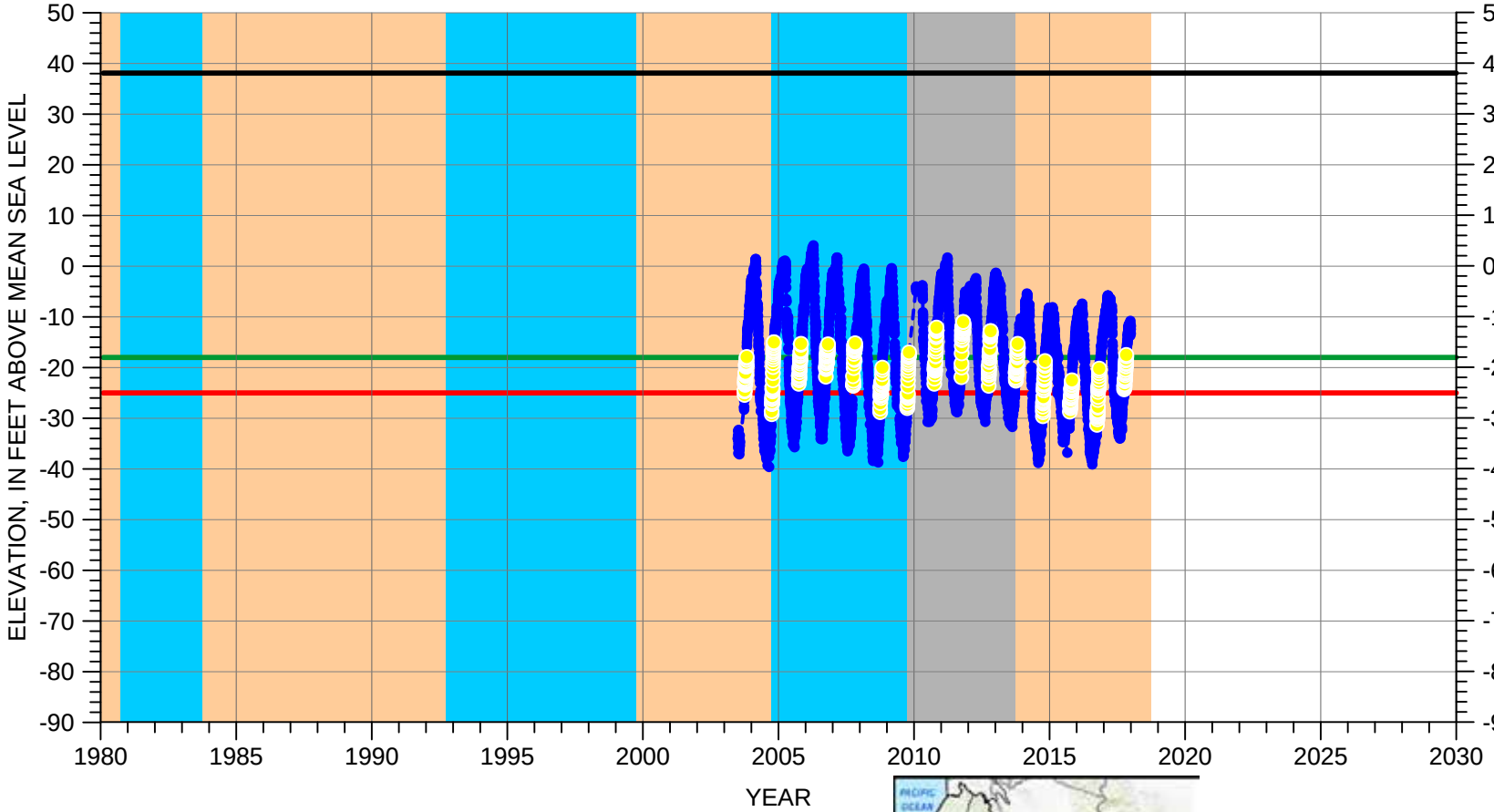
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-26H01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



Perforated from
-248.9 to -298.9 feet msl

Well Bottom
-300.9 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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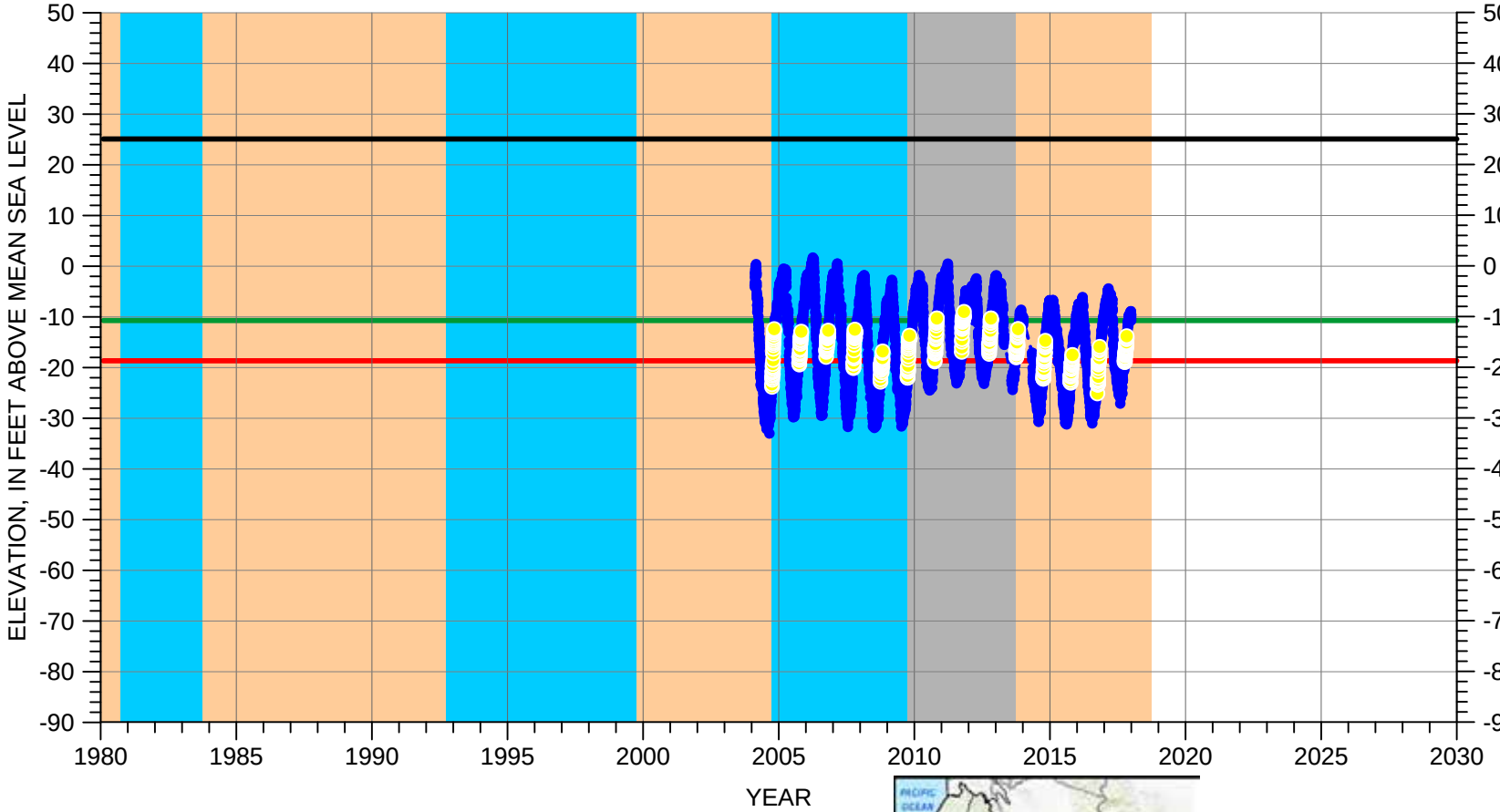
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-27A01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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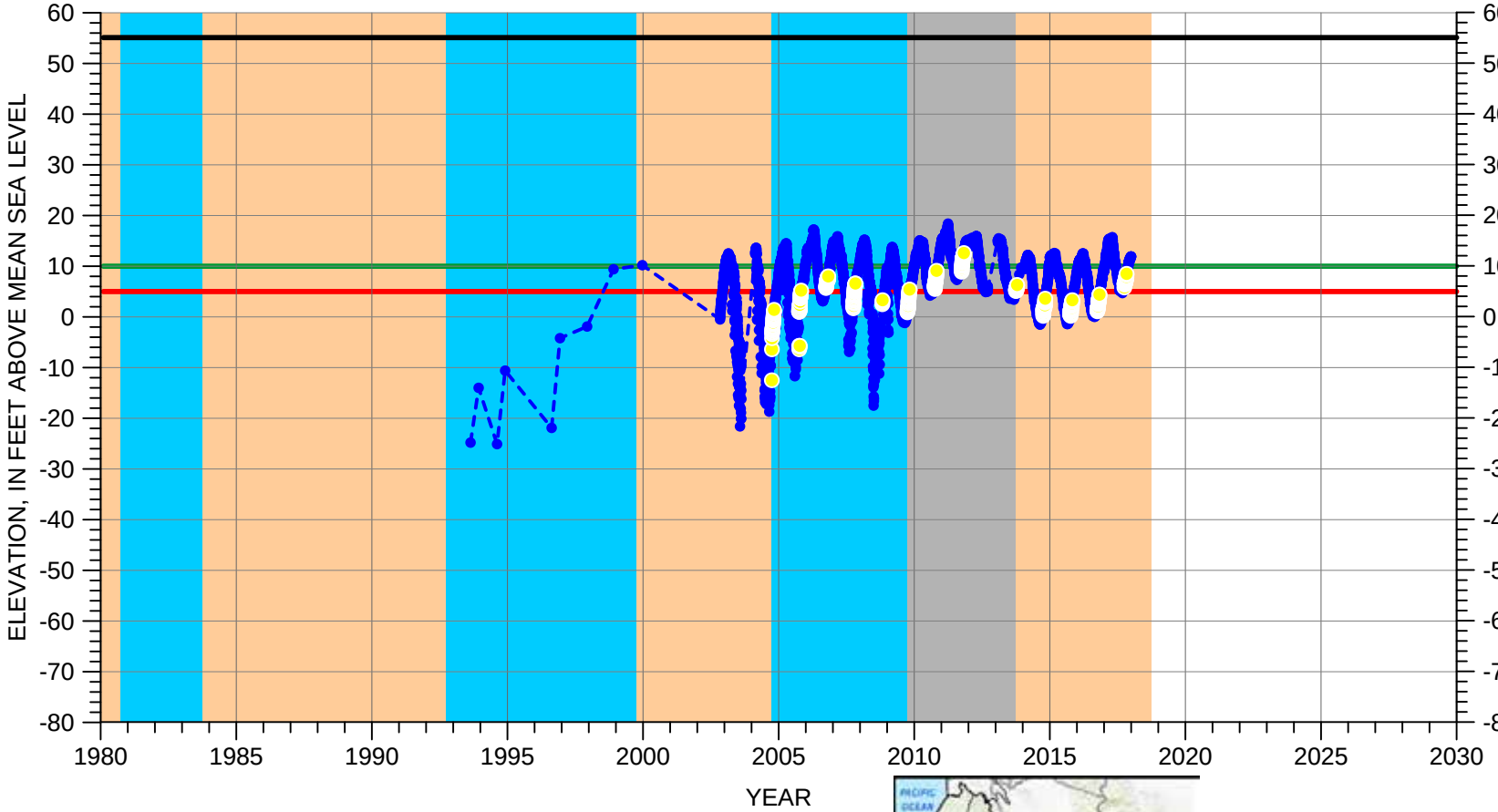
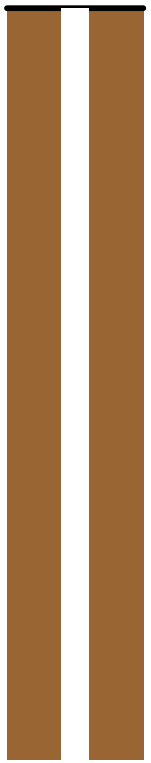
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-18C01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



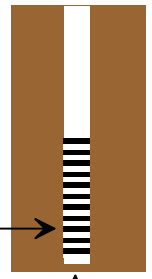


EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET



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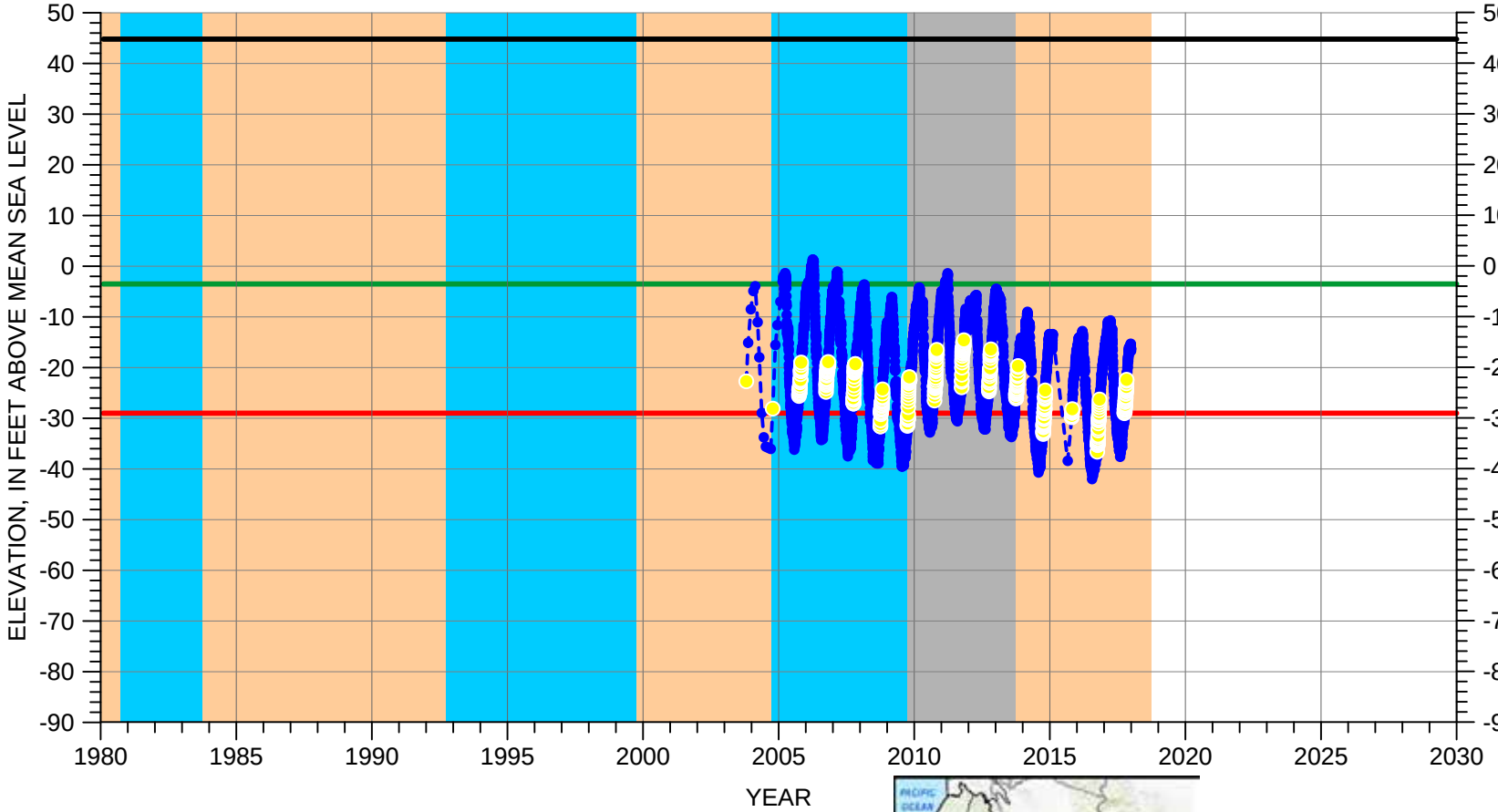
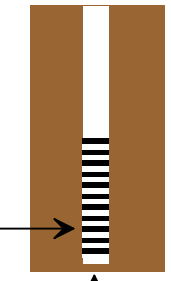
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-30G08

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)





Perforated from
-195.2 to -245.2 feet msl

Well Bottom
-248.2 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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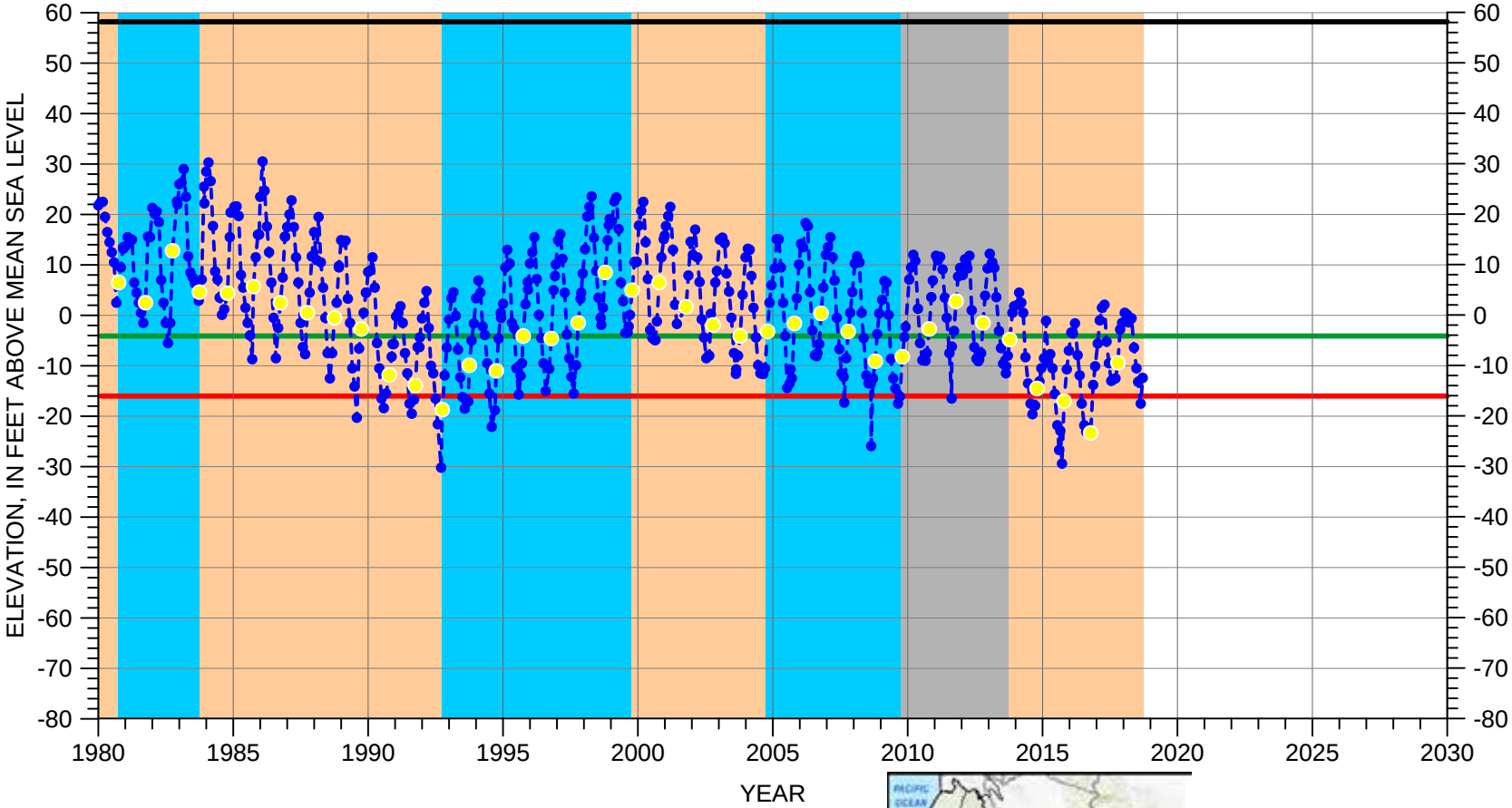
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 15S/03E-16M01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

Perforated interval unknown

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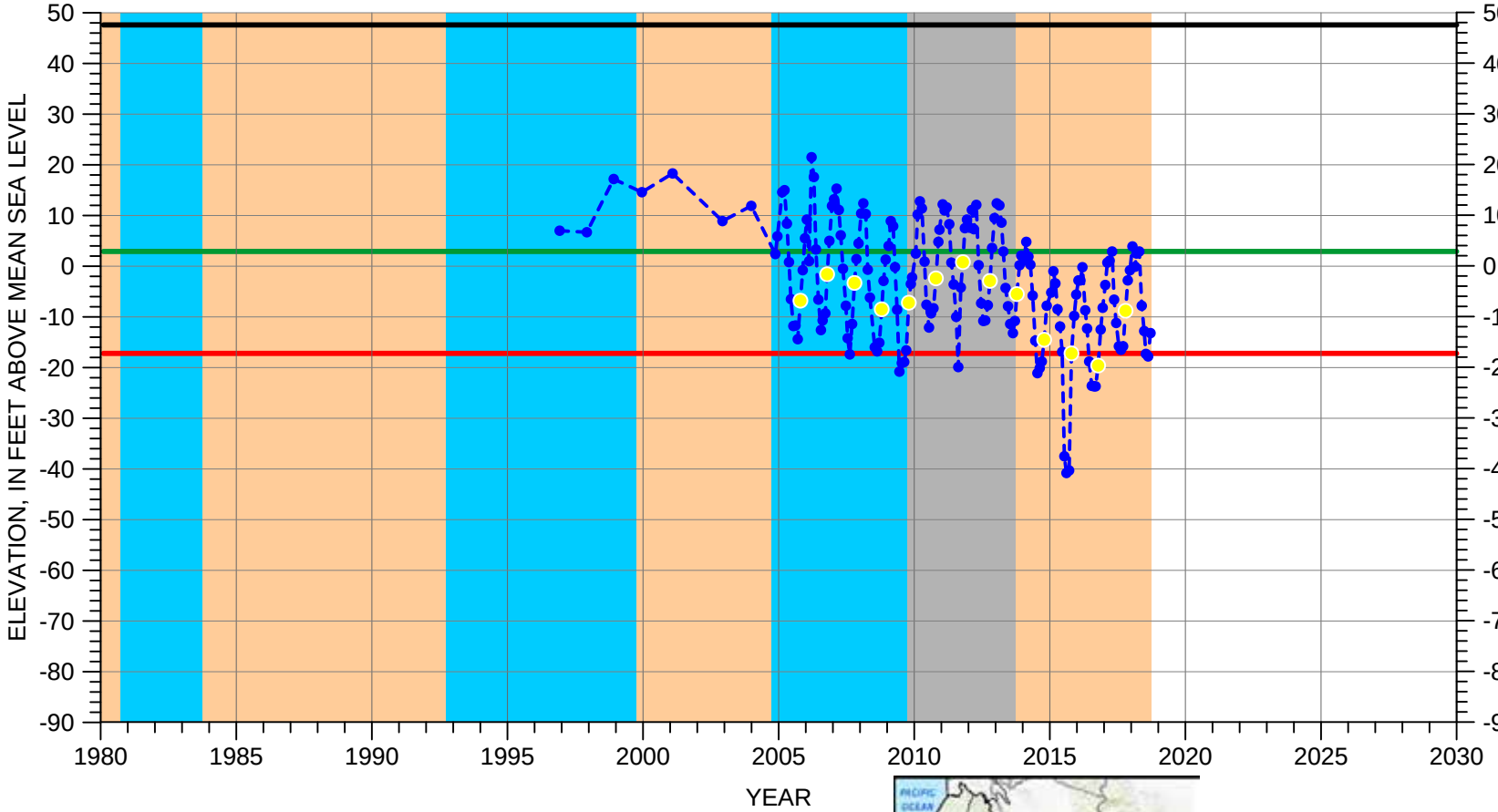
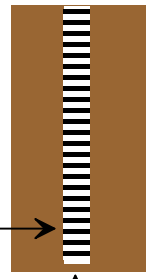
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 15S/03E-17M01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)





Multiple perforated intervals between -80.4 and -132.4 feet msl

Well Bottom -223.4 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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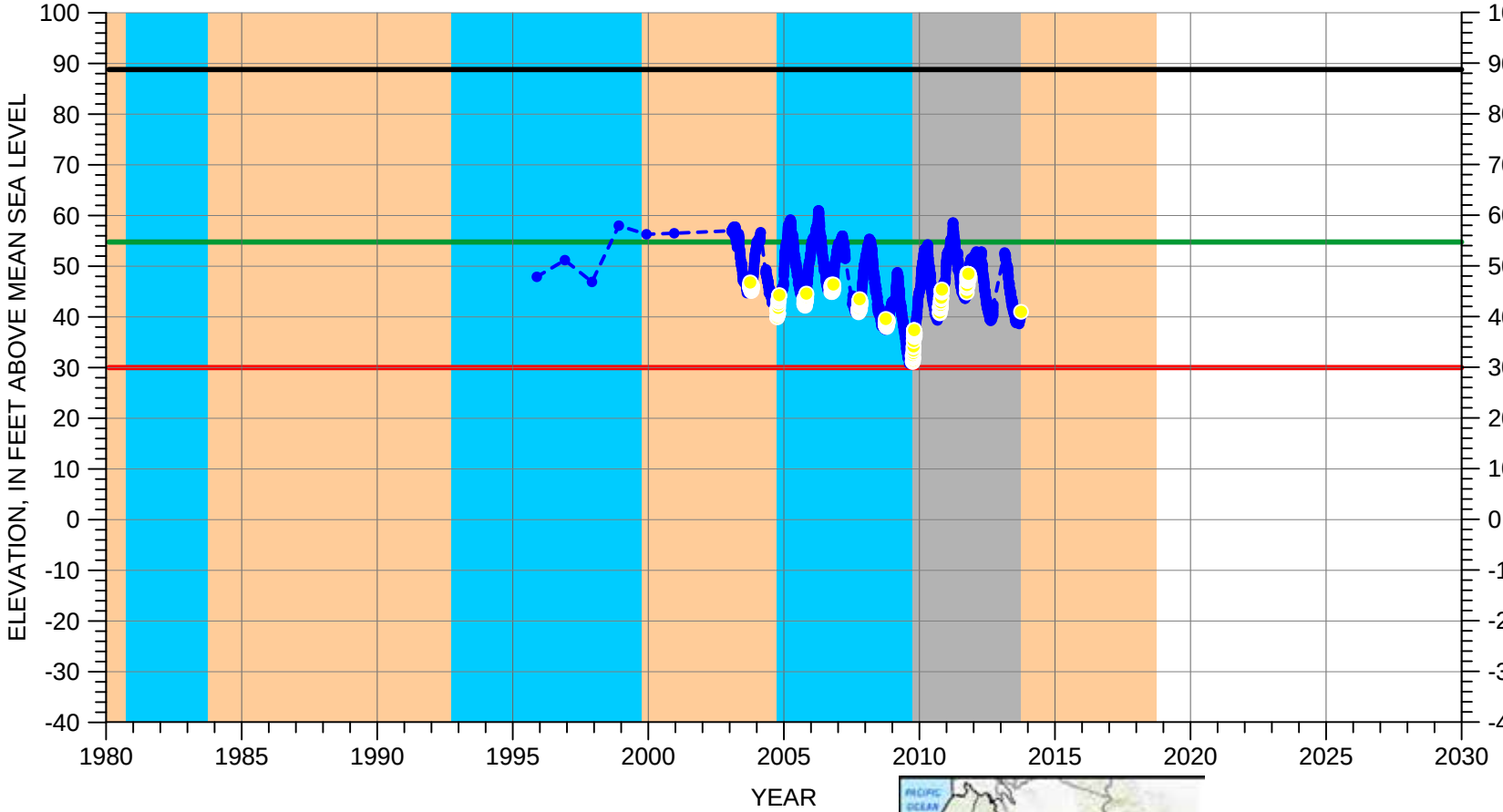
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-08H04

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



Perforated from
3.8 to -46.2 feet msl

Well Bottom
-51.2 feet msl

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EXPLANATION

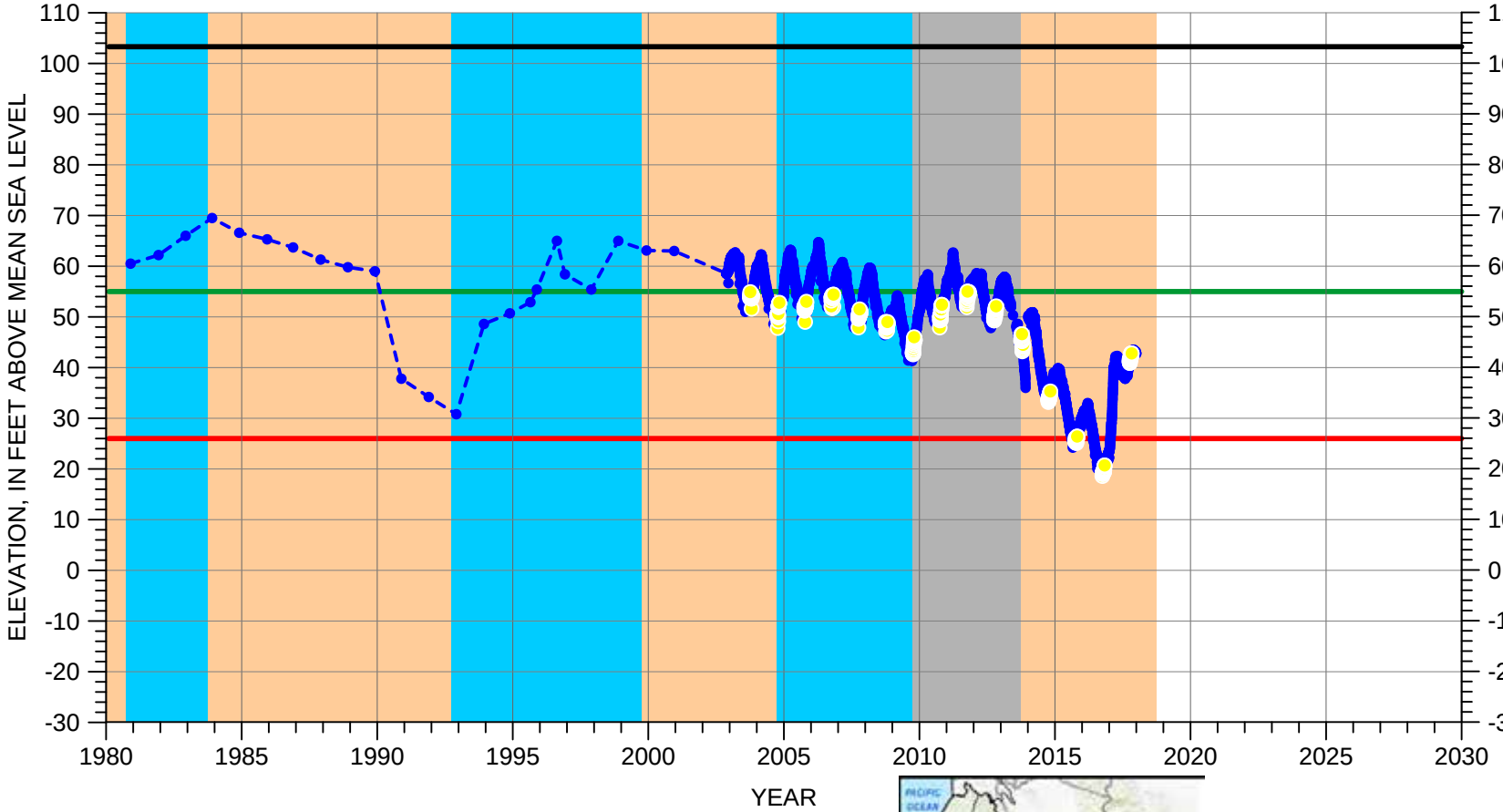
- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-15D01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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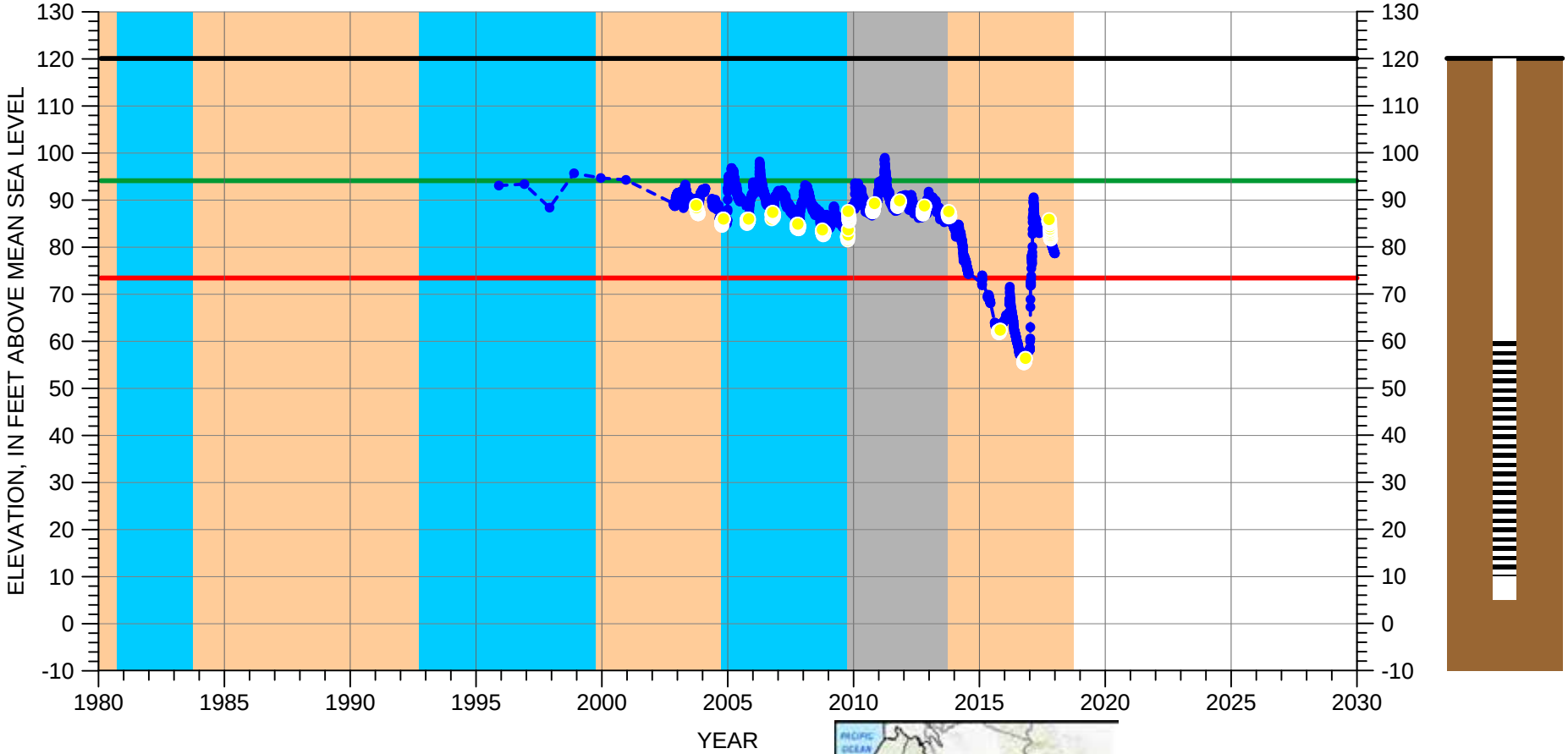
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 17S/05E-06C02

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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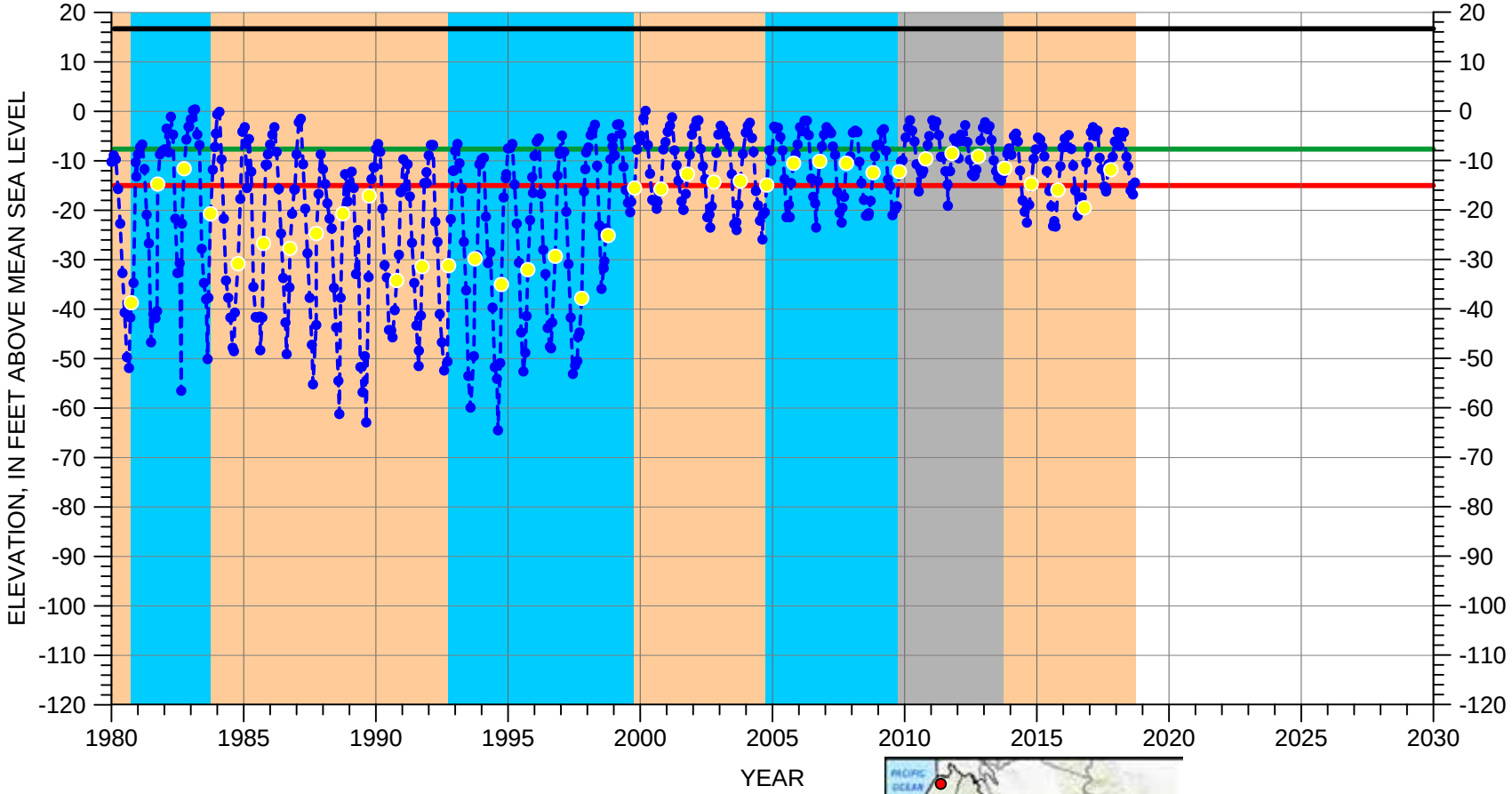
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-21N01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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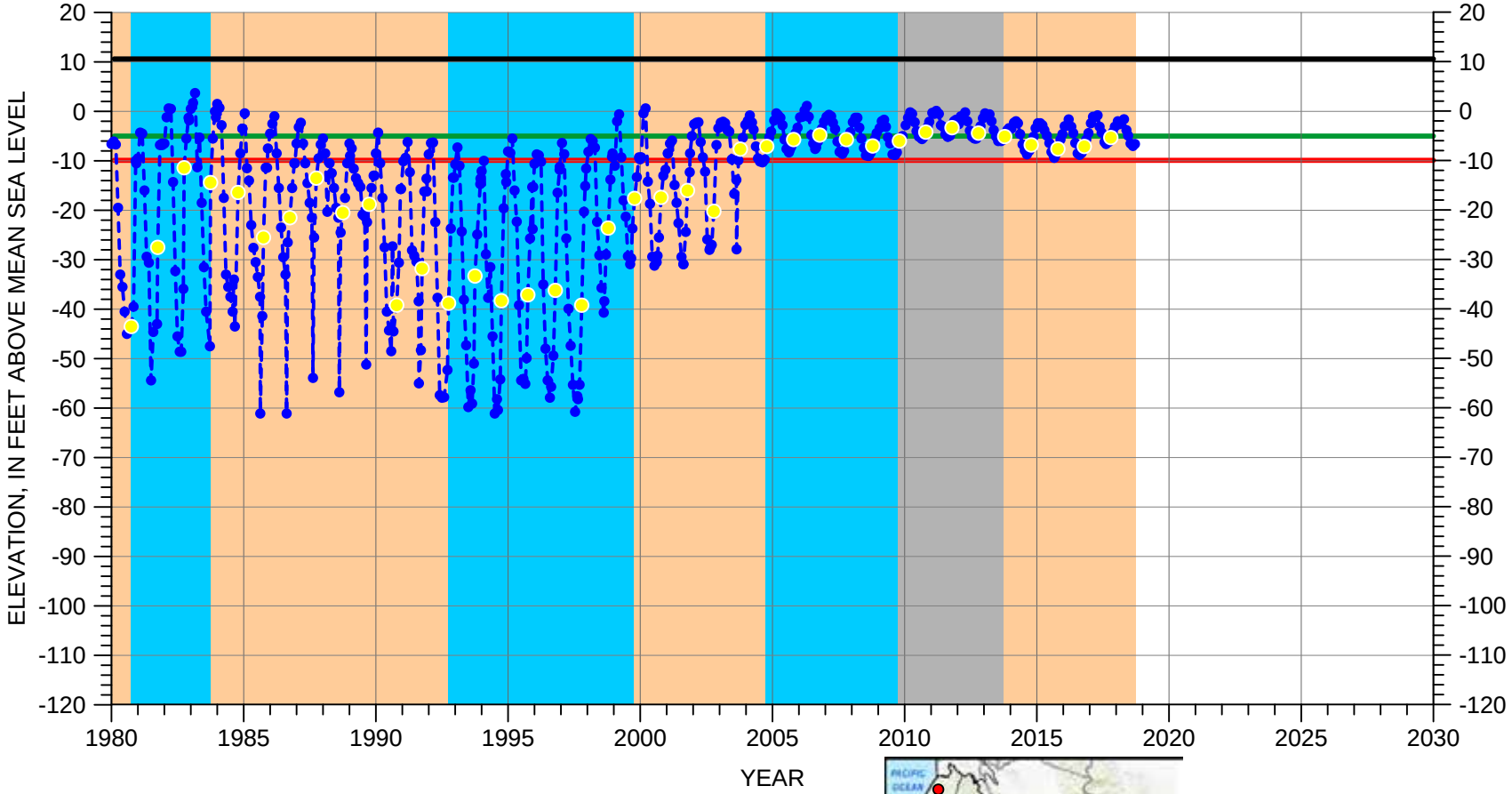
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-32A02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



Perforated from
-289.4 to -589.4 feet msl

Well Bottom
-589.4 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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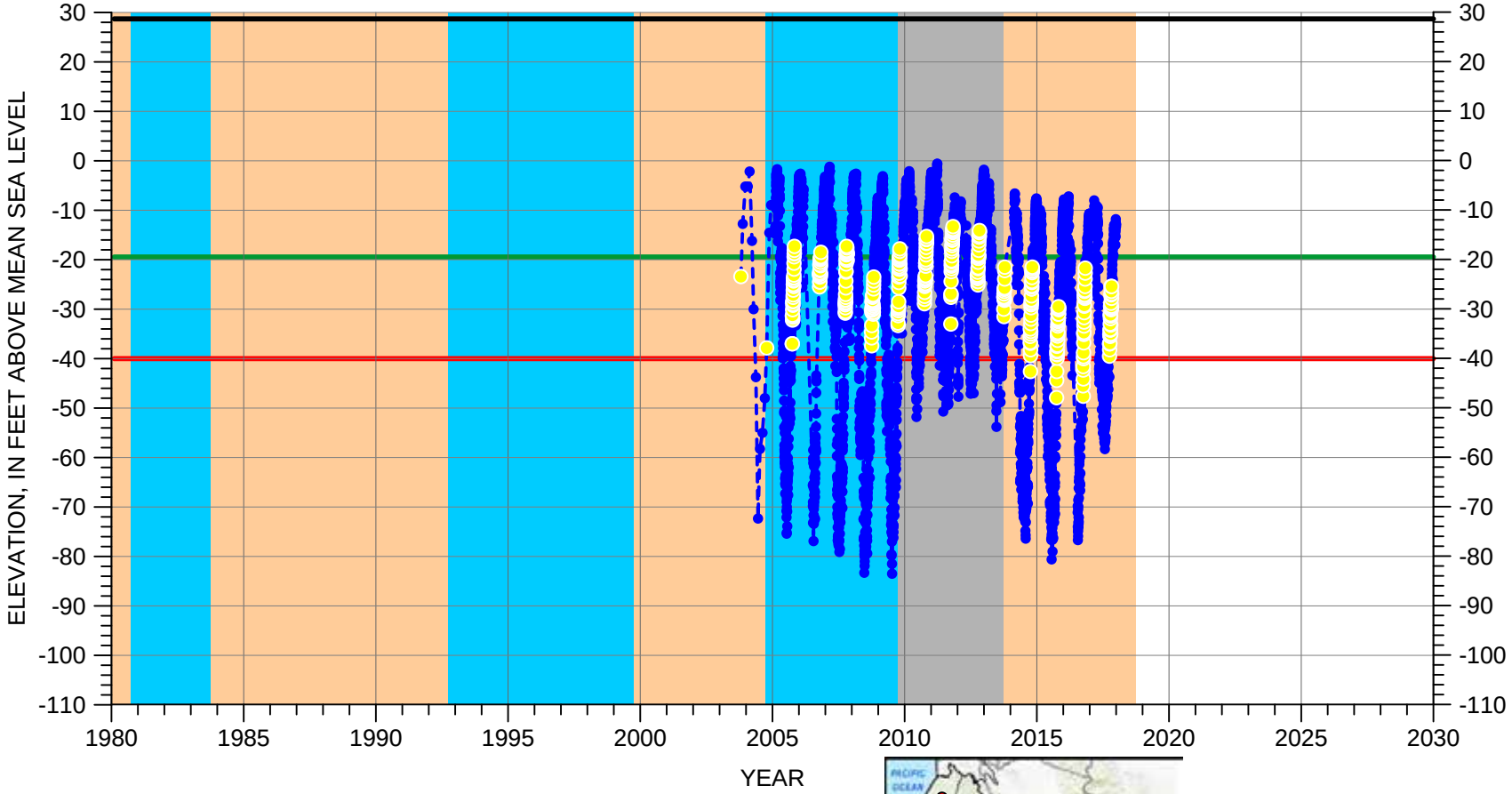
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-03F03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



Perforated from
-391.3 to -421.3 feet msl

Well Bottom
-426.3 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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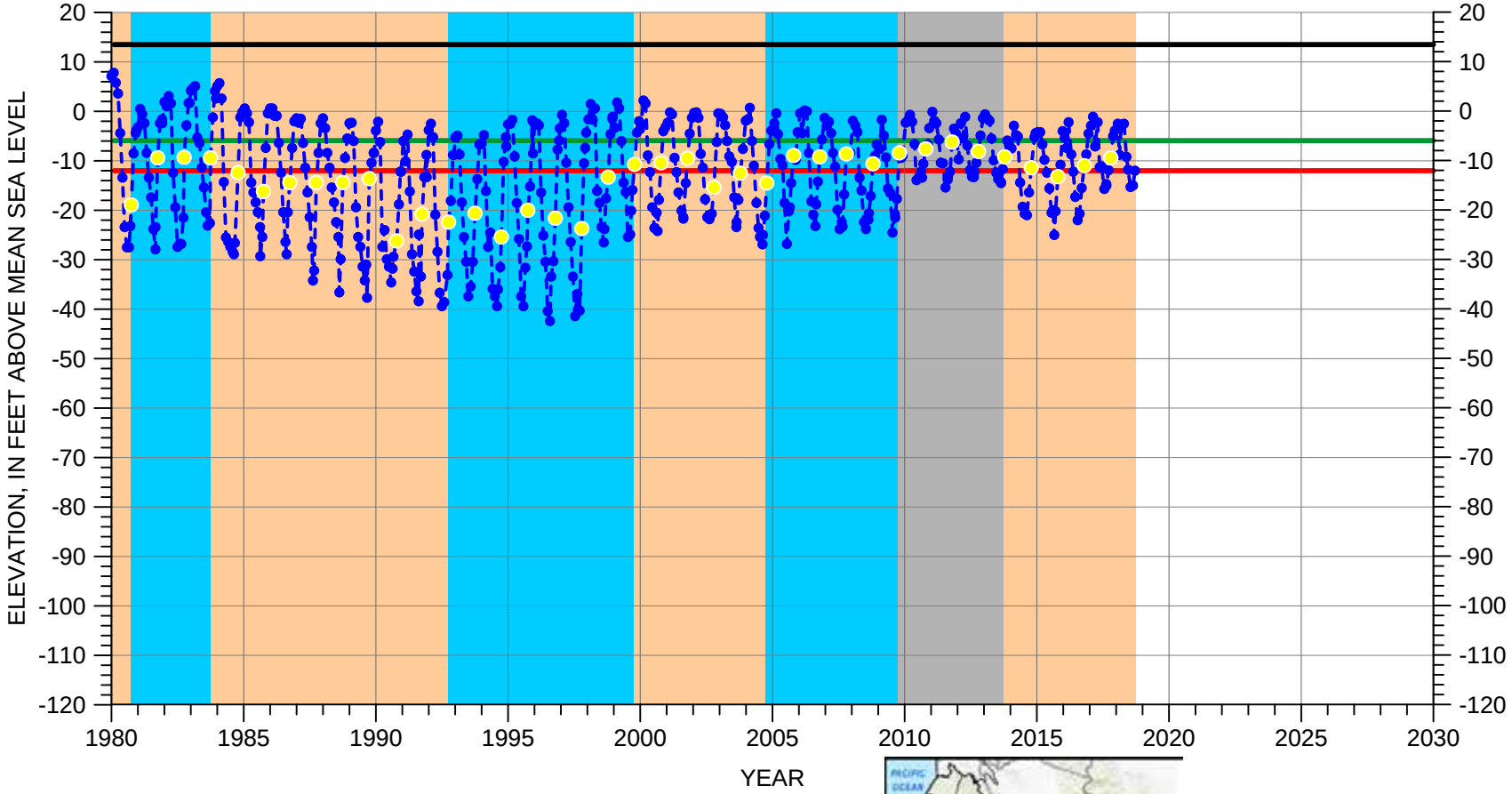
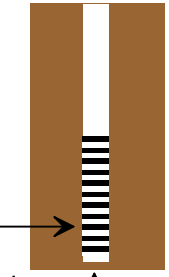
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-08M02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





Multiple perforated intervals between -300.5 and -442.5 feet msl

Well Bottom -486.5 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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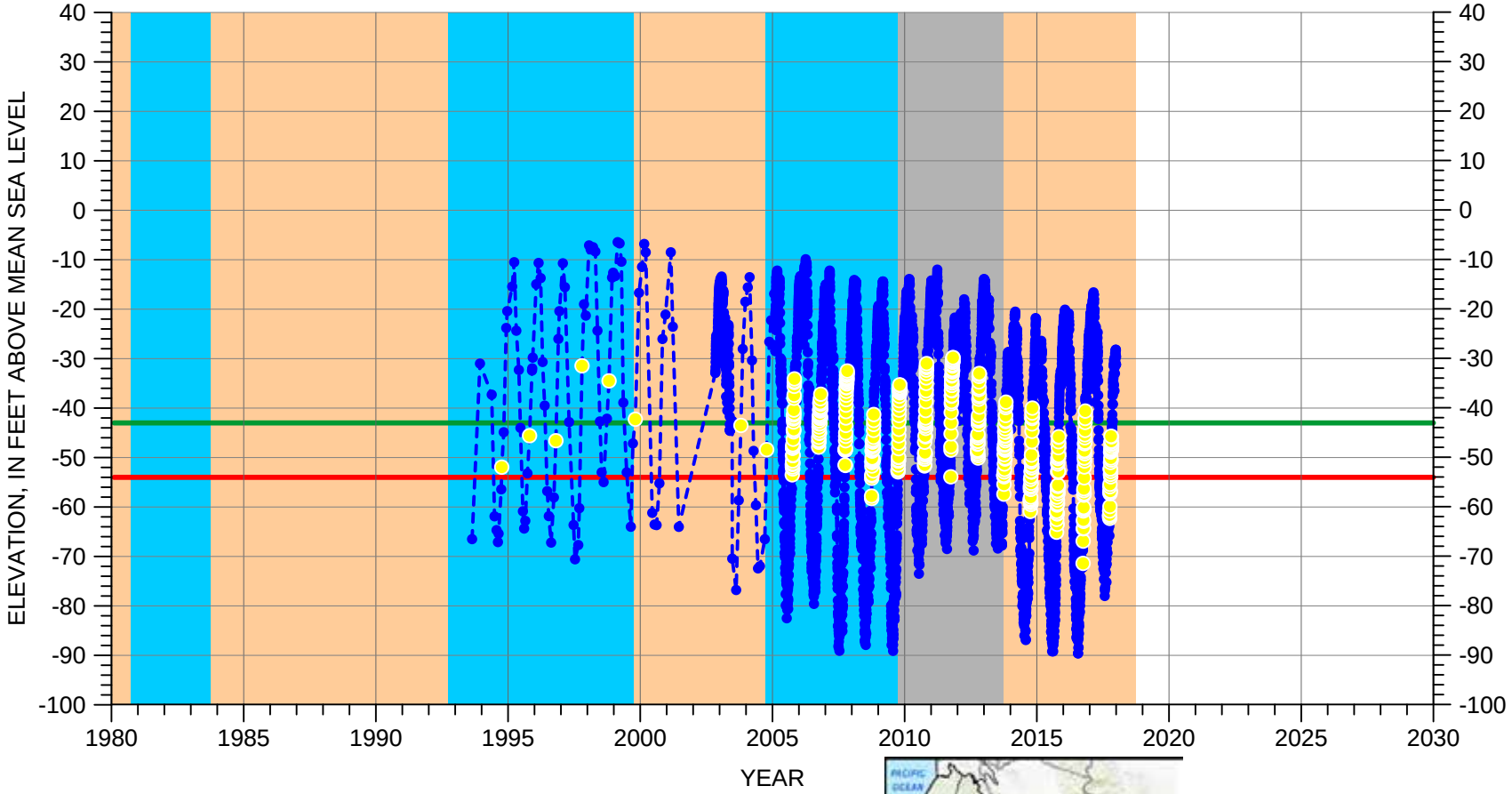
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-12B03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



Perforated from
-293.9 to -323.9 feet msl

Well Bottom
-333.9 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE (56.1 FT MSL)
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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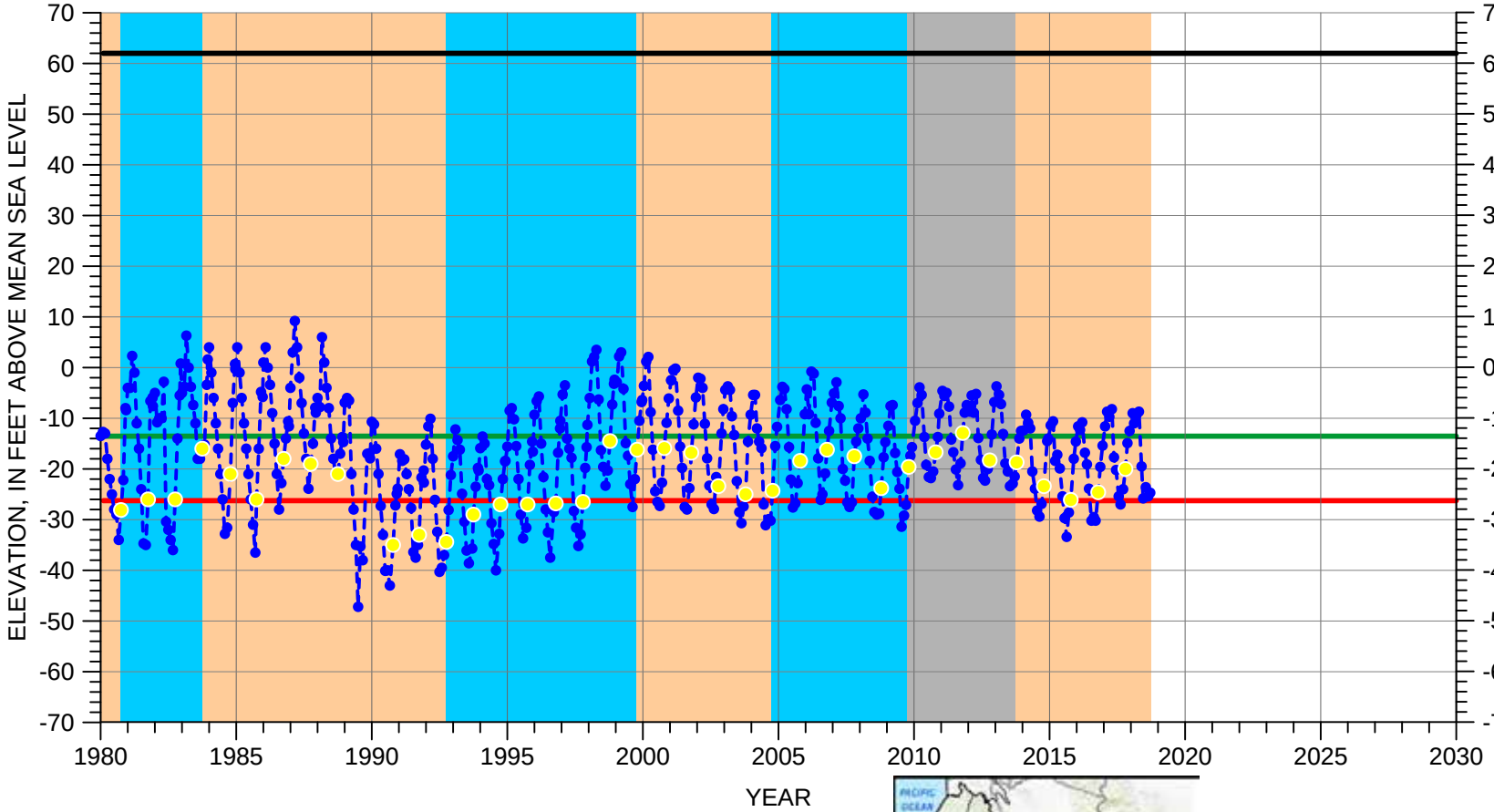
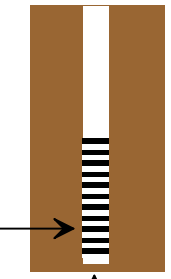
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-12Q01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





Multiple perforated intervals between -211 and -230 feet msl

Well Bottom -557 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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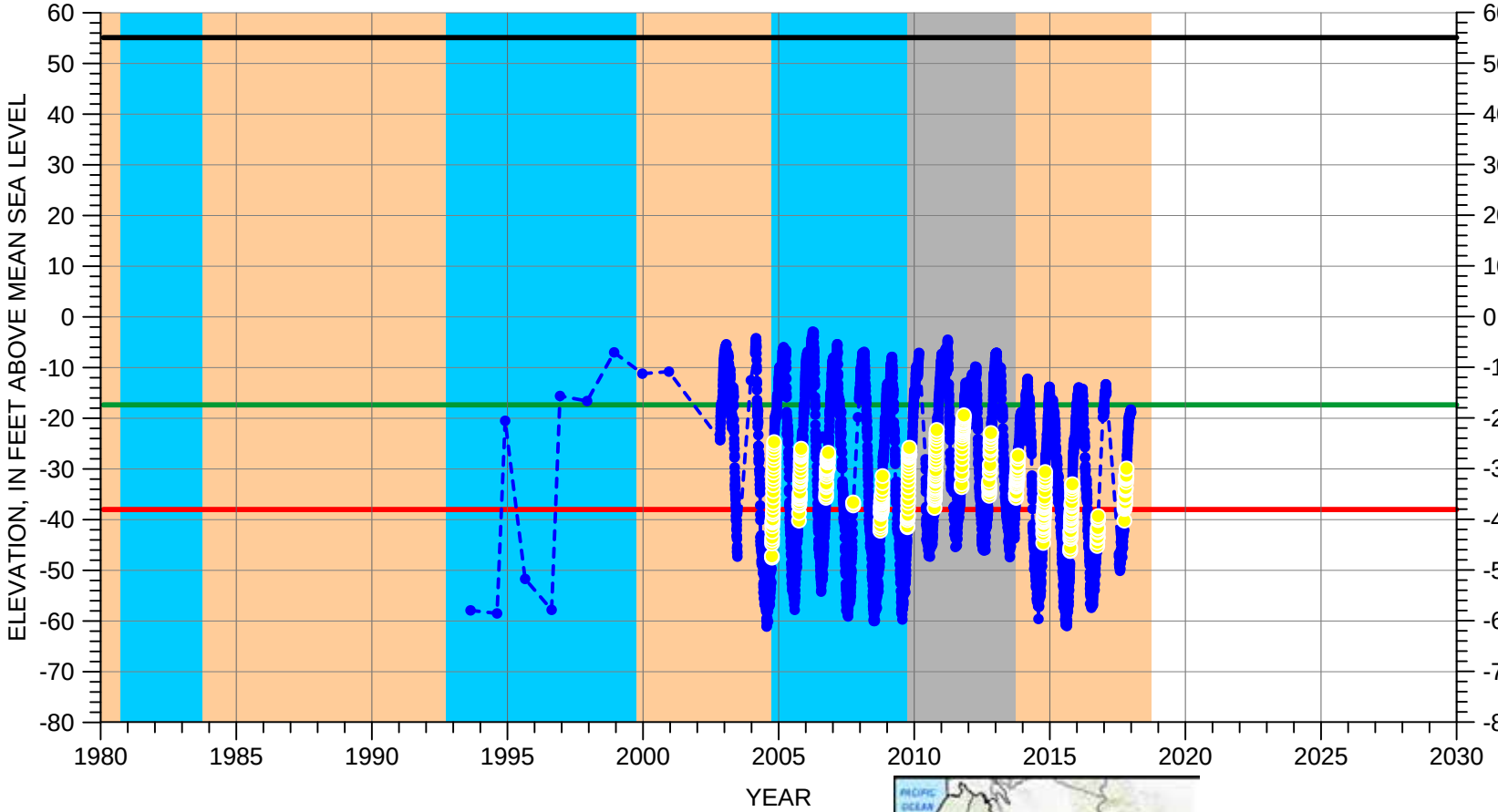
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-18C02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



Multiple perforated intervals between -214.9 and -329.9 feet msl

Well Bottom -339.9 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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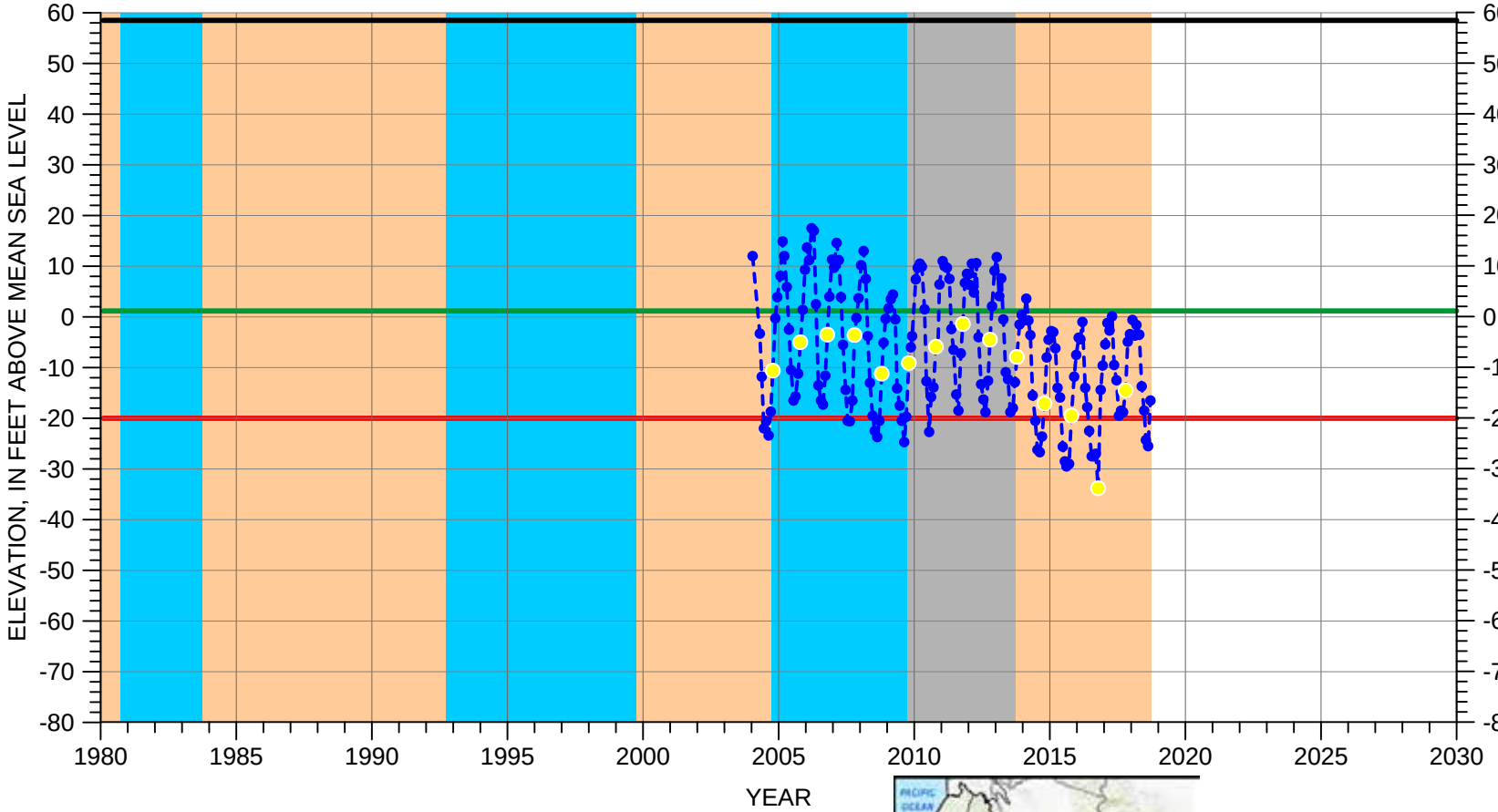
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 15S/03E-16F02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



Multiple perforated intervals between -368.5 and -511.5 feet msl

Well Bottom -533.5 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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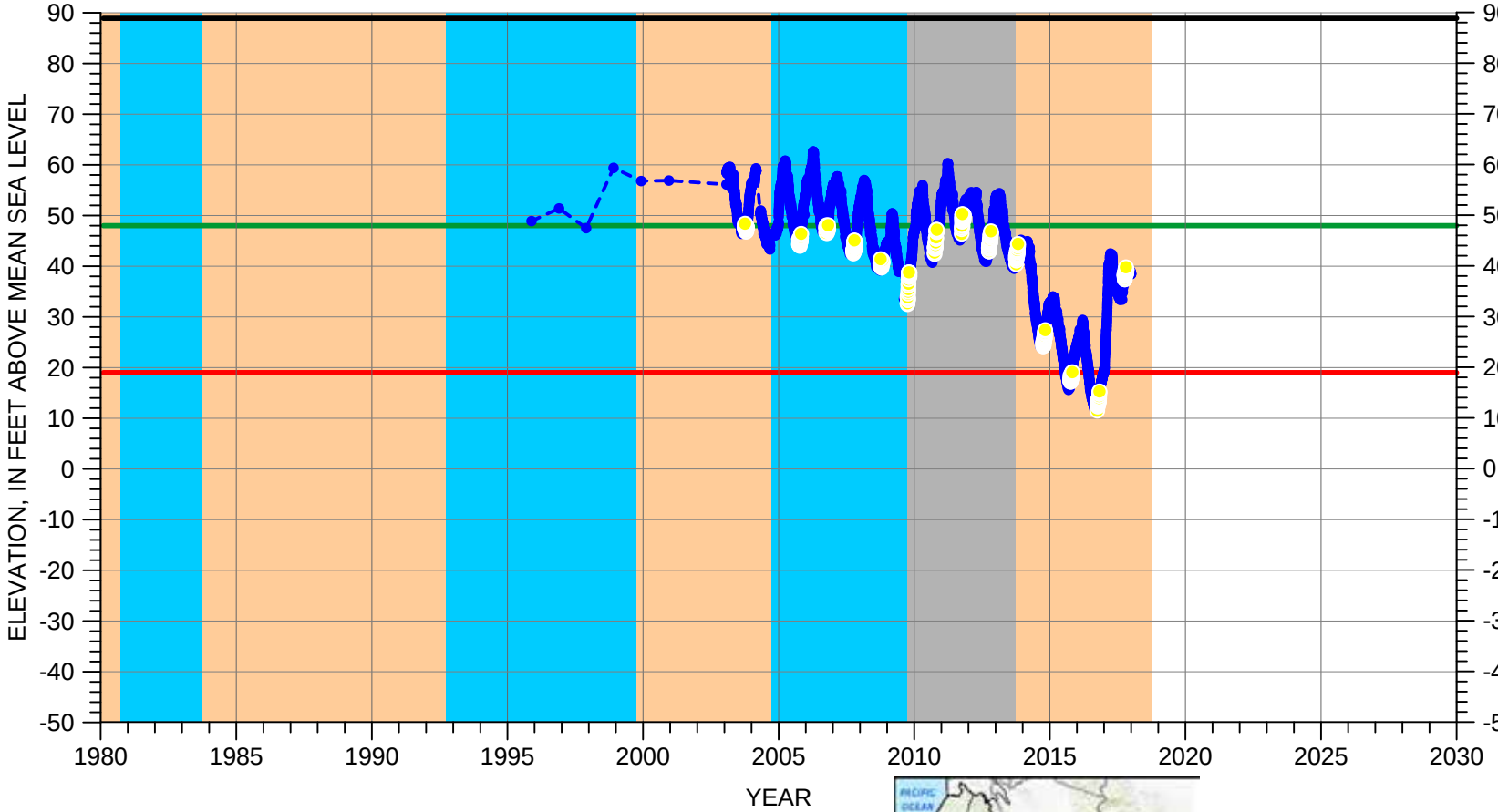
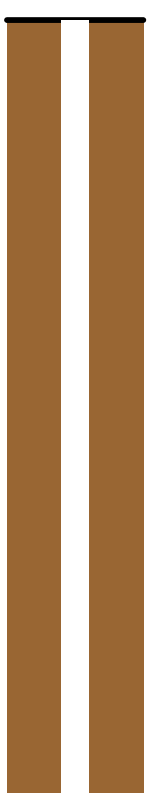
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-08H03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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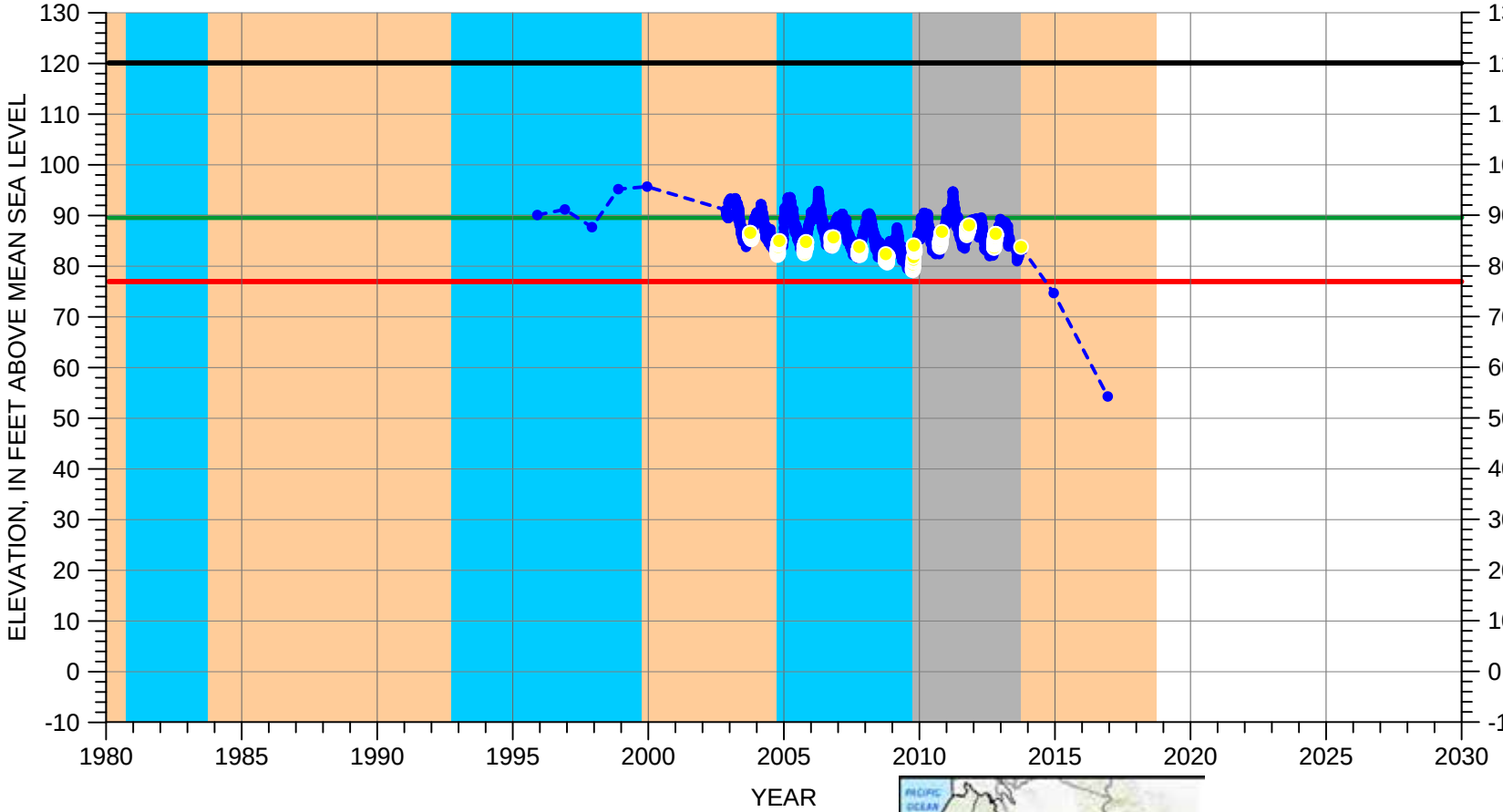
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 17S/05E-06C01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)



Perforated from
-129.9 to -169.9 feet msl

Well Bottom
-179.9 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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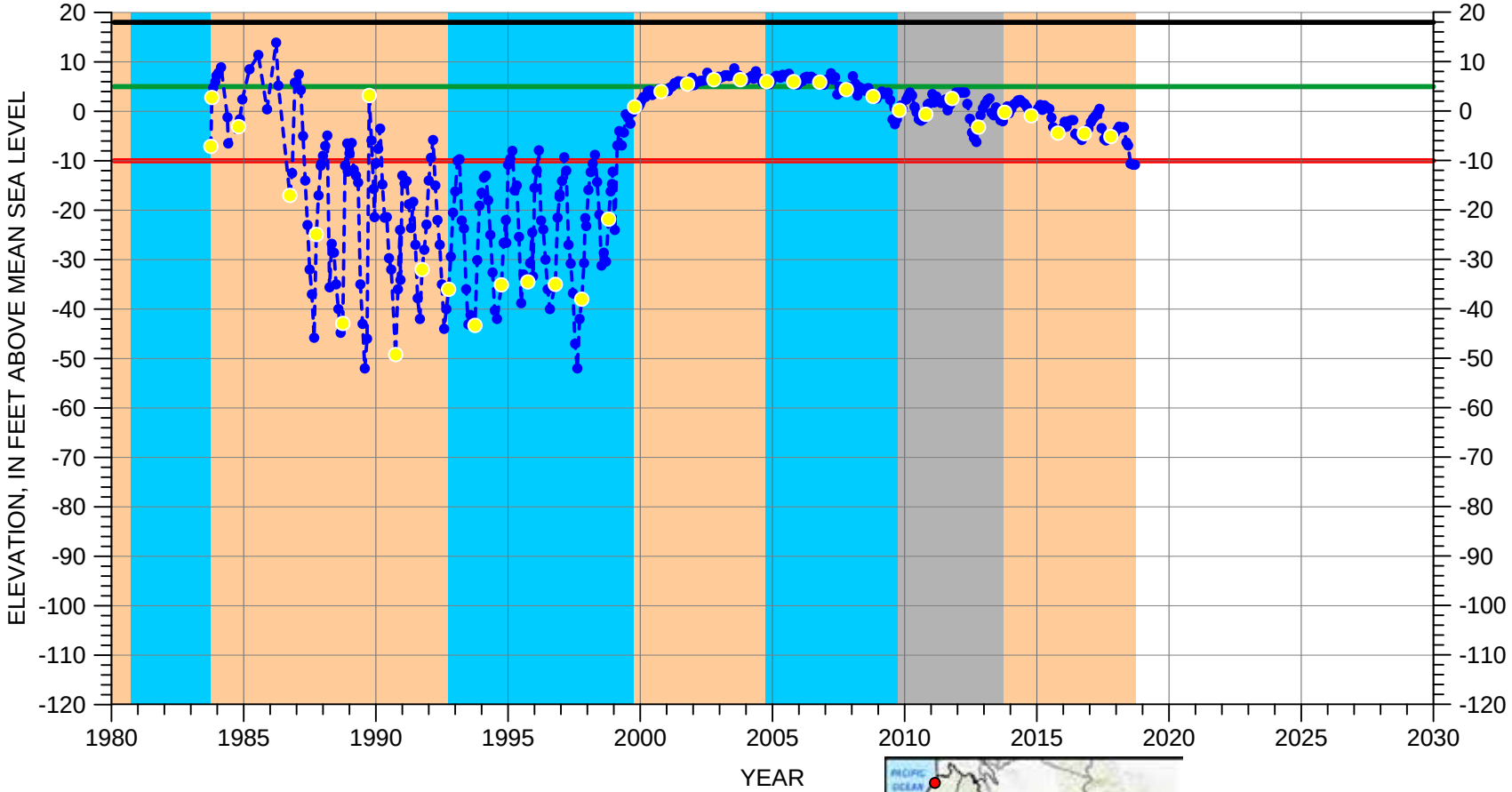
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-19Q03

180/400-Foot Aquifer Subbasin
(Deep Aquifer)



Perforated from
-1202 to -1532 feet msl

Well Bottom
-1544 feet msl

EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET

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APPENDIX 9A

ALL MANAGEMENT ACTIONS CONSIDERED FOR GROUNDWATER SUSTAINABILITY PLAN

Management Action	Description	Category
Voluntary Land Purchase/Retirement	Reduce agricultural groundwater pumping through voluntary program that compensates landowners for permanently retiring irrigated land. New land use should be for beneficial use.	
Voluntary Fallowing	Reduce agricultural groundwater pumping through voluntary program to fallow historically-irrigated land for a full year.	
Agricultural Land and Pumping Allowance Retirement	Water charges revenues may be used by the SVBGSA to acquire and retire irrigated land and/or pumping allowances (potentially including carryover credits and recharge credits) to reduce pumping. All acquisitions will be completed on a voluntary basis from willing sellers at negotiated market prices. The SVBGSA would cease irrigation on acquired land to reduce pumping.	Priority
Partial Season Irrigation	Reduce agricultural groundwater pumping through voluntary program to shorten the length of the irrigation season. In practice, this may mean growing fewer crops within a given season.	
Deficit Irrigation	Apply less water than is required for optimal yield to reduce agricultural groundwater pumping.	
Crop Conversion	Transition to less water-intensive crops to reduce agricultural groundwater pumping.	
Individual Transferable Quotas	Reduce groundwater pumping by establishing total allowable pumping allocations among individual pumpers, and authorize quota trading to minimize the economic effects of lower pumping volumes.	
Conservation Credits	Incentivize water conservation by awarding groundwater pumping credits based on reduction in use. Can be carried over for use in future years.	
Quota/Credit Buyback	Reduce annual groundwater pumping by purchasing/leasing quotas and/or conservation credits.	
Incentives for Replenishment	Offer payments and/or conservation quotas for recharge of available surface water. All or a portion of the recharge will be maintained in the aquifer.	
Land Use Restrictions/Easements	Limit future agricultural or urban groundwater pumping by restricting land use or purchasing conservation easements in targeted areas.	
Mandatory Restrictions in CSIP Area	Mandate reduced groundwater pumping in the CSIP Area by passing an ordinance preventing any pumping for irrigating agricultural lands served by CSIP.	Priority
Water Export Limitations	Limit water export from the Subbasin when it is in over-draft conditions.	
Metering/Monitoring	Measure groundwater withdrawals at individual wells to support quantification of individual transferable quotas, conservation credits, and implement withdrawal fees/tiered pricing.	
Nacimiento Water Release Management	Modify reservoir operations	
SW Education/Outreach & Municipal Enforcement	Additional education and outreach efforts for Commercial and Industrial Facilities w/ enforcement by municipalities for violators or IGP non-filers.	
Withdrawal Fees/Tiered Pricing	Charge fees per acre-foot pumped (flat, increasing block, and/or by water use type) to incentivize reductions in groundwater pumping.	
Water Conservation and Stormwater Pollution Education & Outreach	Change perceptions about water use and stormwater discharges to incentivize efficient stormwater capture.	
Fast Track Water Related Project CEQA/Permitting	Streamline permitting process to realize water enhancement projects.	
Modify watershed management practices to optimize runoff, storage and recharge	Controlled vegetation management using goat herds and prescriptive burns.	
Well and Hydrant Flushing Capture	Capture and repurpose "wastewater" associated with flushing activities.	
Forebay/Upper Valley recharge enhancements using re-operated reservoirs	Re-operate reservoirs to allow pulse flows in the Salinas River that provide additional recharge in the unconfined aquifers of the Forebay and Upper Valley.	Priority
Support and Strengthen MCWRA Restrictions on Additional Wells in the Deep Aquifer	MCWRA Ordinance 5302 restricts drilling new wells in the Deep Aquifer in an Area of Impact that is generally northwest of Davis Road. SVBGSA will work with the MCWRA to strengthen the ordinance to prevent any new wells from being drilled into the deep aquifer until more is known about the Deep Aquifer's sustainable yield	Priority
Irrigation Efficiency	Implement on-farm technology to improve irrigation efficiency and reduce groundwater pumping.	
Municipal Water System Leak Detection & Repair	Address municipal water system losses to reduce groundwater pumping or support additional recharge. For systems w/ over 12% water loss annually. (16% is average w/ 75% generally assumed to be recoverable)	
Urban Conservation (indoor/outdoor)	Mandate or incentivize urban conservation	
Municipal Water Conservation Efforts	Widespread adoption of water-saving appliances and fixtures, along with replacement of lawns with water-efficient landscapes, may reduce total residential water use by 30-40 percent in areas not currently implementing these strategies.	
Recycled Water Incentives - Industrial Facilities	Wineries, Produce Production, Breweries, & Other water intensive industrial facility types. Recycle process wastewater and site storm water for onsite reuse.	
Artificial Turf replacement inside City Limits	Subsidize as an incentive.	
Encourage proactive agricultural practices to benefit water quality and limit evaporation	Fertilizer use efficiency/management, use of cover crops, healthy soils, vegetation treatment.	

APPENDIX 9B

ALL PROJECTS CONSIDERED FOR GROUNDWATER SUSTAINABILITY PLAN

Project	Description	Category
Expansion of Castroville Seawater Intrusion Project (CSIP)	Expand the use of recycled wastewater for irrigation, offsetting the need for groundwater and slowing seawater intrusion. Potential source waters include agricultural wash water from Salinas' industrial ponds, Salinas' stormwater, Reclamation Ditch, Tembladero Slough, Blanco Drain and Monterey stormwater. Wastewater from additional municipalities in the Salinas Valley would increase the amount of water available to CSIP.	Preferred
Destroy 8 Wells in the 180/400-Foot Aquifer Subbasin	Destroy the highest priority wells that threaten to allow seawater intrusion to move between aquifers. This will slow or eliminate seawater migration and intrusion into the 400-foot and deep aquifers.	
Pursue Destruction of Additional 134 wells	Destroy the longer list of wells that threaten to allow seawater intrusion to move between aquifers. This will slow or eliminate seawater migration and intrusion into the 400-foot and deep aquifers.	
Seawater Intrusion Barrier - Injection Wells	Push seawater intrusion towards the coast by injecting water into the 180- and 400-foot aquifers. A number of injection wells would be required; as well as sufficient water (recycled) to supply the injection wells.	
Seawater Intrusion Barrier - Extraction Wells	Pull seawater back towards the coast by extracting saline groundwater from the 180- and 400-foot aquifers. Extracted water would either be disposed of in the ocean or desalinated for potable/agricultural use.	Preferred
High river flow capture and injection at mouth of Salinas River	Capture Salinas River water immediately prior to entering ocean and inject it into the 180 and 400 foot aquifers to reduce seawater intrusion. The stormwater may need to be temporarily held in large storage ponds located near the coast before it can be injected.	
Stormwater Capture and Treatment (Municipal)	Municipal agencies build decentralized stormwater recharge projects that increase groundwater recharge instead of allowing stormwater to flow into the Salinas River.	
Stormwater Capture and Treatment (Agricultural and Industrial)	Agricultural and Industrial users build decentralized stormwater recharge projects that increase groundwater recharge instead of allowing stormwater to flow into the Salinas River. This could be set up similarly to Pajaro Valley Water Agency's "net metered recharge" program.	
Rain Collector Dry Wells	A variation on the preceding recharge projects using dry wells instead of recharge basins.	
Installation of Small River Bed infiltration Basins	Small basins adjacent to the Salinas river that slow or retain high river flows for improved infiltration	
Aquifer Storage & Recovery in Salinas Valley	Temporarily inject and store available water in aquifers, either seasonally or during wet years, and recover water during dry season or dry years. Source of water not identified.	
Recharge local runoff from the Eastside	Recharge local runoff from the Gabilan Range and divert it to groundwater recharge basin(s) before it reaches the Salinas River.	Preferred (Move to Alternative)
Inject Diverted Carmel River Water	Use an existing water right held by MPWMD on the Carmel River for 15,000 AF/yr., transport the water to the Salinas Valley, and inject the water into the Salinas valley subbasins for maintenance of groundwater levels, improvement of water quality, and prevention of further seawater intrusion.	Alternative
Use the Upper Portion of the 180/400-Foot Aquifer Subbasin for Seasonal Storage	Conventional groundwater extraction well facilities would be constructed in the upper (i.e., southern) portion of the 180/400-Foot Aquifer Subbasin to provide improved off-peak irrigation season groundwater storage and peak irrigation season supplemental water for supply and environmental needs.	Alternative
Surface spreading or direct injection of Water Right Permit 11043 using SVWP diversions	Use Water Right 11043 to supply recharge ponds or injection wells in the North County. Water would be conveyed from the two Salinas Valley Water Project diversions. A temporary water storage system may be needed prior to injection.	
Surface spreading or direct injection of Water Right Permit 11043 using an eastside conveyance system	Use Water Right 11043 to supply recharge ponds or injection wells in the North County during high winter flow conditions using a dedicated pipeline from San Antonio Reservoir to North County. A temporary water storage system may be needed prior to injection.	
Conjunctive Use Transfer	Build groundwater pumping and conveyance facilities in mid-valley to deliver groundwater to the East Side and 180/400-Foot Aquifer subbasins to offset coastal pumping and seawater intrusion.	
Other Conjunctive Use - Small-scale near-source diversions and blending of surface water.	Divert Salinas River water at a small scale at appropriate locations in the 180/400 Foot Aquifer subbasin to blend with groundwater, reducing groundwater pumping.	
Add dry season conveyance pipeline to reduce need for dry season river flow	A significant amount of dry season river flow is lost to non-native riparian vegeatation. This water loss could be eliminated if dry season flows were conveyed in a pipeline instead of in the river.	
Extract winter flows using Radial collector(s) and inject into 180- and 400-Foot Aquifers	Divert winter flows from the Salinas River using a radial collector and inject the water into the 180/400-Foot Aquifer Sub-basin for maintenance of groundwater levels, improvement of water quality, and prevention of further seawater intrusion.	Alternative (May move to Preferred)

Project	Description	Category
Interlake Connection and Regional Water Conservation Project - Interlake Water Tunnel & San Antonio Spillway Modification	Build a tunnel that diverts water from Nacimiento Reservoir to San Antonio Reservoir, capturing high Nacimiento flows. This project is forecast to deliver up to 21,000 acre-feet per year of new water. This water could be used for Salinas River stream maintenance, delivered in lieu of groundwater pumping, or be injected as a seawater intrusion barrier. Delivering this water in lieu of groundwater pumping will require integration with one of the conjunctive use projects listed above.	
Build Jerrett Dam	The Jerrett dam site is on the Nacimiento River, upstream of Nacimiento Reservoir, on Fort Hunter Liggett Military Reservation property. The dam could be constructed to impound 145,000 acre-feet of water that could be released to the Nacimiento Reservoir. This water could be used for Salinas River stream maintenance; delivered in lieu of groundwater pumping, or be injected as a seawater intrusion barrier. Delivering this water in lieu of groundwater pumping will require integration with one of the conjunctive use projects listed above.	
Arroyo Seco Dam	Construct a dam in the Arroyo Seco River Watershed creating additional surface water storage that could be used in lieu of groundwater pumping. Delivering this water in lieu of groundwater pumping will require integration with one of the conjunctive use projects listed above. Location of this dam and reservoir is unknown.	
Identify Additional Surface Water Storage/Recharge Sites throughout Valley	Create additional surface water storage and recharge locations, such as Carr Lake.	
Groundwater recharge of recycled water	Use recycled wastewater from Monterey One Water for surface spreading or direct injection in the 180/400-foot aquifers to replace groundwater pumping.	
Optimize CSIP	Automate irrigation systems in CSIP to irrigate based on availability rather than on demand. This ensures that all CSIP water is used when it is available.	Preferred
Seasonal storage of of M1W winter effluent	Build storage for treated effluent not used during wet weather to offset pumping in dry season.	
Modify Monterey One Water Recycled Water Plant	Under the M1W Recycled Water Plant Modifications Project, the SVRP will be improved to allow delivery of tertiary treated wastewater to the CSIP system when recycled water demand is less than 5 mgd.	Preferred
Capture of wastewater from River Road and Toro and Pipe to Hitchcock	Increase wastewater availability by connecting new sources to M1W	
Discontinue WWTP Effluent to Ocean: 100% Recycling of all effluent	Recycle 100% of effluent leaving M1W treatment plant for enhanced availability of recycled wastewater to reduce pumping.	
Winter potable reuse water injection	Treat additional secondary wastewater effluent through an expanded Advanced Water Purification Facility (AWPF) at M1W's RTP, and injecting it into the 180/400-foot aquifer subbasin for maintenance of groundwater levels, improvement of water quality, and prevention of further seawater intrusion.	Alternative
Arundo Eradication Phase III	Eradicating Arundo lessens evapotranspiration, leaving more water in the aquifers and the river. Phase III, funded by an additional grant from the Wildlife Conservation Board, will treat an additional 350 acres downstream of Phase II (King City to Soledad). The goal of the program is to eradicate Arundo within 20 years (~1500 acres over 90 miles of river).	Preferred
Arundo Eradication Additional Phases	Eradicating Arundo lessens evapotranspiration, leaving more water in the aquifers and the river. Eradicate Arundo within 20 years (~1500 acres over 90 miles of river). ~1550 acres remaining after Phase III (Soledad to Coast)	
Sedimentation Clearing and Channel Management	Maximize surface water conveyance by removing sediment buildup in the river channels.	
Study additional vegetation evapotranspiration mitigation opportunities	Require vegetation with lower water uptake for all projects.	
Monterey Peninsula Water Supply Project	Take advantage of the MPWSP slant well pumping to pull seawater intrusion back towards the coast.	
Deepwater Desalination	Slow seawater intrusion by replacing groundwater pumping with imported desalinated water. Potential to produce up to 25,000 acre-feet per year. Requires a pipeline from Moss Landing.	
Brackish Water Treatment for Wellheads	Desalinate brackish well water for irrigation, reducing fresh water pumping and allowing more fresh water to push the seawater intrusion front towards the coast. The source of brackish water is still to be determined.	
Desalinate water from the seawater barrier extraction wells	Treat water extracted from the seawater intrusion barrier and allow for its reinjection in the 180-Foot Aquifer and 400-Foot Aquifer	Alternative
Improve SRDF Diversion	The SRDF Diversion improvements include installing a radial collector well to provide additional diversion capacity at the SRDF. The project includes installing additional water storage for the proposed 85 cfs capacity of the SRDF.	Preferred
11043 Diversion Facilities	Construct extraction facilities at both diversion locations and pump the water to the eastside where the water can then be infiltrated into the groundwater basin at known pumping depressions.	Preferred

Project	Description	Category
Forebay/Upper Valley recharge enhancements using Water Right Permit 11043	Use Water Right 11043 for additional stream recharge or flood plain recharge in the unconfined aquifers of the Forebay and Upper Valley.	

APPENDIX 9C

SUMMARY OF PROJECT COST ESTIMATES

Capital and Annualized Costs
Summary Sheet
(Preliminary Cost Estimate)

	Project	Capital Cost	Annual O&M	Total Annualized Cost	Projected Yield (AF/yr.)	Unit Cost/AF
PP1	Invasive Species Eradication	$35,230,000	$325,000	$3,125,000	20,000	$160
PP2	Optimize CSIP Operations	$16,400,000	$200,000	$1,483,000	5,500	$270
PP3	Modify M1W - Winter Modifications	--	--	--	1,300	--
PP4	Expand Area Served By CSIP	$73,366,000	$480,000	$6,219,400	9,900	$630
PP5	Maximize Existing SRDF Diversion	$0	$2,538,600	$2,538,600	11,600	$220
PP6	Seawater Intrusion Pumping Barrier	$102,389,000	$9,776,400	$17,786,300	-30,000	$590
PP7	11043 Diversion Facilities Phase I: Chualar	$47,654,000	$2,296,000	$6,024,000	8,000	$750
PP8	11043 Diversion Facilities Phase II: Soledad	$60,578,000	$2,295,500	$7,034,500	8,000	$880
PP9	SRDF Winter Flow Injection	$51,191,000	$3,624,000	$7,629,000	12,900	$590
AP1	Desalinate Water from Extraction Wells	$341,472,000	$9,890,000	$36,603,400	15,000	$2,440
AP2	Recharge Local Runoff from Eastside Range	$30,049,500	$1,261,000	$3,611,800	3,500	$1,032
AP3	Winter Potable Reuse Water Injection	$35,300,000	$500,000	$3,261,500	2,250	$1,450
AP4	Seasonal Storage in the Upper 180/400-Foot A	$4,937,500	$723,000	$1,109,300	3,000	$370

General Assumptions

Markups

Plumbing Appurtenance Contingency	30%		
General Conditions	15%		
Contractor Overhead and Profit	15%		
Sales Tax	8.75%		
Engineering, Legal, Admininstrative, Co	30%		

General Unit Costs

Electrical Power Rate	0.15	$/kWh	
Labor Rate	100	$/hr	
Land Costs	$45,000	$/acre	
Pipeline Install Costs,<12"	$200	$/LF	Contractor (Garney) Bid, Construction of Feed Water Pipeline and Transfer Pipeline,
Pipeline Material Costs, 16" PVC	$60	$/LF	https://www.watersupplyproject.org/copy-
Pipeline Install Costs, 16" PVC	$130	$/LF	Contractor (Garney) Bid, Construction of Feed Water Pipeline and Transfer Pipeline, https://www.watersupplyproject.org/copy-
Pipeline Material Costs,>12"	$130	$/LF	
Pipeline Install Costs,>12"	$130	$/LF	
Pipeline Material Costs,36"	$130	$/LF	Contractor (Garney) Bid, Construction of Feed Water Pipeline and Transfer Pipeline, https://www.watersupplyproject.org/copy-
Pipeline Install Costs,36"	$320	$/LF	Contractor (Garney) Bid, Construction of Feed Water Pipeline and Transfer Pipeline, https://www.watersupplyproject.org/copy-
Concrete	$1,500	$/CY	
Monterey Pump Station No. 1	$2,527,325	$/Pump Sta	Contractor (Monterey Peninsual Engineerig) Bid, Construction of Feed Water Pipeline and Transfer Pipeline, https://www.watersupplyproject.org/copy-of-procure-archive
Valley Greens Pump Station	$1,898,100	$/Pump Sta	Contractor (Monterey Peninsual Engineerig) Bid, Construction of Feed Water Pipeline and Transfer Pipeline, https://www.watersupplyproject.org/copy-of-procure-archive

Capital and Annualized Costs
PP.1 Invasive Species Eradication
(Preliminary Cost Estimate)

SUMMARY					
Line No.	**Description**		**Units**		**Total**
1	Project Yield		acre-feet per year		20,000
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$35,230,000
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$2,800,000
7	Annual O&M Cost		$		$325,000
8	Total Annualized Cost		$		$3,125,000
9	Unit Cost		$/AF/yr.		$160
CAPITAL COSTS					
Line No.	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
10	Phase I - Initial Treatment	1800	Acres	$13,500	$24,300,000
11	Phase II - Re-Treatment	500	Acres	$5,500	$2,800,000
12	Phase III - On-Going Monitoring & Maintenance (See O&M)				$0
13	***Subtotal***				$27,100,000
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
14	Engineering, Legal, Admininstrative, Contingencies			30%	$8,130,000
15	***Total Capital Cost***				$35,230,000
OPERATIONS AND MAINTENANCE					
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
16	O&M Estmate	1	LS	$325,000	$325,000
17	***Total O&M Cost***				$325,000

NOTES:
1. "Project Yield" based on: Range of 6,000 to 36,000 AF, assumed an average of 20,000 AF
2. "Facility Life" selected based on 25-yr anticipated life of facilities.
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" based on: Phase I and Phase II.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annualized Capital Cost" based on facility life and interest rate.
7. "Annual O&M Cost" estimate based on average annual needs for on going monitoring and maintenance (checmical treatment every 3 to 5 years).

Capital and Annualized Costs
PP 2. Optimize CSIP Operations
(Preliminary Cost Estimate)

Line No.	Description		Units		Total
1	Project Yield		acre-feet per year		5,500
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$16,400,000
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$1,283,000
7	Annual O&M Cost		$		$200,000
8	Total Annualized Cost		$		$1,483,000
9	Unit Cost		$/AF/yr.		**$270**
CAPITAL COSTS					
Line No.	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
10	Hydraulic Modeling	1	EA	$0	$0
11	Irrigation Scheduling System	1	EA	$1,000,000	$1,000,000
12	Additional Storage Reservoirs, 75 AF	1	EA	$1,200,000	$1,200,000
13	Pipeline - 36" Turnout Into New Basin	400	LF	$400	$160,000
14	Pipeline - 51" Pipe from Basin to CSIP Distribution	6,200	LF	$600	$3,720,000
15	Pipeline - Unknown Size	5,000	LF	$500	$2,500,000
16	Land Cost	12.5	AC	$45,000	$562,500
17	***Subtotal***				$9,142,500
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
18	Plumbing Appurtenance Contingency			30%	$1,524,000
19	General Conditions			15%	$1,371,400
20	Contractor Overhead and Profit			15%	$1,371,400
21	Sales Tax			8.75%	$240,000
22	Engineering, Legal, Admininstrative, Contingencies			30%	$2,742,800
23	***Total Capital Cost***				$16,400,000
OPERATIONS AND MAINTENANCE					
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
24	Irrigation Scheduling System (I&	1	LS	$40,000	$40,000
25	Labor	1	LS	$115,200	$115,200
26	Contingency			30%	$46,600
27	***Total O&M Annual Cost***				$200,000

NOTES:
1. "Project Yield" based on: 3700 AFY from avoided well pumping, 11880 AFY from additional extraction from SRDF.
2. "Facility Life" selected based on 25-yr anticipated life of facilities.
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" does not include additional treatment costs.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annualized Capital Cost" based on facility life and interest rate.
7. "Annual O&M Cost" estimate does not include O&M cost for treatment components of project.
8. "Unit Cost" estimate does not include unit cost for treatment components of project.

Capital and Annualized Costs
PP3. Modify M1W Recycled Water Plant - Winter Modifications
(Preliminary Cost Estimate)

Line No.	Description		Units		Total
1	Project Yield		acre-feet per year		1,300
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$1,492,500
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$116,800
7	Annual O&M Cost		$		--
8	Total Annualized Cost		$		$116,800
9	**Unit Cost**		$/AF/yr.		**$90**
CAPITAL COSTS					
Line No.	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
10	Construction	1	LS	$1,194,000	$1,194,000
11	Design, CM, Proj Admin, Environmental Review (25% Construction)	1	LS	$298,500	$298,500
12	***Total Capital Cost***				$1,492,500

NOTES:
1. "Project Yield" based on: avoided wet weather groundwater pumping based on historical pumping records in the CSIP area.
2. "Facility Life" selected based on 25-yr anticipated life .
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" based on Raftelis, 2018. MCWRA New Source Water Supply Study, Final Report, September.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annual O&M Cost" based on marginal amount assumed in Raftelis, 2018. MCWRA New Source Water Supply Study, Final Report, September.
7. "Unit Cost" estimate does not include unit cost for treatment components of project.

Capital and Annualized Costs
PP 4. Expanded Area Served by CSIP
(Preliminary Cost Estimate)

Line No.	Description		Units		Total
1	Project Yield		acre-feet per year		9,900
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$73,366,000
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$5,739,400
7	Annual O&M Cost		$		$480,000
8	Total Annualized Cost		$		$6,219,400
9	Unit Cost		$/AF/yr.		**$630**
CAPITAL COSTS					
Line No.	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
10	Pipeline	68,640	LF	$500	$34,320,000
11	Booster Pump System, 5 MGD	3	EA	$34,139	$102,400
12	Turnouts	26	EA	$2,500	$65,000
13	Booster Station	2	EA	$1,500,000	$3,000,000
14	HDD	800	LF	$750	$600,000
15	***Subtotal***				$38,087,400
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
16	Plumbing Appurtenance Contingency			30%	$11,426,200
17	General Conditions			15%	$5,713,100
18	Contractor Overhead and Profit			15%	$5,713,100
19	Sales Tax			8.75%	$999,800
20	Engineering, Legal, Admininstrative, Contingencies			30%	$11,426,200
21	***Total Capital Cost***				$73,366,000
OPERATIONS AND MAINTENANCE					
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
22	Distribution System Maintenance	3500	Acre	$138	$480,000
22	***Total O&M Annual Cost***				$480,000

NOTES:
1. "Project Yield" based on: avoided wet weather groundwater pumping based on historical puming records.
2. "Facility Life" selected based on 25-yr anticipated life .
3. "Interest Rate" selected within expected range for public-financing options.
4. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
5. "Unit Cost" estimate does not include unit cost for treatment components of project.

Capital and Annualized Costs
PP 5. Maximize Existing SRDF Diversion
(Preliminary Cost Estimate)

Line No.	Description		Units		Total
1	Project Yield		acre-feet per year		11,600
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$0
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$0
7	Annual O&M Cost		$		$2,538,600
8	Total Annualized Cost		$		$2,538,600
9	**Unit Cost**		$/AF/yr.		**$220**
CAPITAL COSTS					
Line No.	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
OPERATIONS AND MAINTENANCE					
Line No.	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
10	SRDF Power	1	LS	$441,800	$441,800
11	Treatment Chemicals	1	LS	$155,800	$155,800
12	Treatment other O&M	1	LS	$224,600	$224,600
13	Labor (SRDF, Treatment, Basins)	1	LS	$710,400	$710,400
14	Equipment Repair & Replacement	1	LS	$213,100	$213,100
29	Miscellaneous Allowance	1	LS	$207,100	$207,100
30	Contingency			30%	$585,800
31	***Total O&M Cost***				$2,538,600

NOTES:
1. "Project Yield" based on: 49 cfs pumping 214 days per year at the SRDF with new radial collector well.
2. "Facility Life" selected based on 25-yr anticipated life of facilities.
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" includes additional treatment costs.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annualized Capital Cost" based on facility life and interest rate.

Capital and Annualized Costs
PP 6. Seawater Intrusion Pumping Barrier
(Preliminary Cost Estimate)

Line No.	Description		Units		Total
1	Project Yield		acre-feet per year		-30,000
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$102,389,000
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$8,009,900
7	Annual O&M Cost		$		$9,776,400
8	Total Annualized Cost		$		$17,786,300
9	**Unit Cost**		$/AFY		**$590**
CAPITAL COSTS					
Line No.	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
10	Well Construction	18	EA	$750,000	$13,500,000
11	Well Pumps and Motors	18	EA	$150,000	$2,700,000
12	Well Head Infrastructure	18	EA	$125,000	$2,250,000
13	Electrical and Instrumentation	1	EA	$3,500,000	$3,500,000
14	Piping (8" to 36")	44,000	LF	$600	$26,400,000
15	Rehab Outfall	1	LS	$2,500,000	$2,500,000
16	Land Access	18	25%	$187,500	$3,375,000
17	Total				$54,225,000
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
18	Plumbing Appurtenance Contingency			30%	$14,205,000
19	General Conditions			15%	$8,133,800
20	Contractor Overhead and Profit			15%	$8,133,800
21	Sales Tax			8.75%	$1,423,400
22	Engineering, Legal, Admininstrative, Contingencies			30%	$16,267,500
23	**Total**				$102,389,000
OPERATIONS AND MAINTENANCE					
Line No.	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
24	Power	1	LS	$2,652,590	$2,652,600
25	Equipment Repair & Replacement	1	LS	$1,366,200	$1,366,200
26	Operations Labor	1	LS	$3,324,420	$3,324,400
27	Miscellaneous	1	LS	$803,758	$803,800
28	Contingency			20%	$1,629,400
29	Total				$9,776,400

NOTES:
1. "Project Yield" based on: 1000 gpm/well, 22 wells, 365 days project operation (Jan - Dec), 100% project operational utilization.
2. "Facility Life" selected based on 25-yr anticipated life of extraction wells.
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" based on: construction $750,000/well, 22 wells, land acquisition at @25%, pumps & motors $150,000/well, wellhead infrastructure $125,000/well, electrical & instrumentation $3,500,000.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annualized Capital Cost" based on well facilities only; estimate does not include capital costs for conveyance and treatment components of project.
7. "Annual O&M Cost" based on well operations and maintenance only; estimate does not include O&M cost for conveyance and treatment components of project.
7. "Unit Cost" based on well facilities only; estimate does not include unit cost for conveyance and treatment components of project.

Capital and Annualized Costs
PP 7. 11043 Diversion Facilities Phase I: Chualar
(Preliminary Cost Estimate)

Line No.	Description		Units		Total
1	Project Yield		acre-feet per year		8,000
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$47,654,000
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$3,728,000
7	Annual O&M Cost		$		$2,296,000
8	Total Annualized Cost		$		$6,024,000
9	**Unit Cost**		$/AF/yr.		**$750**
CAPITAL COSTS					
Line No.	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
Phase I - Chualar Diversion					
10	Pipeline	23,750	LF	$720	$17,100,000
11	Radial Collector, Booster Pump System (27 MGD firm capacity)	4	EA	$65,000	$260,000
12	Radial Collector, Electrical and Controls	1	LS	$260,000	$260,000
13	Radial Collector, Concrete Structures and Laterals	1	LS	$5,119,000	$5,119,000
14	Infiltration Basins (including land costs)	1	EA	$2,000,000	$2,000,000
15	*Subtotal*				$24,739,000
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
16	Plumbing Appurtenance Contingency			30%	$7,421,700
17	General Conditions			15%	$3,710,900
18	Contractor Overhead and Profit			15%	$3,710,900
19	Sales Tax			8.75%	$649,400
20	Engineering, Legal, Admininstrative, Contingencies			30%	$7,421,700
21	***Total Capital Cost***				$47,654,000
OPERATIONS AND MAINTENANCE					
Line No.	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
22	Power	1	LS	$441,800	$441,800
23	Other O&M	1	LS	$224,600	$224,600
24	Labor (Diversion Facilities, Basins)	1	LS	$710,400	$710,400
25	Equipment Repair & Replacement	1	LS	$213,100	$213,100
29	Miscellaneous Allowance	1	LS	$175,900	$175,900
30	Contingency			30%	$529,700
31	***Total O&M Cost***				$2,296,000

NOTES:
1. "Project Yield" based on: 42 cfs pumping 120 days per year at both Chualar and Soledad with new radial collector well.
2. "Facility Life" selected based on 25-yr anticipated life of facilities.
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" includes additional treatment costs.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annualized Capital Cost" based on facility life and interest rate.
7. "Unit Cost" estimate includes unit cost for treatment components of project.

Capital and Annualized Costs
PP 8. 11043 Diversion Facilities Phase II: Soledad
(Preliminary Cost Estimate)

Line No.	Description		Units		Total
1	Project Yield		acre-feet per year		8,000
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$60,578,000
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$4,739,000
7	Annual O&M Cost		$		$2,295,500
8	Total Annualized Cost		$		$7,034,500
9	**Unit Cost**		$/AF/yr.		**$880**
CAPITAL COSTS					
Line No.	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
Phase II - Soledad Diversion					
10	Pipeline	31,680	LF	$720	$22,809,600
11	Radial Collector, Booster Pump System (27 MGD firm capacity)	4	EA	$65,000	$260,000
12	Radial Collector, Electrical and Controls	1	LS	$260,000	$260,000
13	Radial Collector, Concrete Structures and Laterals	1	LS	$5,119,000	$5,119,000
14	Infiltration Basins (including land costs)	1	EA	$3,000,000	$3,000,000
15	*Subtotal*				$31,448,600
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
16	Plumbing Appurtenance Contingency			30%	$9,434,600
17	General Conditions			15%	$4,717,300
18	Contractor Overhead and Profit			15%	$4,717,300
19	Sales Tax			8.75%	$825,500
20	Engineering, Legal, Admininstrative, Contingencies			30%	$9,434,600
21	***Total Capital Cost***				$60,578,000
OPERATIONS AND MAINTENANCE					
Line No.	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
22	Power	1	LS	$441,800	$441,800
23	Other O&M	1	LS	$224,600	$224,600
24	Labor (Diversion Facilities, Basins)	1	LS	$710,400	$710,400
25	Equipment Repair & Replacement	1	LS	$213,100	$213,100
29	Miscellaneous Allowance	1	LS	$175,900	$175,900
30	Contingency			30%	$529,700
31	***Total O&M Cost***				$2,295,500

NOTES:
1. "Project Yield" based on: 42 cfs pumping 120 days per year at both Chualar and Soledad with new radial collector well.
2. "Facility Life" selected based on 25-yr anticipated life of facilities.
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" includes additional treatment costs.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annualized Capital Cost" based on facility life and interest rate.
7. "Unit Cost" estimate includes unit cost for treatment components of project.

Capital and Annualized Costs
PP9 SRDF Winter Flow Injection
(Preliminary Cost Estimate)

Line No.	Description		Units		Total
1	Project Yield		acre-feet per year		12,900
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$51,191,000
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$4,005,000
7	Annual O&M Cost		$		$3,624,000
8	Total Annualized Cost		$		$7,629,000
9	**Unit Cost**		$/AF/yr.		**$590**
CAPITAL COSTS					
Line No.	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
10	Well Construction	16	EA	$618,340	$9,893,400
11	Well Pumps and Motors	16	EA	$150,000	$2,400,000
12	Well Head Infrastructure	16	EA	$125,000	$2,000,000
13	Electrical and Instrumentation	16	10%	$61,800	$988,800
14	Percolation Basins, Site Civil Work	16	25%	$154,600	$2,473,600
15	Land Access	16	25%	$154,600	$2,473,600
16	Distribution Pipeline (4 mile)	21,120	LF	$650	$13,728,000
17	***SubTotal***				$33,957,400
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
18	General Conditions			15%	$5,093,600
19	Contractor Overhead and Profit			18%	$6,112,300
20	Sales Tax			8.75%	$2,971,300
21	Engineering, Legal, Admininstrative, Contingencies			20%	$2,037,400
22	Bonds and Insurance			3%	$1,018,700
23	***Total Capital Cost***				$51,191,000
OPERATIONS AND MAINTENANCE					
Line No.	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
24	Power	1	LS	$1,152,800	$1,152,800
25	Equipment Repair & Replacement	1	LS	$1,188,000	$1,188,000
26	Operations Labor	1	LS	$211,200	$211,200
27	Miscellaneous	1	LS	$468,200	$468,200
28	Contingency			20%	$604,000
29	***Total O&M Annual Cost***				$3,624,000

NOTES:
1. "Project Yield" based on: 49 CFS radial collector (22,000 GPM) and 50% facility up time.
2. "Facility Life" selected based on 25-yr anticipated life of extraction wells.
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" based on: construction $750,000/well, 22 wells, land acquisition at @25%, pumps & motors $150,000/well, wellhead infrastructure $125,000/well, electrical & instrumentation $3,500,000.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annualized Capital Cost" based on well facilities only; estimate does not include capital costs for conveyance and treatment components of project.
7. "Annual O&M Cost" based on well operations and maintenance only; estimate does not include O&M cost for conveyance and treatment components of project.
7. "Unit Cost" based on well facilities only; estimate does not include unit cost for conveyance and treatment

Capital and Annualized Costs
AP 1. Desalinate Water from the Seawater Barrier Extraction Wells
(Preliminary Cost Estimate)

Line No.	Description		Units		Total
1	Project Yield		acre-feet per year		15,000
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$341,472,000
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$26,713,400
7	Annual O&M Cost		$		$9,890,000
8	Total Annualized Cost		$		$36,603,400
9	**Unit Cost**		$/AF/yr.		**$2,440**
CAPITAL COSTS					
Line No.	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
10	SWRO Facility	13	MGD	$14,000,000	$182,000,000
11	Source Water Pipeline	58,080	LF	$400	$23,232,000
12	Desalinated Water Pipeline	47,520	LF	$400	$19,008,000
13	Distribution Pump Station	13	MGD	$175,000	$2,275,000
14	***Subtotal***				$226,515,000
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
15	General Conditions			15%	$33,977,300
16	Contractor Overhead and Profit			18%	$40,772,700
17	Sales Tax			8.75%	$19,820,100
18	Engineering, Legal, Admininstrative, Contingencies			20%	$13,590,900
19	Bonds and Insurance			3%	$6,795,500
20	***Total Capital Cost***				$341,472,000
OPERATIONS AND MAINTENANCE					
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
21	Desalination O&M	9.3	MGD	$913,400	$8,494,600
22	Electrical power - distibution of	9300000	GPD	$0.15	$1,395,000
23	***Total O&M Annual Cost***				$9,890,000

NOTES:
1. "Facility Life" selected based on 25-yr anticipated life of extraction wells.
2. "Interest Rate" selected within expected range for public-financing options.

Capital and Annualized Costs
AP2. Recharge Local Runoff from Eastside Range
(Preliminary Cost Estimate)

Line No.	Description		Units		Total
1	Project Yield		acre-feet per year		3,500
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$30,049,500
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$2,350,800
7	Annual O&M Cost		$		$1,261,000
8	Total Annualized Cost		$		$3,611,800
9	**Unit Cost**		$/AF/yr.		**$1,032**
CAPITAL COSTS					
Line No.	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
10	Pipeline	10,000	LF	$720	$7,200,000
11	Infiltration Basins (including land costs)	8	EA	$650,000	$5,200,000
12	Diversion Facilities	8	LS	$400,000	$3,200,000
13	*Subtotal*				$15,600,000
Line No.	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
14	Plumbing Appurtenance Contingency			30%	$4,680,000
15	General Conditions			15%	$2,340,000
16	Contractor Overhead and Profit			15%	$2,340,000
17	Sales Tax			8.75%	$409,500
18	Engineering, Legal, Admininstrative, Contingencies			30%	$4,680,000
19	***Total Capital Cost***				$30,049,500
OPERATIONS AND MAINTENANCE					
Line No.	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
20	Other O&M	1	LS	$150,000	$150,000
21	Labor (Diversion Facilities, Basins)	8	LS	$100,000	$800,000
22	Equipment Repair & Replacement	1	LS	$20,000	$20,000
23	Contingency			30%	$291,000
24	***Total O&M Cost***				$1,261,000

NOTES:
1. "Project Yield" based on: average diversion available during a normal year.
2. "Facility Life" selected based on 25-yr anticipated life of facilities.
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" includes additional treatment costs.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annualized Capital Cost" based on facility life and interest rate.
7. "Unit Cost" estimate includes unit cost for treatment components of project.

Capital and Annualized Costs
AP 3. Winter Potable Reuse Water Injection
(Preliminary Cost Estimate)

Line No	Description		Units		Total
1	(Preliminary Cost Estimate)		acre-feet per year		2,250
2	Facility Life		years		25
3	PP 3. SRDF Radial Collector Project		%		6
4	Capital Cost		$		$35,300,000
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$2,761,500
7	Annual O&M Cost		$		$500,000
8	Total Annualized Cost		$		$3,261,500
9	Unit Cost		$/AF/yr.		$1,450
CAPITAL COSTS					
Line No	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
10	Injection Well Construction	6	EA	$618,300	$3,709,800
11	Injection Well Pumps and Motors	6	EA	$150,000	$900,000
12	Injection Well Head Infrastructure	6	EA	$125,000	$750,000
13	Electrical and Instrumentation	6	EA	$30,900	$185,400
14	Percolation Basins, Site Civil Work	9	EA	$154,600	$1,391,400
15	Land Access	22	EA	$77,300	$1,700,600
16	Distribution Pipeline (6 mile)	31,680	LF	$400	$12,672,000
17	***Subtotal***				$21,309,200
Line No	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
18	General Conditions			15%	$3,196,400
19	Contractor Overhead and Profit			15%	$3,196,400
20	Sales Tax			8.75%	$559,400
21	Engineering, Legal, Admininstrative, Contingencies			30%	$6,392,800
	Bonds and Insurance			3%	$639,300
22	***Total Capital Cost***				$35,300,000
OPERATIONS AND MAINTENANCE					
Line No	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
23	Power	1	LS	$3,700	$3,700
24	Equipment Repair & Replacer	1	LS	$324,000	$324,000
25	Operations Labor	1	LS	$24,000	$24,000
26	Miscellaneous	1	LS	$65,500	$65,500
27	Contingency			20%	$83,400
28	***Total O&M Annual Cost***				$500,000

NOTES:
1. "Project Yield" based on: Expanded PWM GWR Expanded project description.
2. "Facility Life" selected based on 25-yr anticipated life of extraction wells.
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" based on: construction $618,000/injection well, 6 wells, land acquisition at @25%, pumps & motors $150,000/well, wellhead infrastructure $125,000/well, electrical & instrumentation $3,500,000.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annualized Capital Cost" based on well facilities only; estimate does not include capital costs for conveyance and treatment components of project.
7. "Annual O&M Cost" based on well operations and maintenance only; estimate does not include O&M cost for conveyance and treatment components of project.
7. "Unit Cost" based on well facilities only; estimate does not include unit cost for conveyance and treatment components of project.

Capital and Annualized Costs
AP 4. Seasonal Storage in the Upper 180/400-Foot Aquifer Subbasin
(Preliminary Cost Estimate)

Line N	Description		Units		Total
1	Project Yield		acre-feet per year		3,000
2	Facility Life		years		25
3	Interest Rate		%		6
4	Capital Cost		$		$4,937,500
5	Cost Recovery Factor		--		0.078
6	Annualized Capital Cost		$		$386,300
7	Annual O&M Cost		$		$723,000
8	Total Annualized Cost		$		$1,109,300
9	**Unit Cost**		$/AF/yr.		**$370**
CAPITAL COSTS					
Line N	**Capital**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
10	Well Construction	3	EA	$750,000	$2,250,000
11	Well Pumps and Motors	3	EA	$200,000	$600,000
12	Well Head Infrastructure	3	EA	$125,000	$375,000
13	Electrical and Instrumentation	1	EA	$725,000	$725,000
14	Land Access	1	25%	$987,500	$987,500
15	***SubTotal***				$4,937,500
Line N	**Markups**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
16	General Conditions			15%	$740,600
17	Contractor Overhead and Profit			18%	$888,800
18	Sales Tax			8.75%	$142,600
19	Engineering, Legal, Admininstrative, Contingencies			20%	$987,500
20	Bonds and Insurance			3%	$148,100
24	***Total Capital Cost***				$7,845,000
OPERATIONS AND MAINTENANCE					
Line N	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
25	Electrical power	1	LS	$659,800	$659,800
26	Labor	1	LS	$28,800	$28,800
27	Other ancillary services, equip	1	LS	$34,400	$34,400
28	***Total O&M Annual Cost***				$723,000

NOTES:
1. "Project Yield" based on: 3700 AFY from avoided well pumping, 11880 AFY from additioanl extraction from SRDF.
2. "Facility Life" selected based on 25-yr anticipated life of extraction wells.
3. "Interest Rate" selected within expected range for public-financing options.
4. "Capital Cost" based on: detail below; does not include additional treatment costs.
5. "Cost Recovery Factor" based on anticipated Facility Life and Interest Rate.
6. "Annualized Capital Cost" based on detail below.
7. "Annual O&M Cost" based on well operations and maintenance only; estimate does not include O&M cost for treatment components of project.
7. "Unit Cost" estimate does not include unit cost for treatment components of project.

APPENDIX 9D: MODELING AND ANALYTICAL TOOLS FOR ANALYZING PROJECT BENEFITS

9D.1 Introduction

Chapter 9 of the GSP includes a set of projects and management actions designed to achieve and maintain sustainability in the 180/400-Foot Aquifer Subbasin over the SGMA implementation horizon. To assess the benefits of individual projects, and combinations of projects, to achieve sustainability, quantitative analyses were performed through simplified groundwater model simulations. These simulations included predicted climate change conditions with and without the proposed projects. In addition, a simplified analytical analysis was developed to evaluate the potential design for a seawater intrusion barrier and its capability to stop seawater intrusion.

A numerical groundwater flow model allows for a simplified mathematical representation of the subbasin. Estimated future flow conditions such as pumping rates and recharge rates are model inputs, and an estimate of the resulting groundwater levels and groundwater flow rates are the output from the model.

The purpose of the groundwater flow model analysis is to develop an estimate of the basin conditions after twenty years of GSP implementation for major projects identified in Chapter 9. Comparing model outputs from various future scenarios provides a means of estimating the project impacts on water levels and groundwater flow rates.

9D.2 Background

The groundwater flow model for simulating project impacts should ideally have the following characteristics:

- Model code should be open-source and publicly available
- Data to develop and calibrate the model should be readily available
- The model should have been calibrated to historical and current data

The USGS has been working closely with MCWRA and other stakeholders in the Salinas Valley since 2016 to develop the Salinas Valley Integrated Hydrologic Model (SVIHM) (MCWRA, 2017). The SVIHM is a combined groundwater and surface water flow model based on a publicly available MODFLOW model code. The SVIHM covers the entire Salinas Valley Groundwater Basin. As described by the USGS, the purpose of the SVIHM is tightly aligned with the numerical analysis needs of the GSP, including:

- Assessing water budgets, groundwater level elevations, and the extent of sweater intrusion,
- Assessing potential future conditions in the Salinas Valley, including analysis of future scenarios

The SVBGSA anticipated that the SVIHM would be the primary tool for developing water budgets and assessing project impacts for the 180/400-Foot Aquifer Subbasin GSP. The USGS and MCWRA both believed that the SVIHM model would be completed and available for the GSP, and the SVBGSA entered into an agreement with MCWRA and USGS to use the SVIHM model for GSP development. However, due to unforeseen circumstances, the SVIHM was not available for developing the180/400-Foot Aquifer Subbasin GSP. The USGS did provide a version of the SVIHM to estimate the future water budgets with climate change assumptions. However, this model was not available for assessing project impacts.

Because the SVIHM was not available, the SVBGSA developed a simpler modeling tool for assessing projects and actions. Although the SVIHM remains the preferred model for long-term use by the SVGSA for GSP implementation, the GSP deadline for the 180/400-Foot Aquifer Subbasin GSP required that an alternative model be developed quickly as a screening tool for purposes of assessing project benefits. This screening tool, referred to as the North Salinas Valley (NSV) Model, is a simplified alternative model that is limited to the northern portion of Salinas Valley, and is only intended to be an initial screening tool to evaluate certain individual and combined projects and actions on the 180/400-Foot Aquifer Subbasin.

When the SVIHM model is released for use by the USGS, the SVBGSA will use the SVIHM to confirm and reassess the water budgets and project benefits for the 180/400-Foot Aquifer Subbasin. The SVBGSA expects that the SVIHM will be available sufficiently in advance of the January 2022 deadline for the other Salinas Valley subbasin GSPs, and therefore the SVIHM model will be used develop the other subbasin GSPs and integrate the proposed projects in a valley-wide, programmatic approach.

9D.3 NSV Groundwater Model Description

Recognizing that the SVIHM will be used when it becomes available, the approach to developing the NSV model was to keep the model simple and to rely on previously developed models for the model input data.

The NSV Model uses the MODFLOW 2000 model code (Harbaugh et. al, 2000), a public domain finite-difference model code developed by the USGS that is widely used and well documented. The model was developed using the Visual MODFLOW graphical user interface (Waterloo Hydrologic, version 4.6.0.168) for ease of data manipulation and output visualization.

9D.3.1 Model Domain

Figure 9D-1 illustrates the model domain and the distribution of active cells in relation to the 180/400-Foot Aquifer Subbasin, other subbasins of the northern Salinas Valley, Monterey Bay, and the bounding mountains. Although the results of model simulations are only needed for the 180/400-Foot Aquifer Subbasin, the model was constructed across the entire valley width because some of the subbasin boundaries are transitional, or not easily defined hydrogeologic boundaries. Therefore, the model includes all of the Eastside, Langley, Monterey, and Seaside subbasins. A small strip of the Forebay subbasin is included to ensure that the entire southern boundary of the 180/400-Foot Subbasin is included in the model.

The finite difference grid varies in cell dimensions range from approximately 50 ft to 2,600 feet (Figure 9D-1).

9D.3.2 Model Layers

The NSV Model uses 8 model layers to represent the full aquifer thickness of the northern Salinas Valley. Figure 9D-2 shows a simplified diagram illustrating the model layers and the hydrostratigraphic layers they represent. Model layer 1 is used only to represent sea level in the area of Monterey Bay and is inactive through the rest of the model. Model layers 2, 4, 6, and 8 represent the Shallow water-bearing sediments, the 180-Foot Aquifer, the 400-Foot Aquifer, and Deep Aquifers respectively. Model layers 3, 5, and 7 represent the intervening aquitards between water bearing zones.

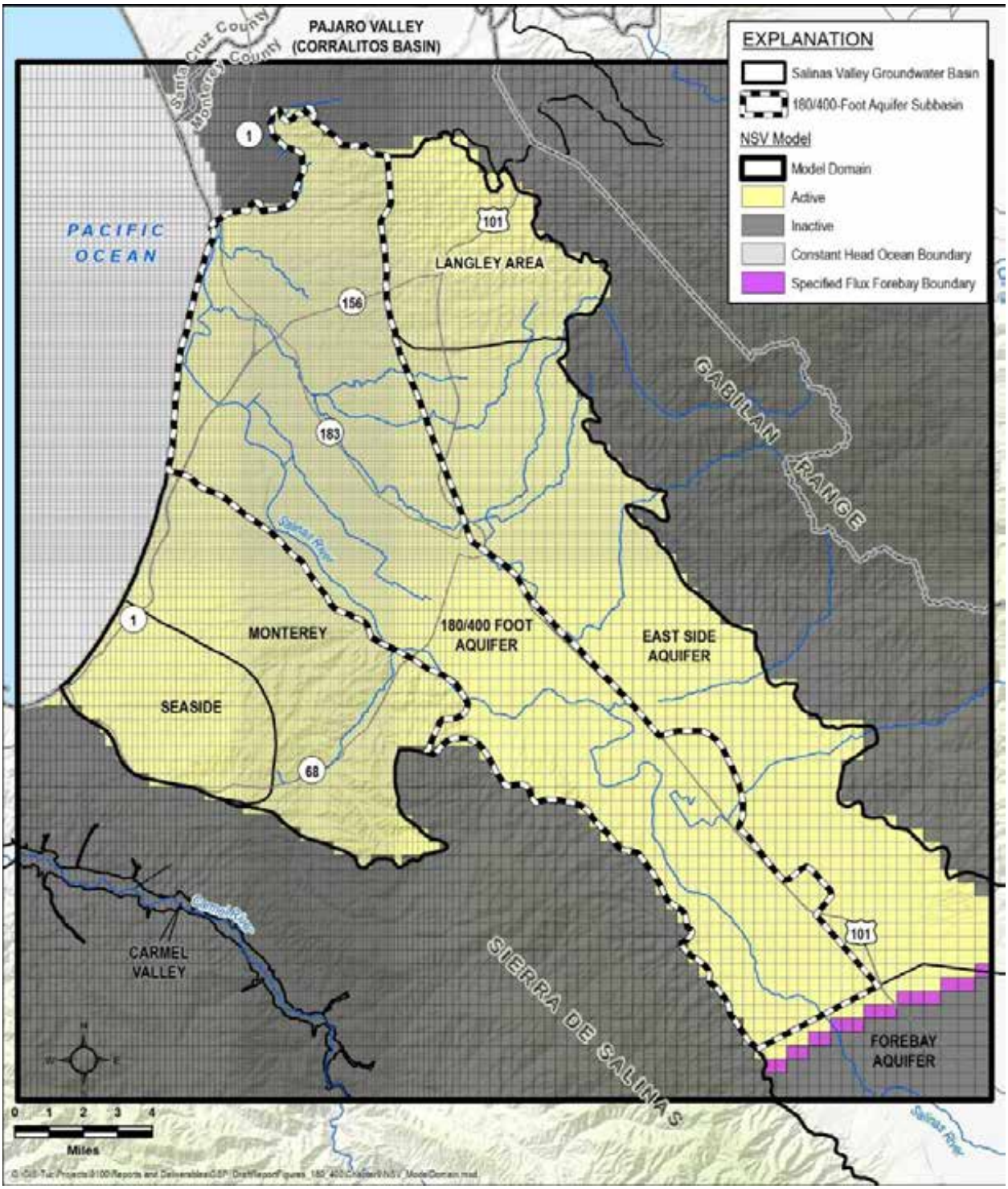
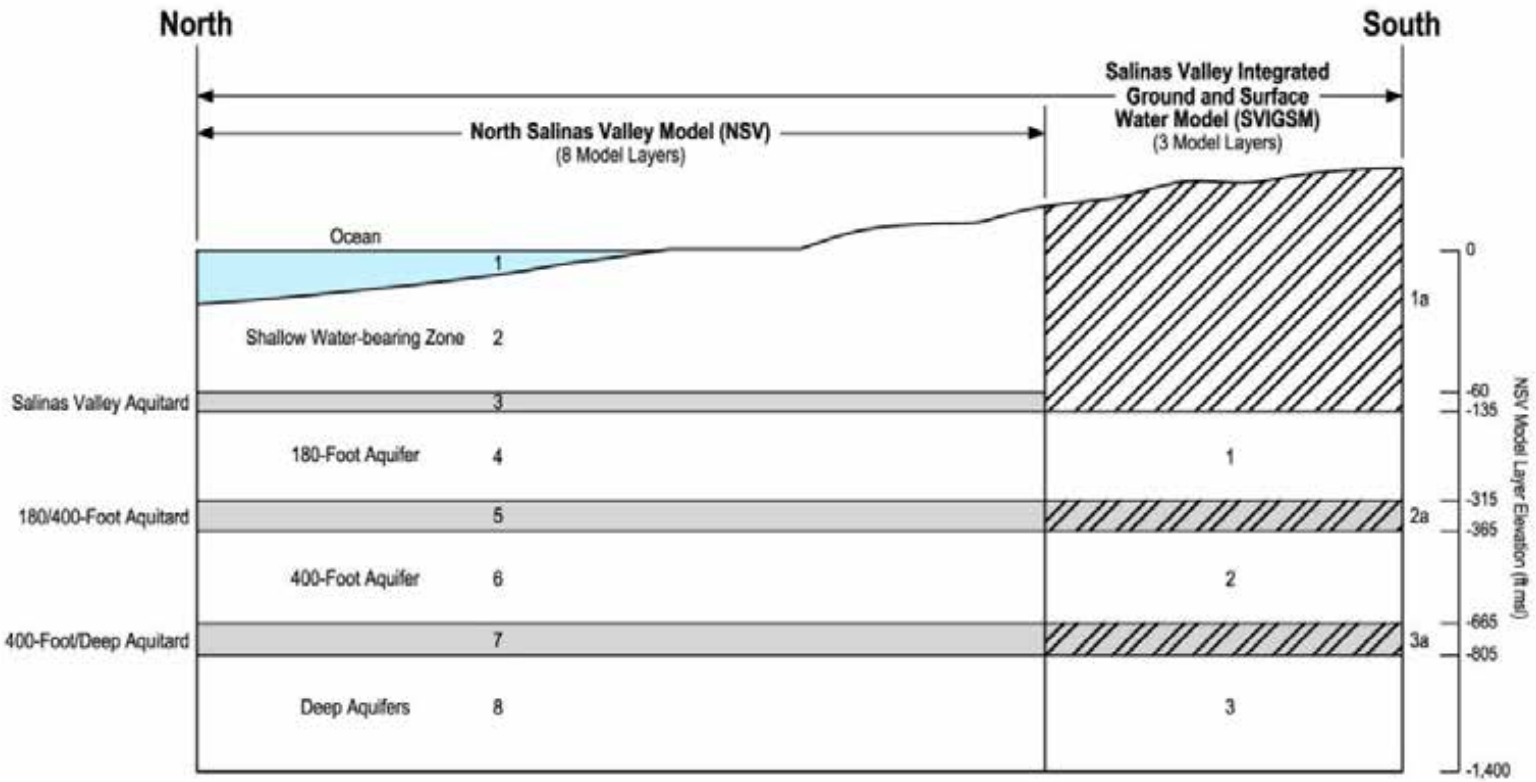


Figure 9D-1. NSV Model Domain and Boundary Conditions



Note: Numbers indicate model layer.
SVIGSM "a" model layers have the vertical hydraulic conductivity and thickness input into the model
Not drawn to scale

Figure 9D-2: Simplified Diagram of Model Hydrostratigraphic Layers (modified from Geoscience, 2015).

9D.3.3 Hydrogeologic Properties

The model layering and assigned material properties of the NSV model are based on the North Marina Groundwater Models (NMGWM) that were developed by Geoscience (2015) and Hydrofocus (2017) and the SVIGSM model that was updated by Luhdorff and Scalmanini Consulting Engineers (LSCE, 2015) for the Monterey Peninsula Water Project (Environmental Science Associates [ESA], 2015 and 2018). Table 9D-1 summarizes the hydraulic conductivity distribution in the NSV model.

Table 9D-1: NSV Model Hydraulic Conductivity Distribution

Layer	Location	Horizontal Hydraulic Conductivity (feet/day)	Vertical Hydraulic Conductivity (feet/day)
1	Ocean	100	100
2	Shallow Water-bearing Zone	25	0.65
3	Salinas Valley Aquitard	5	0.055
4	180-Foot Aquifer in the 180/400-Foot Aquifer Subbasin	100	0.45
4	180-Foot Aquifer in the East Side Subbasin	10	0.1
5	180/400-Foot Aquitard	7.5	0.075
6	400-Foot Aquifer in the 180/400-Foot Aquifer Subbasin	70	0.7
6	400-Foot Aquifer in the East Side Subbasin	15	1.5
7	400-Foot/Deep Aquitard	2.75	0.0275
8	Deep Aquifers – basin center	37.5	0.275
8	Deep Aquifers – basin margins	10	0.1
2,4,6, and 8	Border between 180/400-Foot Aquifer Subbasin and East Side Subbasin	1	0.1

9D.3.4 Model Boundaries

The model's boundary conditions are based on the hydrogeologic conceptual model for the 180/400-Foot Aquifer Subbasin and are illustrated in Figure 9D-1:

- The southern boundary of the model has a specified flow boundary in layers 4 and 6, representing the northern flow of groundwater from the Forebay Subbasin into the 180/400-Foot Aquifer and the East Side Subbasins. The groundwater flow across this

boundary was initially set at a constant annual rate based on average flows from the SVIHM future water budget. The groundwater was later adjusted to match observed water levels as described below.

- The eastern and western boundaries of the model are no-flow boundaries reflecting the negligible flow of groundwater into the basin from the mountain fronts.
- The northern boundary of the model corresponds to the coastline of Monterey Bay and is simulated by specifying a constant water level of 0.5 ft MSL for of the cells in model layer 1 over the Monterey Bay. The representation allows the seawater intrusion flux to be dependent on water levels in the groundwater basin.

The SVIHM includes internal boundaries that divide the model into subareas known to as farms. In this usage, the word farm does not necessarily imply a particular owner, crop type, or land use. Rather, the word farm is used to identify an area for which the model produces a unified water budget. The SVIHM includes 31 farms; 19 of those intersect the NSV model, as shown in Figure 9D-3. Farm ID 31 represents the Monterey Bay area within the model domain.

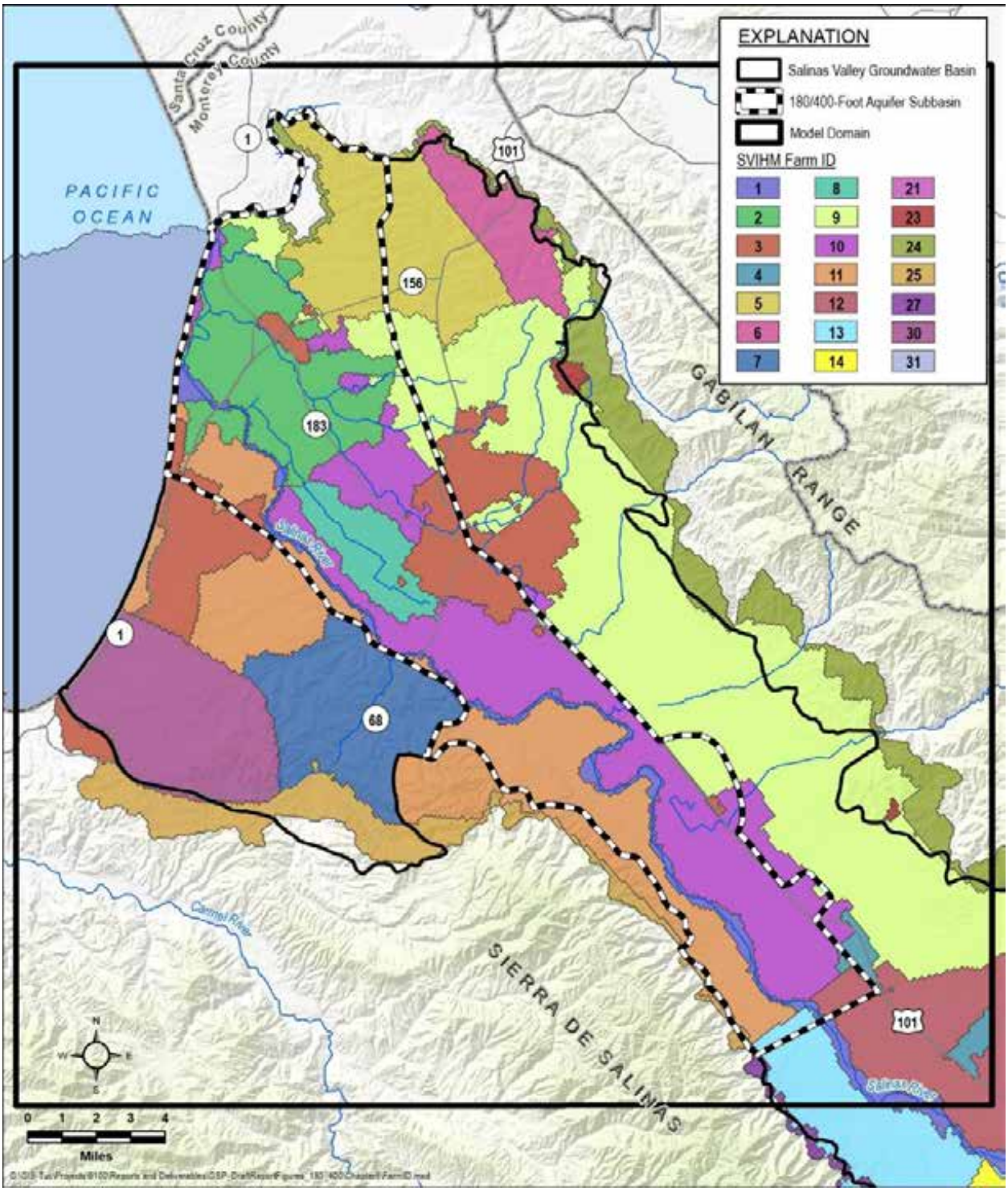


Figure 9D-3. Map View of Farm IDs Within the NSV Model

9D.3.5 Pumping and Recharge

Pumping and recharge values in the NSV model represent average projected baseline conditions. The distributions of pumping and recharge in the model were based on values exported from a version of the SVIHM operational model that incorporates estimated climate change adjustments for the year 2030. For the simplified NSV Model, all pumping and recharge was simulated as constant values reflecting the averages of the 47-year modeling period of SVIHM. Although SVIHM is not yet available for use in simulating the project benefits on a fully transient basis, the estimated pumping and recharge rates in SVIHM were considered the most applicable available estimates for use in the NSV model. The NSV model applies the average annual pumping and recharge rates to 50 annual stress periods representing 50 years of projected conditions.

Groundwater pumping rates were input to the model in two groups to differentiate agricultural and municipal pumping estimates:

- Agricultural pumping rates were estimated using the SVIHM model. This model uses the USGS Farm Package that generates net pumping rates per acre based on land use and crop type. Pumping per acre is specified for each farm ID. Figure 9D-3 illustrates the farm ID designations used in the model input.

- Specified individual municipal wells were input at specific locations and depths in the model with a specified pumping rate for each well based on historical pumping records. These wells are in addition to the groundwater pumping represented by the farm ID pumping, and represent the known pumping for urban use from both municipal and industrial sources.

- Domestic pumping estimates are considered negligible and are not included in the model.

Groundwater recharge was input to the model in two ways:

- The same farm ID designations used for input of pumping were used to specify average annual areal recharge rates per acre, with a specific value assigned to each farm ID based on land use. These recharge estimates were derived from SVIHM output. This recharge value represents the combined influences of precipitation, excess irrigation, and leaking pipelines.

- Salinas River recharge was specified as an averaged per acre value along the Salinas River riparian corridor. A total recharge rate of 70,000 AF/yr. was specified for the Salinas River, based on the average value estimated in SVIHM for the projected water budget. Farm ID 1 represents the riparian corridor and was used to input the river recharge rate into the model.

Table 9D-2 shows the average annual pumping and farm recharge rates by Farm ID.

Table 9D-2: Average Annual Pumping and Recharge Values by Farm ID

Farm ID	Municipal Pumping (AF/yr.)	Farm (agricultural) pumping (AF/yr.)	Farm Recharge (AF/yr.)
1	0	0	2,400
2	819	6,500	13,400
3	35,600	0	900
4	3,500	0	24
5	1,600	110	5,700
6	130	90	1,800
7	1,000	440	2,300
8	0	7,300	4,300
9	1,800	55,000	35,000
10	3,100	50,000	27,000
11	6,600	10,500	9,900
12	426	4,500	2,300
13	0	2,300	1,200
21	76	110	69
23	0	0	86
24	0	0	340
25	100	2	960
27	0	0	20
30	2,300	0	3,400
Total	57,200	136,400	111,800

Note: values are rounded to the nearest 100 AF/yr., and do not necessarily add up to the shown totals.

9D.3.6 Model Adjustments

After the model was constructed based on the NMGWM layering and material properties, and the pumping and recharge rates were input from the SVIHM, the model was run with starting water level conditions approximated to the water level contours of Fall 2017. Based on this initial model simulation, the groundwater flow entering the model at the southern boundary was adjusted to 10,000 AF/yr. so that the simulated water levels were approximately in equilibrium with the observed water levels. No other model calibration was performed.

9D.4 Projects and Actions Simulations

The NSV model was used to simulate the effects of potential projects on the Subbasin and develop quantitative estimates of the potential benefits of the projects. Although the GSP anticipates implementing multiple projects to achieve and maintain sustainability, the initial analysis of project benefits is performed on each project individually to assess relative benefits of each project. All of the CSIP improvement projects were combined into a single simulation.

The benefit of each project was estimated by comparing a project simulation to a baseline, no-project simulation and quantifying the differences in water levels and seawater intrusion rates due to the project. The baseline simulation was the same for all projects. Each project was then simulated with specific modifications to the recharge and pumping inputs to create a simple approximation of the project.

For each project, the potential benefit of the project was quantified by two metrics:

- Maps of the difference in water level between the project and baseline simulations
    - At a model simulation period of 20 years
    - Maps generated for each of the 180-ft and 400-ft aquifer model layers
- The difference in seawater intrusion between the project and baseline simulations
    - At a model simulation period of 20 years
    - Flux into the subbasin at the coastline using a zone budget analysis

Table 9D-3 summarizes the project simulations for each of the simulated projects.

Table 9D-3: Simulation of Project Benefits

	Simulated Project/Scenario	Simulation Approach
1	Invasive Species Eradication	Increase groundwater recharge by 12,000 AF/yr. in Farm ID 1 (riparian corridor)
2	All projects within current CSIP area	Turn off all groundwater pumping in Farm ID 2 (CSIP Area) – 7,300 AF/yr. (6,500 AF/yr. from agricultural and 820 AF/yr. from municipal pumping)
3	CSIP Expansion	Turn off all pumping in Farm ID 2 and Farm ID 8 (total of 14,600 AF/yr.)
5	Salinas River Diversion at Chualar (11043 Water Rights)	Inject 5,000 AF/yr. in the portion of Farm ID 3 (City of Salinas) that is in the East Side Subbasin
6	Salinas River Diversion at Soledad (11043 Water Rights)	Inject 5,000 AF/yr. in southern half of Farm ID 9 (East Side Subbasin)
7	SRDF Winter Injection	Inject 8,000 AF/yr. to Farm ID 10 (180/400-Ft Aquifer Subbasin) and 8,000 AF/yr. to portion of Farm ID 3 in the Monterey Subbasin

The anticipated CSIP expansion area for simulations 3 does not correspond to a specific Farm ID in the model. Farm ID 8 was used to simulate CSIP Expansion because it is in the approximately correct location in the basin and the total pumping rate of 7,300 AF/yr. is approximately equal to the anticipated impact of the CSIP Expansion project.

9D.5 Seawater Intrusion Barrier Evaluation

A seawater intrusion barrier could be designed to either to extract groundwater and produce a hydraulic trough that would intercept seawater intrusion, or to inject groundwater and produce a hydraulic mound that would block seawater intrusion. A barrier project would transect the 180/400-Ft Aquifer Subbasin and the Monterey Subbasin, with an estimated length of 8.5 miles and approximately 75% of the barrier within the 180/400-ft Aquifer Subbasin.

A full evaluation of the barrier sizing in consideration of other projects will require use of the full transient SVIHM model. For the initial estimation of barrier size and cost, the seawater intrusion barrier project was evaluated using analytical methods with the goal of estimating the well spacing and flow rates needed for a hydraulic barrier to prevent seawater intrusion.

The seawater intrusion barrier sizing was developed in the absence of any of the other future projects included in the GSP. The effect of the other projects would be to improve the water balance in the Subbasin and decrease the rate of seawater intrusion, thereby decreasing the flow required at the barrier.

An extraction barrier was evaluated using the analytical solution published by Javandel and Tsang (1987). This solution uses the ambient hydraulic gradient, aquifer transmissivity, and pumping rate per well to calculate the optimal distance for three or more wells on a line to prevent water from flowing between the wells. The hydraulic gradient is based on MCWRA Fall 2017 groundwater contours: 0.0006 in the 180-ft aquifer and 0.001 in the 400-ft aquifer. Transmissivity is based on values in the NSV model: 18,000 ft^2/day in the 180-ft Aquifer and 21,000 ft^2/day in the 400-ft Aquifer.

Using these input values, an 8.5-mile long barrier requires total extraction of approximately 30,000 AF/yr. to produce a trough that prevents flow of groundwater through the barrier. This would require extraction of approximately 22,500 AF/yr. from the 180/400-Ft Aquifer Subbasin, with 7,500 AF/yr. from the 180-ft aquifer and 15,000 AF/yr. from the 400-ft aquifer.

The extraction rate for each well is a function of the well spacing and can be adjusted to fit design requirements for the final barrier. For example, an extraction barrier with 9 wells spaced 5,000 feet apart would require approximately 700 gpm per well in the 180-ft aquifer and 1,400 gpm per well in the 400-ft aquifer. For a barrier with 22 wells spaced 2,000 feet apart, the rates per well would decrease to approximately 300 gpm in the 180-ft aquifer and 600 gpm in the 400-ft aquifer.

The injection barrier was evaluated using the Theis equation and the principle of superposition to estimate the height of mounding produced by a line of several injection wells. The Theis equation was used to estimate the height of hydraulic mounding as a function of distance from a single injection well and then the estimated mounding height at each distance along the barrier was estimated as the sum of the influences from all the wells in the barrier.

Input for this analysis required a designation of the height of the mounding, transmissivity, storage coefficient, pumping rate per well, and an estimated time to reach equilibrium conditions. The minimum mounding height was estimated to be 6.75 ft for the 180-Ft Aquifer and 13.75 ft for the 400-Ft Aquifer in order to compensate for seawater density and the depth of the aquifers below sea level. Transmissivity values of 18,000 ft^2/day for the 180-Foot Aquifer and 21,000 ft^2/day for the 400-Foot Aquifer, and storage coefficient of 0.003 are based on the NSV model. The time to equilibrium mounding was estimated as 30 days. Based on these input parameters and an 8.5-mile barrier with 9 wells (5,00-ft spacing), the estimated injection rate is approximately 46,000 AF/yr., with 34,500 AF/yr. of injection in the 180/400-ft Aquifer Subbasin; divided into 8,700 AF/yr. in the 180-Foot Aquifer and 25,500 AF/yr. in the 400-Foot Aquifer).

9D.6 References

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APPENDIX 11A
BOARD MEMBER ROSTER

LAST NAME	FIRST NAME	REPRESENTING	APPOINTING AUTHORITY	Appt./Reappt.
Brennan	Janet	Environmental Directors	Monterey County Board	3 yr. to 7/1/20
Lipe	Bill	Ag Interest, (Upper Valley)	Monterey County Board	3 yr. to 7/1/22
Stefani	Ron	Disadv. Comm./Public Water System	Castroville CSD	3 yr. to 7/1/22
Adcock	Tom	CPUC regulated representative	Salinas City Council	2 yr. to 7/1/21
McHatten	Michael	South County Cities	So. Co. City/City Selection SubComm. Nom.	3 yr to 7/1/22
Gunter	Joseph	Salinas	Salinas City Council	3 yr. to 7/1/20
McIntyre	Steve	Ag Interest (Forebay)	Monterey County Board	3 yr to 7/1/20
Alejo	Luis	Other GSA Eligible Entity**	Monterey County Board	3 yr to 7/1/20
Chapin Hodges	Caroline	Public Member	Monterey County (SVBGSA nominee)	3 yr. to 7/1/22
Pereira	Colby	Ag Interest (East Side/Langley)	Monterey County Board	3 yr. to 7/1/22
Secondo	Adam	Ag Interest (Pressure)	Monterey County Board	3 yr. to 7/1/20

* Following staggered terms, Directors serve 3 yr. terms, with exception of 2 yr. regular term for CPUC Water regulated company; JPA §6.3

**Not including cities of Salinas, Gonzales, Soledad, Greenfield or King City; nominated by Monterey County, Water Resources Agency, Monterey One Water

APPENDIX 11B
ADVISORY COMMITTEE ROSTER

Interest	Organization	Primary Alternate(s)
Agriculture	Driscoll Strawberry Associates	Emily Gardner Dennis Lebow
	Grower-Shipper Association of Central California	Abby Taylor-Silva
	Monterey County Farm Bureau	Norm Groot Kevin Piercy
	Monterey County Vintners & Growers	Kim Stemler
	Salinas Valley Sustainable Water Group	Chris Drew
	Salinas Valley Water Coalition	Nancy Isakson Steve McIntyre
County and City Governments	City of Salinas	Brian Frus
	City of Gonzales	Harold Wolgamott
	Monterey County	Charles McKee
Disadvantaged Communities and Housing	CHISPA	Alfred Diaz-Infante Paul Tran
	Environmental Justice Coalition for Water	Horacio Amezquita
Environmental	Environmental Caucus	Robin Lee Abigail Hart
	Environmental Caucus (2)	Beverly Bean
	Salinas River Channel Stream Maintenance Programs, River Management Unit Associates, Inc.	*Member pending Board approval*
Industrial	Chevron U.S.A.	Dallas Tubbs Jeff Johnson
Municipal Well Operators and PUC-Regulated Water Companies	Alco	Tom Adcock Adnen Chaabane
	Cal Water Service	Brenda Granillo Greg Williams Michael Bolzowski
Planning / Land Use	LandWatch	Tom Ward Janet Brennan
Rural Residential Well Owners	Rural Residential Well Owner, North County	Robert Burton
	Rural Residential Well Owner, South County	Bing Seid
Water Supply and Management	Castroville Community Service District *Note: Castroville is a disadvantaged community.*	Eric Tynan Ron Stefani
	Marina Coast Water District	Keith Van Der Maaten Patrick Breen Mike Wegley
	Monterey One Water	Mike McCullough
	Water Resources Agency	Howard Franklin
	Seaside Basin Watermaster, Technical Program Manager	Robert Jaques Jonathan Lear

APPENDIX 11C. LIST OF GOVERNANCE MEETINGS

Meeting	Date	Topic
Advisory Committee Regular Meeting	Nov 21, 2019 - 02:00 PM	Draft GSP 180-400 recommend approval to Board - Implementation Plan.
Board of Directors Regular Meeting	Nov 14, 2019 - 03:00 PM	Future palnning schedule for remaining GSP's
Board of Directors Regular Meeting	Oct 10, 2019 - 03:00 PM	Communication Plan Revisions - Marina Coordination Agreement
Executive Committee Regular Meeting	Sep 26, 2019 - 10:00 AM	MGSA Coordination Agreement- review of correspondance
Advisory Committee Regular Meeting	Sep 19, 2019 - 02:00 PM	MGSA Coordiantion Agreement
Board of Directors Regular Meeting	Sep 12, 2019 - 03:00 PM	Chapter 10 and 11 release to Public Review of CSIP projects
Executive Committee Regular Meeting	Aug 22, 2019 - 10:00 AM	MGSA Coordination Agreement
Advisory Committee Regular Meeting	Aug 15, 2019 - 02:00 PM	Chapter 10 and 11 recommend to Board for release
Board of Directors Regular Meeting	Aug 8, 2019 - 03:00 PM	Chapter 9, request County to Appoint Public Board Member
Planning Committee Regular Meeting	Aug 1, 2019 - 10:00 AM	Chapter 10 recommend to Board for release
Advisory Committee Regular Meeting	Jul 18, 2019 - 02:00 PM	Chapter 9 recommend Board to release
Board of Directors Regular Meeting	Jul 11, 2019 - 03:00 PM	Chapter 6 release to Public Arroyo Seco Presentation
Advisory Committee Regular Meeting	Jun 20, 2019 - 02:00 PM	Chapter 6 recommend Board to release
Board of Directors Special Meeting	Jun 10, 2019 - 01:00 PM	Chapter 8 recommend Board to release to public - IRWM Project Review
PLANNING COMMITTEE	Jun 6, 2019 - 10:00 AM	Chapter 6 recommend Board to release
Executive Committee Regular Meeting	May 23, 2019 - 10:00 AM	Recommend Coordination Committee with Monterey County Water Resources
Advisory Committee Regular Meeting	May 16, 2019 - 02:00 PM	Chapter 8 recommend Board to release to public - IRWM Project Review
Board of Directors Regular Meeting	May 9, 2019 - 03:00 PM	Chapter 7 release to Public.- Basin Boundary Modification Outcomes
PLANNING COMMITTEE SPECIAL MEETING	May 6, 2019 - 09:00 AM	Chapter 8 recommend Board to release to public
Planning Committee Regular Meeting	May 2, 2019 - 10:00 AM	Chapter 8 recommend Board to release to public
Executive Committee Regular Meeting	Apr 25, 2019 - 10:00 AM	Basin reprioritization update - update on Arroyo Seco/Greenfield negotiations
Advisory Committee Regular Meeting	Apr 18, 2019 - 02:00 PM	Chapter 7 release to Public.- Basin Boundary Modification Outcomes
Board of Directors Regular Meeting	Apr 11, 2019 - 03:00 PM	Budget Adoption
SVBGSA Planning Committee	Apr 4, 2019 - 10:00 AM	Chapter 7 release to advisory Committee
Executive Committee	Mar 28, 2019 - 10:00 AM	Budget Review
Board of Directors Regular Meeting	Mar 14, 2019 - 03:00 PM	Report
Advisory Committee Regular Meeting	Feb 21, 2019 - 02:00 PM	Chapter 5 release to advisory Committee - fee consdieration
Board of Directors Regular Meeting	Feb 14, 2019 - 03:00 PM	Fee Study - Hydrological Modeling
Executive Committee Regular Meeting	Jan 24, 2019 - 10:00 AM	Fee Study - Hydrological Modeling - Advisory Committee By laws update
Advisory Committee Regular Meeting	Jan 17, 2019 - 02:00 PM	Joint Meeting with Advisory Committee
Board of Directors Special Meeting	Jan 10, 2019 - 03:00 PM	Chapter 4 release to public TNC Presentation on GDE's
Advisory Committee Regular Meeting	Dec 20, 2018 - 02:00 PM	Chapter 4 to Board for reviews
Board of Directors	Dec 13, 2018 - 03:00 PM	Chapters 1-3 fro public Review - MCWD Agreement
SVBGSA PLANNING COMMITTEE REVISED AGENDA	Dec 6, 2018 - 10:00 AM	Chapter 4 to Advisory Committee for review
Advisory Committee	Nov 15, 2018 - 02:00 PM	Chapters 1-3 to Board - MCWD Agreement
SVBGSA Planning Committee	Nov 6, 2018 - 10:00 AM	Chapter 4 to Advisory Committee for review
Advisory Committee	Oct 18, 2018 - 02:00 PM	Fee Development approval - Setting GSP planning schedule
Board of Directors	Oct 11, 2018 - 03:00 PM	Planning dates, Consultant Contract - planning schedule
Executive Committee	Sep 27, 2018 - 10:00 AM	Fee Development approval - Setting GSP planning schedule
SVBGSA BOARD OF DIRECTORS AND ADVISORY COMMITTEE SPECIAL JOINT MEETING AGENDA AND SVBGSA BOARD OF DIRECTORS SPECIAL MEETING	Sep 13, 2018 - 02:00 PM	Joint meeting Board and Advisory agreement with WRA and USGSA
Executive Committee	Aug 23, 2018 - 10:00 AM	Agreement with WRA, Fee schedule, coortdination agreements
Advisory Committee	Aug 16, 2018 - 02:00 PM	Fee development
Board of Directors	Aug 9, 2018 - 03:00 PM	Report on Public Outreach for Sustainable Criteria
Advisory Committee	Jul 19, 2018 - 02:00 PM	Basin Boundary Modification
Board of Directors	Jul 12, 2018 - 03:00 PM	Interlake tunnel report, Advisory Committee appointments
Executive Committee	Jun 28, 2018 - 05:50 PM	Consultant agreement GSP planning process
Board of Directors	Jun 14, 2018 - 03:00 PM	Approval MOU with Water Resources Agency
Board of Directors	May 10, 2018 - 03:00 PM	Joint meeting Board and Advisory agreement with WRA
Board of Directors -Advisory Committee Joint Meeting	April 19, 2018 - 02:00 PM	Meeting with Planning Consultant set Directorn for GSP Development
Executive Committee	Mar 22, 2018 - 10:00 AM	Mar 8 2018 - 03:00 PM
Board of Directors	Mar 8 2018 - 03:00 PM	Consultant Agreement Status Reports Seawater Intrusion Update
Advisory Committee	Feb 15, 2018 - 02:00 PM	Water Bond Presentation Committee member confirmations
Board of Directors	Feb 8 2018 - 03:00 PM	Coordination Agreement Status Reports Seawater Intrusion Update
Advisory Committee	Jan 18, 2018 - 02:00 PM	Mar 8 2018 - 03:00 PM
Board of Directors	Jan 11, 2018 - 03:00 PM	DWR Presentation Brown Act Education
Board of Directors	Dec 14.2017 - 4:00 PM	Seawater Intrusion Report RFQ for consultant to prepare plan

APPENDIX 11D

ISSUES ASSESSMENT

Consensus Building Institute

Sustainable Groundwater Management Act Implementation

Salinas Valley Groundwater Stakeholder Issue Assessment

Developed by Senior Mediators Gina Bartlett and Bennett Brooks, Consensus Building Institute
February 29, 2016

Executive Summary

In fall 2015, the Consensus Building Institute, a neutral nonprofit that helps groups collaborate, conducted a stakeholder issue assessment on forming a groundwater sustainability agency in the Salinas Valley Basin. California's Sustainable Groundwater Management Act requires that the basin identify an agency or group of agencies to oversee groundwater management by 2017 and then develop a plan to manage groundwater by 2020. CBI's role is to *help facilitate* local decision-making, recommending and leading a process that brings together all affected parties in productive dialogue, on forming the groundwater sustainability agency (GSA).

To understand and reflect the range of perspectives and to develop recommendations for the process to form a GSA, CBI conducted 35 in-depth interviews and received 86 individual surveys from a range of stakeholder interests in the Salinas Valley, including governmental (cities and counties), water agencies, agriculture, disadvantaged communities, environmental, business, and community representatives. Given the importance of groundwater in the region's water supply and economy, CBI's methodology is grounded in three core principles: (1) being comprehensive in soliciting input from the range of potentially impacted stakeholders; (2) being transparent in the nature of the feedback and recommendations provided; and (3) drawing on CBI experience and best practices to recommend an approach likely to foster effective and inclusive deliberations. This report presents CBI's assessment findings and recommendations for a transparent, inclusive process on forming a GSA in the Salinas Valley.

Findings

Findings reflect a range of feedback on GSA formation, the process, challenges, and critical issues. In brief, stakeholders articulate:

- Groundwater supply is high stakes; everyone recognizes the importance of forming the GSA successfully.

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- Interviewees cannot identify any one organization as a likely candidate to serve as the GSA. Many envision multiple organizations coming together under a Joint Power Authority to form a singular GSA.
- The GSA must have the trust of all the interested parties and the technical expertise to develop the plan. The GSA should draw on existing data and studies wherever possible.
- Stakeholders strongly support inclusivity and diversity to build success in the process. Fairly representing all interests would support creating a shared framework of mutual benefit.
- Given that agriculture is the primary economic driver in the area, stakeholders recommend that agriculture have a significant voice in governance and decision-making on GSA formation, yet balancing that voice with urban, cities, county, and other interests.
- Many recognize the need to act to avoid both undesirable results and state intervention.
- Interviewees readily talk about historic tensions and sources of distrust in the region that the process must manage.
- Critical issues are tied to land use and small communities losing water supply because of poor water quality.
- "The Valley is innovative and progressive – it moves ahead to address problems." While interviewees define and view groundwater supply quite differently, everyone concurs that a range of stakeholders must agree on the GSA.

Consensus Building Institute Process Recommendations

Create a Transparent, Inclusive Collaborative Process for Groundwater Sustainability Agency Formation

Stakeholders are broadly unified on several core aspects related to a process for identifying a GSA. It must be transparent. It must be inclusive. It must be accompanied by broad outreach. And it should draw on the best available data.

Convene a Groundwater Stakeholder Forum and Collaborative Work Group

The Groundwater Stakeholder Forum would be a periodic public forum with a range of interests participating that advises on GSA formation. The forum's role would be to shape the overall process. Forum membership would encompass all stakeholders who are interested in groundwater and must be considered under SGMA. The Collaborative Work Group would develop consensus on the proposed GSA structure and recommend adoption by the GSA-eligible agencies. The work group would be a representative body with a focused number of participants (12-20) representing the interests of GSA-eligible agencies and groundwater users. CBI would work with interest groups to identify work group participants. The work group would develop detailed proposals and meet regularly with the Groundwater Stakeholder Forum to share ideas and solicit feedback on proposals. The work group would commit to incorporating forum feedback to the greatest degree possible. The work group could also form ad hoc committees to carry out detailed work. For example, CBI would recommend forming an engagement committee to develop the public engagement plan and a technical committee to begin to prepare for plan development.

Confirm Work Plan
The forum and the work group would have a decision-making work plan to outline its discussion topics. Between February and November 2016, these bodies would work diligently to develop a proposal for GSA formation. These conversations would be punctuated by public engagement activities. In winter 2016/17, the Collaborative Work Group would consult with agency governing boards and the public on the proposals. In spring 2017, the forum and work group would refine the GSA structure based on those consultations. Once the GSA structure was set, the responsible entities forming the GSA would issue public notice and hold a public hearing by spring 2017 before notifying the state in advance of the June 2017 deadline.

Design and Implement a Public Engagement Plan
Given the paramount importance and level of interest in groundwater in the Salinas Valley, CBI would recommend designing and implementing a public engagement plan and suite of activities to create transparency and information about GSA formation for the general public, translating materials and creating radio spots to reach Spanish-speaking communities.

Conclusion
The overarching goal of this effort would be to reach widespread support on forming the groundwater sustainability agency for the Salinas Valley and complying successfully with the Sustainable Groundwater Management Act. The keys to success are creating a transparent, inclusive process that engages interested stakeholders, designing a governance structure that balances interests, supports a vibrant economy, manages groundwater sustainably, and meets SGMA requirements. A viable and broadly supported GSA is the essential first step towards long-term sustainable groundwater management.

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Part 1: Assessment Findings

California's recently passed historic groundwater management legislation requires that groundwater be managed locally to ensure it can be a sustainable resource well into the future.

The legislation, known as the Sustainable Groundwater Management Act, prioritizes groundwater basins in significant overdraft including the Salinas Valley to move forward first. SGMA requires that such areas first identify an agency or group of agencies to oversee groundwater management by 2017 and then develop a plan to manage groundwater use by 2020.

The Consensus Building Institute (CBI) is a neutral non-profit that helps groups engage collaboratively on a wide range of issues. A consortium of interests[1] in the Salinas Valley asked CBI to help all interested parties in the region to address the legislation's initial mandate to form a Groundwater Sustainability Agency (GSA) by June 2017.

This report represents the first step in CBI's work on this effort: an in-depth assessment of stakeholder perspectives on the range of issues and opportunities tied to establishing a GSA. This report presents CBI's assessment findings and recommendations for a transparent, inclusive process on forming a GSA in the Salinas Valley. The report is presented in the following sections:

- ***Approach,*** summarizing CBI's methodology to conduct the assessment
- ***SGMA Context,*** providing a brief scan of the legislation, project impetus, and objectives
- ***Findings,*** presenting findings based on a series of interviews and surveys and a review of relevant background material
- ***Recommendations,*** putting forward a series of process design and decision-making recommendations related to GSA formation.

It is important to note that CBI's role is to *help facilitate* local decision-making on this critical issue, recommending and leading a process that brings all affected parties together in a productive dialogue. The ultimate decision on GSA structure is to be determined entirely at the local level.

Approach

CBI's assessment is intended to understand and then reflect to interested parties the range of perspectives and possible process approaches being considered by stakeholders potentially affected by implementation of the Sustainable Groundwater Management Act (SGMA) in the Salinas Valley.

[1] Consortium members comprised the representatives of the cities, Monterey County, Farm Bureau, Grower Shipper Association, Salinas Valley Water Coalition and Water Resources. Agency. The Consortium was formed solely to jump-start the process by hiring an impartial facilitator. CBI will work with a broad cross-set of interests including agriculture, cities and NGOs to manage the process moving forward.

Given the critical role groundwater plays in the region's water supply and economy and the potential impacts of any change in how groundwater is managed, CBI's methodology is grounded in three core principles: (1) being comprehensive in soliciting input from the range of potentially impacted stakeholders; (2) being transparent in the nature of the feedback and recommendations provided; and (3) drawing on CBI experience and best practices to recommend an approach likely to foster effective and inclusive deliberations.

The findings included in this report are drawn from a wide range of discussions and feedback with Salinas Valley stakeholders. CBI gathered this feedback in two primary ways:

- ***In-depth interviews.*** CBI Senior Mediators Gina Bartlett and Bennett Brooks conducted 35 in-depth interviews with 47 individuals that included cities; agriculture, environmental, and land use groups; water agencies and suppliers; individuals working with disadvantaged communities; and elected officials. Interviewees were confidential (to foster candor) and were conducted either in-person or by phone. (A list of those interviewed as part of the formal assessment process, as well as the interview protocol, is included as an appendix.)

- ***Broad-based survey.*** Given the importance of this topic and to ensure all stakeholders had an opportunity to inform this initial report, CBI also conducted a survey, available online and via email. CBI worked with a range of individuals and entities in the Salinas Valley to invite widespread participation. CBI received 86 individual survey responses. (A copy of the survey is included in the appendix.)

CBI initially worked with the consortium to identify a preliminary stakeholder list. In the initial round, CBI concentrated on interviewing representatives of the local public agencies eligible to serve as the GSA and key interested parties. Once interviews began, participants recommended other stakeholders for the assessment process, many of whom CBI then interviewed. This incremental process continued until Gina and Bennett began to hear similar information with no significant new information put forth. In addition, Gina and Bennett held brief conversations with other interested parties who contacted them or expressed interest in learning more about the process.

Both the interviews and survey focused on a common set of questions intended to provide feedback on the following broad topics: interests, issues, and challenges related to groundwater management; perspectives on GSA formation and structure; and guidance related to process structure and stakeholder involvement. In addition, CBI reviewed background materials related to both SGMA and Salinas Valley groundwater management.

After preparing this report, CBI invited interview participants to review the draft findings and provide feedback to ensure accuracy. CBI will also present the draft findings and recommendations at a public workshop in January. After this, CBI will finalize the report and its recommendations.

Please note that CBI did not attempt to independently validate the claims or concerns of the interviewees or survey respondents. Rather, this report seeks to summarize the range of views, ideas, and concerns expressed. Additionally, this brief report cannot do justice to the deep knowledge, experience, and nuances of the many stakeholders interviewed. Rather, the report tries to reflect back key themes and concerns that help shape the way forward. CBI has sought to present these findings, in our role as a neutral facilitator, as accurately and fairly as possible. Any errors or omissions are the sole responsibility of CBI.

SGMA Context

The Sustainable Groundwater Management Act is a package of three bills (AB 1739, SB 1168, and SB 1319) that provides local agencies with a framework for managing groundwater basins in a sustainable manner. The State has prioritized 127 basins in the state that must comply with SGMA, including the Salinas Valley basin's eight sub-basins. The California Department of Water Resources Bulletin 118 is a report that defines the basin boundaries. Basins that must comply with SGMA have to meet several critical deadlines.

Form a Groundwater Sustainability Agency by June 30, 2017

A local agency, combination of local agencies, or county may establish a GSA. Under SGMA, local agencies with water supply, water management, or land use responsibilities are eligible to form GSAs. A water corporation regulated by the Public Utilities Commission or a mutual water company may participate in a groundwater sustainability agency through a memorandum of agreement or other legal agreement. The GSA is responsible for developing and implementing a groundwater sustainability plan that considers all beneficial uses and users of groundwater in the basin.

A GSA must cover all portions of the basin. The county is responsible for representing the unincorporated areas. Each GSA-eligible agency could form its own GSA; however, DWR will not recognize GSAs with overlapping areas. GSAs with overlap must eliminate overlap to be recognized by the state. If more than one GSA is formed in the Salinas Valley Basin, they would require a coordination agreement.

Develop a Groundwater Sustainability Plan by 2020 or 2022

GSAs must develop a groundwater sustainability plan with measurable objectives and milestones that ensure sustainability. A priority basin must have single plan or multiple coordinated plans. The Salinas Valley sub-basin has areas deemed in critical condition. Basins in critical condition must develop plans by Jan. 31, 2020. Priority basins that are not in critical condition have until Jan. 31, 2022, to develop plans.

Achieve Sustainability in 20 years

SGMA requires basins to achieve sustainability in 20 years. Sustainability is defined as avoiding undesirable results, including significant and unreasonable chronic lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence, and depletion of interconnected surface waters.

State Backstop or Intervention
If a local agency is not managing the groundwater sustainably, SGMA directs the State Water Resources Control Board to intervene to manage the basin until a local agency is able to do so. SGMA calls for State Water Board intervention when a basin fails to meet the stated deadlines.

GSA-Eligible Agencies in the Salinas Valley Basin
A number of local public agencies are eligible to form a GSA in the Salinas Valley. California Water Code 10723.6 stipulates that a combination of local agencies may form a GSA by a joint powers agreement, a memorandum of agreement or other legal agreement. A water corporation regulated by the Public Utilities Commission or a mutual water company may participate in a groundwater sustainability agency though a memorandum of agreement or other legal agreement. Staff will identify the complete list GSA eligible agencies, including PUC-regulated and mutual water companies early in the process. Below is a partial list of agencies that are eligible in the Salinas Valley Basin.

Monterey County
San Luis Obispo County

City of Gonzales
City of Greenfield
City of King
City of Marina
City of Paso Robles
City of Salinas
City of Soledad

Castroville Water Community Service District
Marina Coast Water District
Monterey County Water Resources Agency
Monterey Peninsula Water Management District
San Ardo Water District
San Lucas Water District

Alco Water
California Water Service

Findings
The following summarizes findings from interviews and surveys conducted by the Consensus Building Institute.

GSA Formation
Groundwater supply is high stakes; everyone recognizes the importance of forming the GSA successfully. The people of the Salinas Valley rely almost solely on groundwater for their water supply and livelihoods. Interviewees articulate that sustainability will require a long-term approach: the region needs a continuous source of drinking water for communities and individual well owners. Significant agricultural production in the Valley and tourism in the Peninsula shape the economy and create a complex interdependence between production and business and water for people's daily lives, including the cities and communities that house workers essential to the region's prosperity. While interviewees define and view groundwater supply problems quite differently, everyone concurs that a range of stakeholders must agree on the groundwater sustainability agency. "Fairness and trust are the key to whatever comes out of this process."

"Our primary concern is to maintain the economic driver by managing on a sustainable basis."

No clear candidate exists for the GSA. Interviewees cannot identify any one organization as a likely candidate to serve as the GSA. One person outlined two options: a single GSA for the entire basin or multiple GSAs organized by sub-basin, suggesting that the latter might better manage the varied conditions in each sub-basin. Many anticipate that some type of Joint Powers Authority, merging the responsibilities of existing agencies, may be likely. Suggested examples are the county, one or more cities, and agriculture representatives with some type of advisory body that is inclusive of smaller water systems, domestic well owners, or the general public. One person suggested one vote per acre-owned, and another urged that the GSA avoid duplicating existing processes when possible. Also, most interviewees envision one GSA in the basin in Monterey County. At least one person suggests that one GSA cover the Salinas Valley Basin in both counties. (Many anticipate that the Paso Robles sub-basin would be split at the county line with a separate GSA forming for the San Luis Obispo County portion.) However, no one configuration or entity emerged through the interview process.

"We need an entity that has knowledge to be the GSA and trust of all the interested parties, and the technical expertise to develop the plan." Stakeholders urge that the GSA must rely on science, constructively regulate, and wisely and fairly navigate water supply politics. Interviewees recommend a process based on scientific information and a governance structure that reflects this understanding. Participants would like to see a GSA with a formal regulatory structure with repercussions for failure to abide by agreements. Most recognize that the GSA will need the power and structure to be able to regulate toward sustainability, including levying fees for projects. They would like to see a GSA that can identify and implement management decisions that would achieve sustainability and provide the ability to measure success. Questions that stakeholders recommend for consideration in forming the GSA include: How do we get better knowledge of basin functions? What projects are currently operating and anticipated in the future? What has worked or failed in other areas? How will funding be set up? What fees would the GSA charge?

"The worst situation would be if the GSA is formed without proper internal capacity to carry out its required functions."

Surveys mentioned the need for skilled staff and adequate funding for success. "It will take a skilled director to run the GSA." Interviewees suggest that GSA staff will need to exercise strong leadership and knowledge of water and politics. The GSA would need hydrologists and geo-morphologists. Interviewees suggest that the GSA should be balanced and represent the range of stakeholders in the Salinas Valley Basin. Others counter that stakeholder consensus has not worked so allowing independent experts to make decisions would be preferable. The Monterey Regional Pollution Control Agency is a model that the GSA might replicate. Interviewees suggest that it found a way to balance urban and rural interests.

"The Water Resources Agency acting alone as a GSA would probably not balance agricultural interests with urban, that's why some organizations were hesitant about WRA becoming the GSA." WRA is often mentioned as a likely GSA candidate because its service area overlies the basin, and it manages many water supply projects. However, most interviewees think that WRA needs to *participate in* rather than *serve as* the GSA. Stakeholders' reasons vary: many feel that agricultural interests are dominant, that the cities have no direct representation, and that representing diverse interests at WRA would be difficult; changing WRA's legislative intent to serve as the GSA would be arduous; and shifting WRA to a regulatory role might erode stakeholder trust.

Given that agriculture is the primary economic driver in the area, most interviewees feel that agriculture needs to have a "big voice" in governance. Most concur that balancing the importance of agriculture with all the other interests in governance is critical. Agriculture is clearly recognized as the primary economic driver; it uses "most of the water and will foot much of the bill for any changes needed to manage groundwater sustainably." Interviewees understand that others need representation as well, specifically, the cities, city water suppliers (which are California Public Utilities Commission-regulated water corporations), rural residential well owners, and small mutual water companies. Interviewees articulate the inter-connected nature and need for comprehensive water management because the cities provide the homes for agricultural workers and hospitality workers in the Peninsula. The City of Salinas has a number of residents that rely on jobs in the hospitality industry in the Peninsula. The City sees a direct line between those jobs and the corresponding revenue and supporting successful regional water management.

"Agriculture is going to be focusing in on their needs with 90% of the use in the basin. It's a big majority that you have to listen to. But it doesn't work for the 90% to pump and not be mindful of the impact on the 10%."

Interviewees express fear about achieving balance in decision-making. They express concern about the urban population "outvoting" agricultural interests, and agricultural interests using political power to "outvote" the cities.
Interviewees articulate a strong recognition of inter-dependence and recommend the following considerations for governance:

- Ensure agricultural interests have a significant voice in the dialogue, but balance that voice with urban, cities, county, and other interests
- Represent the major interests: agriculture, cities, domestic water suppliers, community interests, and environmental users of water.
- Consider population
- Consider water use and demand
- Make size of governing body manageable: not too large to be unwieldy

Stakeholder GSA-Formation Process Recommendations

"Inclusivity and diversity will build success." All interviewees suggest that an inclusive, transparent process is critical to success. Everyone agrees that all stakeholders need to come together to collaborate and reach consensus on the GSA. Some express concern that collaboration will be difficult if stakeholders fight over groundwater issues rather than trying to resolve them. Many recommend having all GSA-formation-related meetings open to the public. Also, a few people suggest the importance of holding meetings throughout the Valley to explain the need for the new organizations and request ideas on the governing board, funding, and programs. Some would like to see process agreements so interests participating in GSA formation cannot use what they have learned for lawsuits. To reach Spanish-speaking populations, the outreach effort would need to rely on Spanish radio and television, and many suggested translating all materials.

"The Valley is innovative and progressive – it moves ahead to address problems." While no one thinks collaborating on the GSA will be easy, everyone concurs that stakeholders from different interest groups must work together to figure out the best configuration for forming the GSA. One person suggests looking at cooperative efforts in Napa County as an example. Many believe that stakeholders will be able to successfully form the GSA.

"Fairly represent the interests so we can create a shared framework of mutual benefit." Participants offered a number of suggestions for designing an effective process. Some recommend a focused group to negotiate the GSA complemented by broad transparent outreach. Many suggest starting with a large, inclusive group, anticipating that after the first few meetings, many will defer to a core group to carry out the work. A few recommended establishing committees to work on detailed agreements and proposals for broader group consideration. Several recommended developing a memorandum of understanding on the process so that the public agencies commit to the process of working together, possibly in a joint meeting of the Board of Supervisors and City Councils. Many said they look to CBI to recommend a process design based on its experience and familiarity with best practices.

Stakeholders recommend drawing on existing studies when possible. To manage costs and avoid duplication of effort, people would like the GSA to draw on existing studies. An important first step would be to consider all the data that are currently available and to determine the role of Zone 2c in the GSA.

Challenges to GSA Formation

Many recognize the need to act – to avoid both undesirable results and state intervention. Many understand that groundwater levels are dropping. A few interviewees perceive that some water users, in particular some representatives of agriculture, are resistant to reducing water use. Yet others feel that agriculture has contributed significantly to reducing water use by changing irrigation practices and providing funding and support for water supply projects. Many express hope that

people can move beyond their own self-interests and manage water for the region. Lastly, a lawsuit with the County of San Luis Obispo underway on the Paso Robles sub-basin continues with different views of the role of the underflow form the Salinas River, the outcome of which might affect this effort.

"GSA-forming entities [must] recognize and accept that new ways of addressing the issues are needed (i.e., the status quo is not working)."

Some interviewees suggest that a few stakeholders in the Valley would prefer an adjudicated basin. A few interviewees articulate that adjudication or state intervention is necessary to sustainably manage the basin; in other words, they do not believe the political will exists to ever curtail pumping. One or two interviewees believe that adjudication would remove politics from management, i.e. it would be easier. A few interviewees express frustration that adjudication would be costly and time consuming. Some suggest that if stakeholders are unable to reach consensus on the GSA, some may initiate the adjudicatory process. Some express concern that the State will intervene, regardless, if saltwater intrusion continues.

"If the GSA is going to have authority to impose strict measures to maintain sustainability, there has to be the political will to undertake these."

Many suggest that it is timely to rethink WRA's agreement to keep well data confidential and only provide aggregated data. The GSA will need data to demonstrate sustainability and be in compliance with SGMA. Interviewees anticipate that comprehensive monitoring data will be necessary to support implementation of the groundwater sustainability plan and would prefer to use existing well data where possible.

Interviewees readily talk about historic tensions and sources of distrust in the region. People express differing viewpoints about whether these tensions are "real" or even if they still exist. However, CBI names them here because they are part of the "water narrative" that could affect GSA representation and governance. While a few interviewees suggest strain, most articulate mutual interests among agriculture and urban interests, linking the economy and housing. Most speak of historic tensions between North and South County over water supply, including impacts to groundwater and surface water and cost sharing on water resources projects. However, stakeholders also suggest that many are working together across the whole basin to manage water supply issues. One person cites the Salinas Valley water project (rubber dam) as an example of folks coming together to address issues cooperatively. The other identified division in the county is between the Peninsula and the Valley. Some interviewees suggest that attitudes between the two shape the ability to carry out projects with perceived regional benefit. These perceptions could affect GSA formation, governance structure, and operational effectiveness.

Critical Issues: Land Use, Water Supply, Water Quality and Boundaries

Water and land use are closely connected. Some agricultural representatives suggest that many in agriculture have long believed there is sufficient water. However, with the ongoing drought and other changed conditions, supply constraints have become more evident. A few people would like to limit residential and commercial development in watershed areas to reduce groundwater depletion. Most would prefer that development occur within the cities rather than taking land out of production. Interviewees express different perceptions of how water flows throughout the sub-basins, where recharge may occur, and how pumping in one area impacts another. California Water Service and Alco Water Service, investor-owned water corporations, serve Salinas residents, and California Water serves King City residents as well. Individuals from the North County report an unprecedented dip in water levels in this fourth year of drought. One or two people would like clarification of water rights under SGMA.

Interviewees report that many small communities are losing their water supply, primarily because of water quality concerns. Interviewees identify a number of water quality issues in different parts of the Valley, primarily nitrates in domestic wells, arsenic, and seawater intrusion. Many of these communities are small systems with only several houses connected to wells that tend to be very shallow. The communities tend to be low income or impoverished. The County Department of Public Health monitors water quality in wells, and several local non-profits have been working with community residents to secure reliable potable water supplies. Stakeholders link water supply to quality issues and believe the groundwater sustainability plan has to link them as well, regardless of SGMA requirements.

ONGOING RELATED PROJECTS & STUDIES (partial list)

- Bureau of Reclamation Carmel and Salinas Rivers Study
- Bureau of Reclamation-Funded Drought Contingency Planning in North Salinas Valley
- Castroville Seawater Intrusion Project (CSIP) / Salinas Valley Reclamation Project
- Salinas River Stream Maintenance Program
- Salinas Valley Water Project
- Pure Water Monterey
- Water Resources Agency (WRA) / USGS Groundwater Model Development
- WRA Interlake Tunnel Project

While the Salinas Valley relies on groundwater, a number of projects augment supply, and studies are underway that will inform the groundwater sustainability plan. Surface storage in the Upper Valley controls releases to the Salinas River and provides recharge in that part of the basin. Recycled water projects, including the Castroville Seawater Intrusion Project and Pure Water Monterey, and the Salinas River Diversion Project (rubber dam) are underway to offset groundwater use in North Valley. A Bureau of Reclamation study will characterize the Carmel and Salinas rivers' groundwater basins. The Water Resources Agency has a technical advisory group that is working with USGS to develop a new groundwater model and is evaluating an interlake tunnel between the two surface storage facilities. Stakeholders also report the possibility of additional

water available via State Permit 11403 on the Salinas River. Finally, desalination projects are at various stages of development in the region.

"Ag is the major economic engine in Monterey County. Agriculture has and will continue to pay for the largest percentage of water improvement projects in the basin."

Several discrete boundary issues might affect GSA formation. The California Department of Water Resources' (DWR) Bulletin 118 defines basin boundaries for SGMA implementation. The area known as the "Salinas Valley Basin" is actually made up of 8 sub-basins listed below. Stakeholders mentioned a number of basin boundary issues that could affect GSA formation. DWR is accepting requests to change basin boundaries for technical reasons and for jurisdictional reasons between January and March 2016. The next opportunity to request changes would be in 2018, before the groundwater sustainability plan is due for the Salinas Valley in 2020.

Salinas Valley Sub-Basins Defined by Department of Water Resources Bulletin 118

CASGEM Basin Number	Sub-Basin Name	Stakeholder-Identified Boundary Considerations
3-4.01	180/400 FOOT AQUIFER	▪ Part of Dolan Road is included in Pajaro Basin, which should be in the 180/400 Foot Aquifer. Stakeholder would consider extending 180/400 Foot Aquifer north to County line.
3-4.02	EAST SIDE AQUIFER	▪ *None mentioned.*
3-4.04	FOREBAY AQUIFER	▪ *None mentioned.*
3-4.05	UPPER VALLEY AQUIFER	▪ *None mentioned.*
3-4.06	PASO ROBLES AREA	▪ Separated by County Line. New water district forming via LAFCO in San Louis Obispo County portion. ▪ Hames Valley in Monterey County is included although some think it is a separate hydrologic system.
3-4.08	SEASIDE AREA	▪ Adjudicated. GSA would govern fringe area not covered by adjudication.
3-4.09	LANGLEY AREA	▪ *None mentioned.*
3-4.10	CORRAL DE TIERRA AREA	▪ Portion adjudicated. GSA would govern fringe area not covered by adjudication.

Part 2: Recommendations

Create a Transparent, Inclusive Collaborative Process for Groundwater Sustainability Agency Formation

Stakeholders are broadly unified on several core aspects related to a process for identifying a GSA. It must be transparent. It must be inclusive. It must be accompanied by broad outreach. And it should draw on the best available data. While stakeholders did not articulate broad agreement on a particular process for tackling GSA formation, many are looking to CBI to draw on its expertise and experience elsewhere to put forward a recommended approach. With this is in mind, CBI has crafted a suite of recommendations structured to achieve the following:

- Ensure multiple and ongoing opportunities for meaningful public input and dialogue
- Balance the need for broad participation with the imperative for focused and effective conversations
- Foster cross-interest group discussions on all aspects of GSA design to ensure participants understand and integrate each other's interests and concerns
- Provide sufficient time for thoughtful deliberations without exhausting people's time and resources
- Achieve agreements and reach outcomes within the required timeline

Convene a Groundwater Stakeholder Forum and Collaborative Work Group

Groundwater Stakeholder Forum

The Groundwater Stakeholder Forum would be a public forum with a range of interests participating that meets periodically to advise on the formation of the GSA. The forum's role is to shape the overall process. Forum membership would encompass all stakeholders who are interested in groundwater and must be considered under SGMA. Forum meetings would foster consistent participation and also provide the public an opportunity to learn about and provide input on an ad hoc basis on GSA formation. Spanish translation would be offered at forum meetings. At each forum, the Collaborative Work Group (see below) would share information about work underway and solicit feedback on proposals. Forum discussions would focus on outlining both areas of agreement and divergent views for the Collaborative Work Group to consider; consensus at the Forum would not be required. The Collaborative Work Group would incorporate forum feedback into its proposals that would ultimately become recommendations to the decision-making bodies on the GSA governance structure.

Collaborative Work Group

The Collaborative Work Group's role would be to develop consensus recommendations on the GSA structure. The GSA-eligible agencies would consider those recommendations for adoption. The Collaborative Work Group would be a representative body with a focused number of participants (12-20 individuals) representing the diverse interests of the GSA-eligible agencies and groundwater users. All Work Group deliberations would be open to the public. CBI facilitators

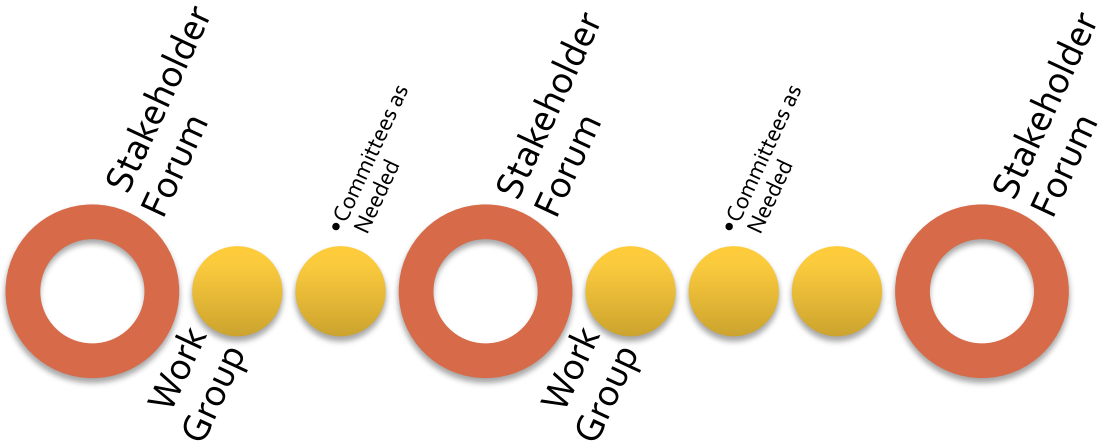
would work with each interest to identify individual representatives able to commit to consistent participation in the Collaborative Work Group. Work group members would commit to attending meetings consistently, with relative frequency as necessary, to develop the recommendations needed to meet the state's deadlines. Representatives would need to be able to represent interests and demonstrate ability to work collaboratively with others and listen and problem solve on GSA formation and governance issues. The work group would review and finalize its membership at an early meeting.

Work Group Participation Criteria

- Strong effective advocate
- Demonstrated ability to work collaboratively with others
- Able to commit time needed for ongoing discussions
- Collectively reflect diversity of interests
- Maintain group size to support focused deliberations

The work group would carry out the detailed work of forming the GSA. The work group would strive for consensus (participants can at least live with the decision) in developing recommendations for GSA formation. Products of the work group would reflect the outcomes of its discussion. The work group would meet regularly with the Groundwater Stakeholder Forum to share ideas and solicit feedback on proposals. The work group would commit to incorporating feedback from the stakeholder forum to the greatest degree possible. Discussion at meetings would be centered on work group members, but with time built in for public comment. However, as noted above, the Groundwater Stakeholder Forum would be the primary venue for sharing information and seeking feedback on proposals for GSA formation in the Salinas Valley.

DIAGRAM: Groundwater Stakeholder Forum, Collaborative Work Group, and Committee Meetings



Committees
CBI would also recommend ad hoc committees come together periodically to manage a specific task. Ad hoc committees would develop options for the Collaborative Work Group to contemplate and refine before sharing with the Groundwater Stakeholder Forum. Ad hoc committees would be small and nimble. Participants would have expertise related to the committee's purpose. Ad hoc committees would also be open to the public.

Engagement Committee: In this initial phase, CBI would recommend an engagement committee form to work with the facilitation team on developing a communication and engagement plan and creating a project web site and public information materials about SGMA and the GSA formation process. As time progresses, materials would focus on making sure interested community members understand and can provide input on the proposed recommendations. The engagement committee would refine all public information materials.

Technical Committee: CBI would also recommend a technical committee convene to examine basin boundaries and begin preparing to develop the groundwater sustainability plan. Since the Salinas Valley Basin must complete its plan by 2020, the technical committee could develop a work plan, including plan requirements and the necessary resources, to develop the groundwater sustainability plan.

Recommended Stakeholder Representation and Participation
CBI would recommend that all stakeholder interests engage in forming the groundwater sustainability agency. CBI would work with interest groups to identify specific individuals to commit to participate in GSA formation. The key interests, that stakeholders suggest and SGMA defines, would include the following:

<u>Local Agencies Eligible to Serve as GSA</u>
- County (Monterey County & San Luis Obispo County)
- Cities
- Water Agencies
- Public Utilities Commission-Regulated Water Companies
- Other Public Agencies

<u>Beneficial Users & Uses</u>
- Agriculture
- Business
- Disadvantaged Communities
- Environmental
- Rural Residential Well Owners

Effective Participation
To conduct a successful process, the parties would commit to the following:

Everyone would agree to address the issues and concerns of the participants. Everyone who is joining in the collaborative process is doing so because she or he has a stake in the issues at hand. For the process to be successful, all the parties

agree to validate the issues and concerns of the other parties and strive to reach an agreement that takes all the issues under consideration. Disagreements would be viewed as problems to be solved, rather than battles to be won. Parties are committed to making a good faith effort to find a collaborative solution (as opposed to seeking resolution in the courts).

Continuity of the conversations and building trust would be critical to the success of the work group. Everyone would agree to inform and seek feedback from their respective group's leadership and constituents about the ongoing dialogue. Meeting scheduling would allow for the work group to inform the stakeholder forum and for work group members to inform and seek advice from their leadership, attorneys, or scientific advisors about the discussions and recommendations.

Decision Making

The Collaborative Work Group and Groundwater Stakeholder Forum would be consensus seeking, striving to reach outcomes that all participants could at least "live with." The Collaborative Work Group would recommend the GSA structure to the GSA-eligible entities in the basin. If more than one agency chooses to participate in the GSA, each agency's governing board would have to adopt or approve the GSA.

If the Collaborative Work Group proved unable to reach consensus on the recommended structure, each GSA-eligible agency could move forward to comply with SGMA by forming one or more GSAs and the required coordination agreements. If no agencies step forward to form the GSA, SGMA stipulates that the county would be the default GSA. In the Salinas Valley, this would need to involve both Monterey County and San Luis Obispo County because the Paso Robles sub-basin extends into San Luis Obispo County. The GSA would be responsible for forming the groundwater sustainability plan. Based on stakeholder feedback, successful GSA formation is considered critical to the ultimate goal of plan development and implementation.

Decision-Making Road Map

The process would move through these stages of organization, information gathering, proposal development, and engagement activities to develop recommendations on forming a groundwater sustainability agency for the Salinas Valley Basin.

Jan-Feb 2016	Feb-April	March-Oct	**Oct-Nov**	Dec-Mar 2017	March 2017
• **Organization:** • Confirm Process Design & Stakeholder Participation • Develop Work Plan • Organize Committees	• **Information Gathering & Understanding:** • SGMA Requirements & Governance Options • Current Basin Understanding • Basin Boundaries (Applications due to DWR between Jan-March 2016) • Stakeholder Interests	• **GSA Formation Proposal Development** • **Public Enagement Plan and Activities**	• **GSA Formation Vetting Process**	• **GSA Formation Proposal Refinement and Legal Documentation**	• **Public Notice & Hearing**

GSA Formation Proposal Development

To develop and make recommendations on forming the GSA, the Collaborative Work Group would need to explore these topics, engaging the Groundwater Stakeholder Forum to guide its work. Public engagement activities would also occur to solicit input to strengthen proposals.

- Confirm GSA Authorities and Management Responsibilities
- Establish Criteria to Evaluate Options
- Identify GSA-Eligible Agencies and Interest in Participating in GSA
- Understand Potential Options for GSA
- Explore Overarching Governance Structure
- Evaluate Pros & Cons of Different Legal Structures
- Identify Potential Costs of GSA Operations
- Develop Recommendations on Representation, Voting, Financing, Fees
- Agree on Preliminary Proposals
- Vet and Refine Proposals
- Recommend GSA Structure

Design and Implement a Public Engagement Plan

Given the paramount importance of groundwater in the Salinas Valley, CBI would design and implement an outreach plan and suite of activities to create transparency and information about GSA formation for the general public. CBI recommends working with the engagement committee to develop both the plan and its materials. As recommended during the public workshop on the assessment, the engagement plan would include special efforts to reach neighborhood groups, homeowners' associations, and local landowners who own wells. As recommended during the interview process, the public engagement plan would incorporate translation and radio spots to inform Spanish-speakers in the groundwater basin.

Conclusion

The overarching goal of this effort would be to reach widespread support on forming the groundwater sustainability agency for the Salinas Valley and complying successfully with the Sustainable Groundwater Management Act. The keys to success are creating a transparent, inclusive process that engages interested stakeholders, designing a governance structure that balances interests, supports a vibrant economy, manages groundwater sustainably, and meets SGMA requirements. A viable and broadly supported GSA is the essential first step towards long-term sustainable groundwater management.

About the Consensus Building Institute

Founded in 1993, the Consensus Building Institute improves the way that community and organizational leaders collaborate to make decisions, achieve agreements, and manage multi-party conflicts and planning efforts. A nationally and internationally recognized not-for-profit organization, CBI provides collaborative problem solving, mediation and high-skilled facilitation for state and federal agencies, non-profits, communities, and international development agencies around the world. CBI senior staff are affiliated with the MIT-Hard Public Disputes Program and the MIT Department of Urban Studies and Planning. Learn more about CBI at: www.cbuilding.org

Gina Bartlett is a senior mediator at CBI. She has mediated many complex policy issues related to water resources, land use, and natural resources over the last 20 years. She is on the national roster of the U.S. Institute for Environmental Conflict Resolution and has a Master's degree in Conflict Analysis & Resolution. Ms. Bartlett is working on implementation of the Sustainable Groundwater Management Act with the California State Water Resources Control Board and Department of Water Resources, the California Water Foundation, and Sonoma County with three priority basins. You can learn more about Gina at cbuilding.org and reach Gina at 415-271-0049 or gina@cbuilding.org

Bennett Brooks is a senior practitioner who brings deep experience in water resources and high-conflict complex issues, both in California and elsewhere. Over the last 18 years, he has facilitated dozens of complex and highly contentious collaborative dialogues on issues related to water resource conflicts, ecosystem restoration, fisheries, and infrastructure improvements throughout the U.S. He has conducted numerous assessments, designed and facilitated several joint fact-finding panels, and taught a range of negotiations trainings on mutual gains bargaining. Last year, Bennett facilitated a successful dialogue among Central Valley water managers that generated many of the ideas now encompassed in California's groundbreaking groundwater management legislation. Bennett recently facilitated a series of roundtable discussions to better define measurable objectives and triggers related to the six "undesirable results" identified in SGMA. You can reach Bennett at BBrooks@cbuilding.org

Consensus Building Institute

Appendix A: List of Persons Interviewed

Interviews alphabetized by last name of interviewee.[2]

1. Tom Adcock, President, and Andrea Schmitz, Water Quality Manager, Alco Water
2. Lew Bauman, County Administrative Officer, Nick Chiulos, Assistant CAO, Les Girard, Chief Assistant County Counsel, and Charles McKee, County Council, Monterey County
3. Brian Boudreau and Beth Palmer, Monterey Downs, LLC
4. Dave Chardavoyne and Rob Johnson, Monterey County Water Resources Agency
5. Rob Cullen, Mayor, King City
6. John Diodati, Department Administrator, Carolyn Berg, San Luis Obispo County Department of Public Works
7. Marc Del Piero, Sherwood Darington, and Richard Nutter, Board Members, Agricultural Land Trust
8. Daisy Gonzalez and Vicente Lara, Environmental Justice Coalition for Water
9. Norm Groot, Monterey County Farm Bureau
10. Abigail Hart, The Nature Conservancy
11. Brett Harrell, Nunes Company and Grower-Shipper Association
12. Dale Huss, Ocean Mist and Sea Mist Farms
13. Nancy Isakson, Salinas Valley Water Coalition
14. Mike Jones, General Manager, California Water Service
15. Margie Kay
16. Roger Maitoso, Arroyo Seco Vineyard
17. Bob Martin, Rio Farms
18. Mike McCullough. Monterey Regional Pollution Control Agency
19. Rene Mendez, City Manager, City of Gonzales
20. Jeanette Pantoja, Environmental Justice Coalition for Water Board and Building Healthy Cities
21. Gary Petersen, Director of Public Works, City of Salinas
22. John Ramirez, Monterey County Department of Public Health
23. Jerry Rava, Rava Ranch
24. Rich Smith, Paraiso Vineyards
25. Sergio Sanchez, Office of Assemblyman Alejo and Hispanic Chamber of Commerce of the Central Coast
26. Steve Shimek, Monterey Coast Keeper and The Otter Project
27. Dennis Sites, Salinas Valley Sustainable Water Group
28. Abby Taylor Silva, Grower-Shipper Association and Monterey County Water Resources Agency Board Member
29. Simon Salinas, Supervisor, Monterey County
30. Dave Stoldt, Monterey Peninsula Water Management District
31. Eric Tynan, General Manager, and Ron Stefani, Board Member, Castroville Community Services District
32. Juan Uranga, Center for Community Advocacy
33. Keith Van Der Maaten, General Manager; Howard Gustafson and Peter Le, Board Members; and Roger Masuda, Attorney, Marina Coast Water District
34. Amy White, Executive Director, LandWatch Monterey County
35. Don Wilcox, Public Works Director, City of Soledad

[2] In addition to the formal assessment interviews, G. Bartlett and B. Brooks held brief conversations with other interested parties who contacted them or expressed interest in learning more about the process.

Appendix B: Interview Protocol & Survey Questions

NOTE: The survey varied slightly to make it easier to capture information in writing, but the questions were essentially the same. Please contact Gina@cbuilding.org or 415-271-0049 if you would like a copy of the survey questions.

Initial Exploration on GSA Formation in Salinas Valley Basin

Confidentiality: *CBI Facilitators will use what we discuss to report back findings without attributing it to interviewee personally; anything that interviewee wishes to stay confidential will remain between the facilitator and interviewee.*

Background

Tell us about your background and/or interests related to groundwater management generally?

What is the role of groundwater in your water supply? How does your organization think about groundwater as part of its water supply future?

GSA Formation and Structure

The first major requirement under SGMA is to form a GSA(s) by June 2017 for medium and high priority basins. What are your primary concerns or interests related to SGMA and GSA formation? Why are these important?

How would you (and your entity) foresee GSA formation moving forward in your basin? Why?

What configurations or options for a GSA would you envision or have you thought about? How would you organize the governance structure? What are the pros and cons related to those options?

What kind of conflict might emerge related to GSA formation? How might the conflict be resolved?

What criteria or considerations would help you evaluate GSA configurations and/or candidates? *(What specific qualities would you envision for a potential GSA? (financial, technical capacity, etc.))*

What special considerations, if any, related to basin boundaries (as outlined in Bulletin 118) should we know about? How might these considerations affect GSA formation, outreach, etc.?

Process and Decision-Making

Who should be involved in deciding on the GSA formation? How should they decide?

If a stakeholder group comes together to work on GSA formation, how would you like to be involved?

Who might be able to represent your interests in these deliberations?

How would you recommend designing a road map to a decision on GSA formation? What steps would you take?

What interest, if any, does your entity have in serving as a GSA?

What agency might you recommend or envision as serving as the GSA(s) or what agencies might come together to serve as a GSA? How might other agencies or stakeholders feel about these possibilities?

What kinds of information might be needed to support decision-making on GSA formation?

Who has credibility to provide technical information?

Internal Decision Making
How will decision making on the GSA configuration/structure occur in your entity?

Who are the key opinion leaders and thought leaders on forming the GSA and managing groundwater within your entity?

What's the best method to keep those leaders abreast of new developments and potential insights?

Stakeholder Engagement
What other stakeholders are important to inform or keep abreast in some fashion on these issues?

How would you recommend engaging those groups/individuals during this phase of the process? Once the GSA is formed?

What kinds of outreach / engagement /activities do you or others already have in place that might involve these stakeholders?

Conclusion
Is there anything else that you haven't mentioned? What advice would you offer or what else would you recommend to move this effort forward?

Who else, if anyone, would you recommend that I interview on these issues?

APPENDIX 11E. DISADVANTAGED COMMUNITIES

Introduction and Purpose of Appendix

Many of the communities in the Salinas Valley Groundwater Basin are classified as Disadvantaged Communities (DACs) and Severely Disadvantaged Communities (SDACs), as well as Economically Distressed Areas (EDAs). The SVBGSA jurisdictional area has well documented DAC-designated areas including seven Census Designated Places (CDPs), 60 Block Groups, and 20 Tracts. Additionally, work conducted by the Greater Monterey County Integrated Regional Water Management (IRWM) Program identified 25 small disadvantaged, severely disadvantaged, and suspected disadvantaged communities in unincorporated areas of the IRWMP region (Greater Monterey County Regional Water Management Group, 2018), which includes the entire SVBGSA area. As many of these communities are dependent on groundwater for drinking water, they face challenges associated with drinking water quality.

The State of California has recognized challenges in providing clean, safe, and affordable drinking water to all of its citizens, especially low-income and minority communities. In 2012, California law AB 685, the Human Right to Water, declared that every person has a right to clean, safe, and affordable drinking water. In 2019, the State further made it a priority by passing SB 200, the Safe and Affordable Drinking Water Fund. In Fiscal Year 2019-2020 alone, it will dedicate $130 million for safe drinking water solutions in DACs that do not have access to safe drinking water.

The Salinas Valley Groundwater Basin is one of the most productive agricultural regions in the world. However, over several decades seawater intrusion and intensive fertilizer use resulting in nitrate contamination have compromised drinking water quality in parts of the Basin. Nitrate contamination in groundwater can pose serious health risks to pregnant women and infants if consumed at concentrations above the maximum contaminant level (MCL) of 10 milligrams per liter (mg/L) nitrate as nitrogen (NO_3-N). Nitrate contamination not only poses health risks, but also results in major costs for small rural communities. This is particularly challenging for the many economically disadvantaged communities in the Basin.

SGMA has limited requirements with regards to improving groundwater quality; the SGMA regulations are written in terms of avoiding degradation (CWC, §354.28 (c)(4)). However, the SVBGSA seeks to engage more constructively with disadvantaged communities moving forward in the subbasin planning processes. SVBGSA maintains excellent relationships with agencies monitoring and addressing water quality issues in the Basin. The purpose of this appendix is to provide background information on the relationship between DACs (including SDACs and EDAs) and groundwater, particularly with respect to the drinking water challenges in the Basin. Unless otherwise noted, the information in this appendix is based on and much is excerpted from

the Integrated Regional Water Management (IRWM) Plan for the Greater Monterey County Region (Greater Monterey Regional Water Management Group, 2018).

Identifying DACs in the Salinas Valley

A Disadvantaged Community (DAC) is defined in the California Water Code (§79505.5(a)) as a community with an annual median household income that is less than 80% of the statewide annual median household income, based on five-year estimates. Further, a Severely Disadvantaged Community (SDAC) is defined as a community with an annual median household income that is less than 60% of the statewide annual median household income, based on five-year estimates. For information on how these designations are determined, see the Greater Monterey County Integrated Regional Water Management Plan (Greater Monterey County Regional Water Management Group, 2018). These designations are significant because in order for a community to be eligible for State grant funds specially allocated for disadvantaged communities, or to be eligible for reduced matching fund requirements, a community must meet one of these strict definitions.

At the same time, the California Department of Water Resources (DWR) also recognizes the existence of communities that are economically challenged but that are not designated as being disadvantaged according to U.S. Census data. These communities have been labeled Suspected Disadvantaged Communities until their status can be proven either way.

In addition to disadvantaged communities, DWR recognizes Economically Distressed Areas. An economically distressed area (EDA) is defined as:

> *…a municipality with a population of 20,000 persons or less, a rural county, or a reasonably isolated and divisible segment of a larger municipality where the segment of the population is 20,000 persons or less, with an annual median household income that is less than 85 percent of the statewide median household income, and with one or more of the following conditions as determined by the department: (1) financial hardship, (2) unemployment rate at least 2 percent higher than the statewide average, or (3) low population density (Water Code §79702(k)).*

Figure 1 shows the communities currently designated as DACs, SDACs, or EDAs in the Salinas Valley. This figure combines census tracts, blocks, and places to give a more complete representation of the communities within this area. Currently, the statewide median household income is $63,783. Therefore, the calculated DAC and SDAC thresholds are $51,026 and $38,270, respectively (see https://water.ca.gov/Work-With-Us/Grants-And-Loans/Mapping-Tools). For example, Castroville has a median household income of $35,000 (Rural Community Assistance Corporation, 2017). Moss Landing is not currently designated as a DAC; however, according to a survey by the California Rural Water Association (2018), its median household income is $47,600.

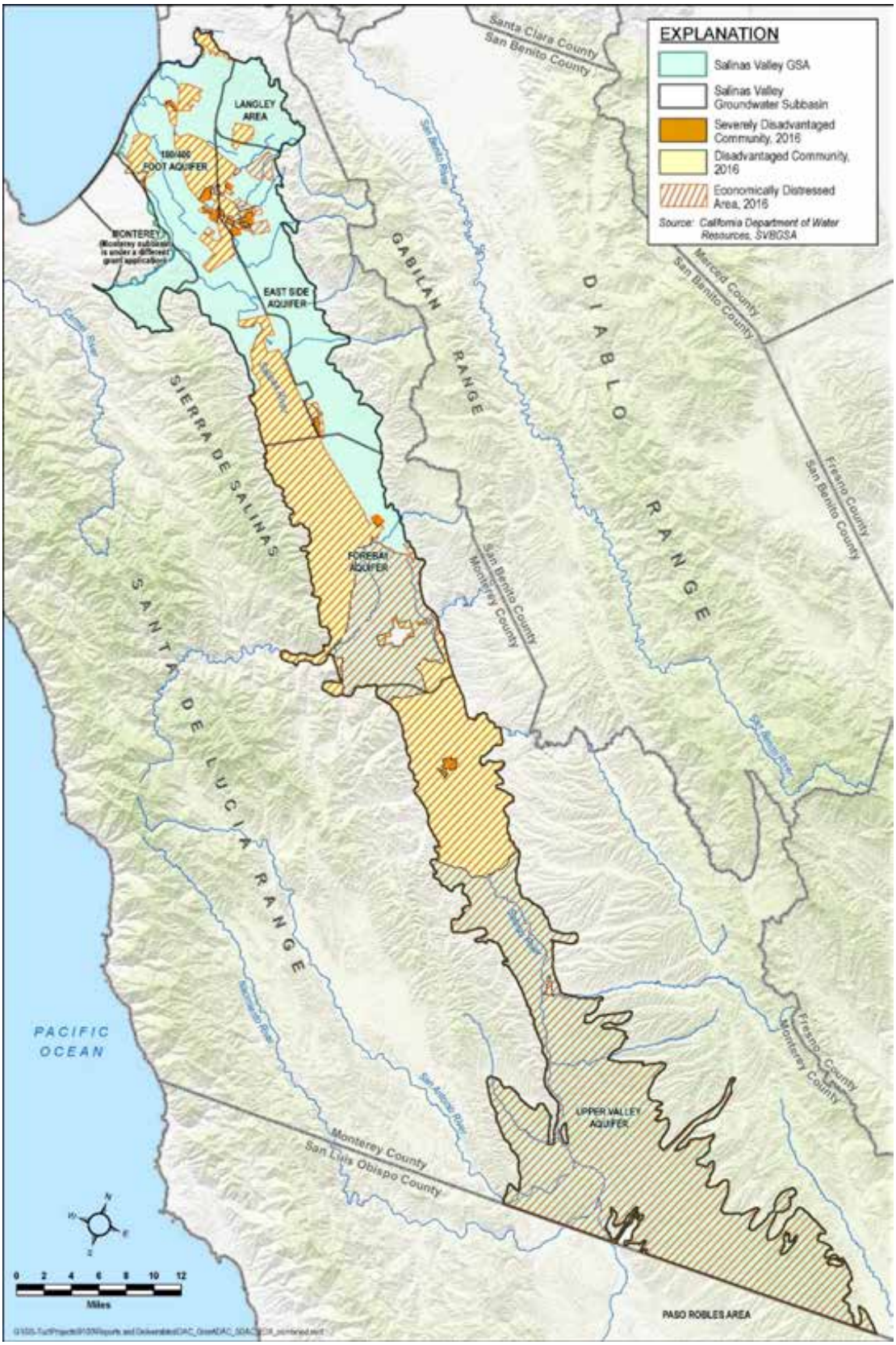


Figure 1. Map of DACs, SDACs, and EDAs in the Salinas Valley Groundwater Basin

As highlighted in the IWRM Plan, small disadvantaged communities in unincorporated areas often have small public water systems that serve fewer than 200 connections. The smallest of these communities have State Small Water Systems (SSWS), which serve between five and 14 connections); Local Small Water Systems (LSWS), which serve between two and four connections; and/or households served by private domestic groundwater wells. There is a significant difference in capacity, water supply, and infrastructure needs between a DAC served by a large water system (e.g., a large disadvantaged community of several thousand people, or a small disadvantaged community served by a large water utility) and a small disadvantaged community served by a small water system or by private wells. The State Water Resources Control Board (SWRCB) summarized these differences in its 2015 report, Safe Drinking Water Plan for California (SWRCB, 2015):

- Small water systems have the greatest difficulty in providing safe drinking water because they are least able to address the threats to public health associated with water quality.
- Larger water systems are better equipped to deal with water quality issues because they have more customers to fund the necessary improvements, have economy of scale, more technical expertise, better management skills and knowledge, are able to solve operational problems internally, and have dedicated financial and business-related staff. They generally have more sophisticated treatment and distribution system operators who are able to react to incidents and changes in treatment conditions that may occur during operations.
- On the other hand, small systems, especially those in disadvantaged communities, have only a small number of customers, which provides them with limited fiscal assets and no economy of scale. They often lack technical expertise, the ability to address many of the issues pertinent to operating a water system, as well as qualified management and financial and business personnel. In many instances, especially for very small water systems, the system operator may be just a part-time position.

Following the Greater Monterey County IRWM Plan, this Appendix includes DACs, SDACs, and EDAs and places an emphasis on small disadvantaged communities for the reasons highlighted by the SWRCB.

Jurisdictional Responsibilities

A number of agencies and groups have existing jurisdictional responsibility over groundwater quality. The SVBGSA will collaborate with these agencies and groups so as to not duplicate efforts or overstep its institutional authority. The following agencies and groups have responsibility over various aspects of groundwater (Greater Monterey County Regional Water Management Group, 2018):

- **Greater Monterey County IRWM Regional Water Management Group –** AB1630 appropriated State grant funds to enable this Group to develop solutions for DACs to be integrated into the broader IRWM planning effort. IRWM is a voluntary, collaborative effort to identify and implement water management solutions on a regional scale to increase regional self-reliance, reduce conflict, and manage water resources. The IRWM planning process brings together water and natural resource managers along with other community stakeholders to collaboratively plan for and ensure the region's continued water supply reliability, improved water quality, flood management, and healthy functioning ecosystems. The Department of Water Resources manages grant programs specifically designated for adopted IRWM Plans including funding for water quality improvement projects.
- **State Water Resources Control Board (SWRCB) –** The SWRCB administers the state's Drinking Water Program as the federally-designated Primary Agency responsible for the administration and enforcement of the Safe Drinking Water Act requirements in California. Prior to July 1, 2014, the California Department of Public Health was designated as the Primary Agency. These requirements are defined in the California Health and Safety Code and Titles 17 and 22, California Code of Regulations. The CDPH continues to maintain the State's Drinking Water and Radiation Laboratory, which serves as the state's principal laboratory as required for primacy under the Safe Drinking Water Act. The SWRCB is responsible for the regulatory oversight of over 7,600 public water systems in California. It may delegate oversight responsibility of public water systems with less than 200 service connections to local county health departments, which it has done in Monterey County.
- **Monterey County Department of Environmental Health (MCDEH) –** Delegated oversight responsibility by the SWRCB, MCDEH is the Local Primary Agency and its Drinking Water Protection Services regulates domestic water systems in the County that serve between two and 199 connections. There are approximately 160 such systems in the County regulated under this program. MCDEH also regulates all well construction in Monterey County.
- **SWRCB and Central Coast Regional Water Quality Control Board –** State policy on water quality control falls under the SWRCB, which is the state water pollution control agency for all purposes under the Clean Water Act (CWC §13160), including drinking water sources from both surface water and groundwater. The SWRCB has nine regional boards, including the Central Coast Regional Water Quality Control Board (CCRWQCB), which is responsible for the day-to-day implementation of the federal Clean Water Act and California's Porter-Cologne Water Quality Control Act in the Central Coast. Together, the State Water Board and Regional Boards are responsible for the protection of the quality of ambient surface and groundwater up to the point where the water enters a drinking water well or surface water intake. The Regional Boards are

responsible for developing and enforcing water quality objectives and implementation plans to protect the beneficial uses of the State's waters. The Regional Boards enforce water quality regulations through the following means.

- **Basin Plan –** Each Regional Board is directed to formulate a water quality control plan, called a Basin Plan, that includes water quality standards under the Clean Water Act. The CCRWQCB implements the Basin Plan in the Central Coast Region, in part by issuing and enforcing waste discharge requirements to individuals, communities, or businesses whose waste discharges can affect water quality, including surface water, groundwater, or wetlands.
- **Waste Discharge Requirements (WDRs) –** WDRs, sometimes simply known as Orders, for discharges to waters of the United States also serve as National Pollutant Discharge Elimination System (NPDES) permits. The SWRCB and CCRWQCB regulate discharges from wastewater treatment and disposal systems under general WDRs. Small, domestic wastewater treatment systems having a maximum daily flow of 100,000 gallons per day (gpd) or less that discharge to land are covered under a statewide general WDR permit for small systems (Order WQ 2014-0153-DWQ). The State and Regional Boards are also responsible for plans and permits related to other uses, such as farming, septic tanks, and larger scale sewage treatment that can also impact the quality of surface and ground waters.
- **Irrigated Lands Regulatory Program (ILRP) –** The SWRCB initiated the ILRP in 2003 to control agricultural runoff's impairment of surface waters. In 2012, groundwater regulations were added to the program. Waste discharge requirements, which protect both surface water and groundwater, address agricultural discharges throughout the Central Coast. Anyone who irrigates land to produce crops or pasture commercially must seek ILRP permit coverage and maintain in good standing with their coalitions.

- **Department of Pesticide Regulation** – The California Department of Pesticide Regulation is responsible for ensure that pesticides do not contaminate the groundwater.
- **Office of Environmental Health Hazard Assessment** – The California Office of Environmental Health Hazard Assessment is responsible for providing the SWRCB with health-based risk assessments for contaminants. These assessments are used to develop primary drinking water standards.
- **California Public Utilities Commission (CPUC)** – The CPUC is responsible for ensuring that California's investor-owned water utilities deliver clean, safe, and reliable water to their customers at reasonable rates. The Water Division regulates over 100 investor-owned water and sewer utilities under the CPUC's jurisdiction; providing water service to about 16 percent of California's residents.

- **Local Agency Formation Commissions (LAFCOs)** – These commissions oversee the expansion of service areas of public agencies, including cities that own or operate public water systems. They can review public agencies to determine if the agency is providing municipal services in a satisfactory manner, including the delivery of safe drinking water.
- **Central Coast Groundwater Coalition (CCGC)** – The CCGC is a non-profit 501(c)5 mutual benefit organization that represents landowners and growers who operate in Monterey, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, and Santa Barbara counties, as well as the northern portion of Ventura County in the Central Coast Region. The CCGC is not a governmental organization like the other jurisdictional agencies, and therefore does not have legal jurisdictional authority. However, the CCGC is the primary organization tasked with fulfilling the groundwater quality regulatory requirements in the Irrigated Lands Regulatory Program (ILRP) of the Central Coast Regional Water Quality Control Board. The organization combines the resources of its members to achieve economies of scale to comply with the regulatory requirements of the CCRWQCB. Between 2013 and 2015, the CCGC characterized the rural drinking water supply and shallow groundwater aquifer in the CCGC region which includes the previously noted six counties. In addition to using data from member wells, CCGC gathered publicly available data generated by the counties and data submitted by landowners and growers who perform individual monitoring as part of the current ILRP. Information collected on tested wells included depth to groundwater and well perforation levels where available. For many wells, quality parameters were collected, such as nitrates and total dissolved solids (TDS). In the groundwater characterization report, the information from the six counties was compiled and analyzed to produce maps showing areas where groundwater quality exceeds drinking water limits for nitrates. This information enabled CCGC to develop an accurate groundwater characterization in 2015 which provides growers, regulators and the public with a better understanding of local aquifers and geology in the six-county region.

DAC Drinking Water Challenges

Drinking water systems are categorized according to the number of service connections:

- Public water systems, which are referred to as municipal public water systems in this GSP for clarity, are water systems that provide drinking water to at least 15 service connections or serve an average of at least 25 people for at least 60 days a year,
- State small water systems are water systems that provide piped drinking water to between five and 14 service connections, and do not regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of the year,
- Local small water systems are water systems that provide drinking water to between two and four service connections, and

- Private domestic wells usually provide water to only one or two connections.

Since state small water systems, local small water systems, and private domestic wells face more severe drinking water challenges than public water systems, they are the focus for the following discussion.

Private domestic wells are not regulated by the State. MCDEH requires one-time nitrate testing of newly installed private domestic wells, but there are no additional requirements. The SWRCB's Groundwater Ambient Monitoring and Assessment (GAMA) Domestic Well Project was developed in order to address the lack of domestic well water quality data. The GAMA Groundwater Information System includes numerous datasets that can be downloaded by users. The CCRWQCB also collects domestic well data per Irrigated Lands Regulatory Program (ILRP) groundwater monitoring requirements.

Between October 2013 and August 2014, the CCGC compiled water quality data from 229 samples from domestic and irrigation wells in the Salinas Valley. Data were collected from the GeoTracker GAMA database that includes data from the California Department of Public Health, GAMA-SWRCB data collection efforts and Regulated Sites. Additional data were collected from the USGS National Water Information System data, and data were extracted from the GAMA special study carried out by Lawrence Livermore National Laboratory. In its 2015 *Groundwater Characterization Report* (CCGC, 2015), CCGC made the following conclusions regarding nitrate in the Salinas Valley:

- 41% of wells with nitrate concentrations (or 309 of 758 total wells sampled) had maximum concentrations over the MCL.
- 34% of the land area within the Salinas Valley has nitrate concentrations over the MCL.
- 55% of domestic wells or 121 of 221 total sampled on CCGC-member properties had concentrations exceeding the MCL.

Domestic wells and wells associated with local small and state small water systems are generally more susceptible to nitrate contamination since they are typically shallow and are more likely to be located in rural areas within or adjacent to agricultural areas. They are also more susceptible to potential nitrate contamination from nearby septic systems. Public water systems, on the other hand, tend to access deeper groundwater and are more likely to be located in areas that are less susceptible nitrate contamination. Public water system operators implement regular water quality testing and treatment as necessary, and wells are usually taken out of service once they become contaminated. Funding programs are often available for public water systems, and costs are spread out over a large number of ratepayers over time. When contamination is detected in private domestic wells, treatment options are limited and the individual homeowner will typically have to bear the full cost of addressing the problem (CCGC, 2015).

According to the IRWM Plan, only a very small percentage of domestic wells in Monterey County have been tested through the Central Coast Regional Water Quality Board's groundwater monitoring programs. MCDEH has recently adopted a policy to begin requiring well testing when an application for repair or replacement of a septic system is proposed, which will provide new additional data.

MCDEH Drinking Water Protection Services regulates state small and local small water systems through their Small Water System Program. There are currently 694 local small and 276 state small water systems in Monterey County, which serve about 4,232 connections (Greater Monterey County Regional Water Management Group, 2018).

DACs in the Basin rely primarily on groundwater for their drinking water supply, except for those who rely on bottled water due to unsafe or poor water quality conditions. The primary drinking water problems experienced by small DACs in Monterey County are related to nitrate contamination, seawater intrusion, or other contaminants of concern. Numerous studies over the decades have documented these challenges.

Insufficient water quantity is generally less of a problem in the Salinas Groundwater Basin than poor or unsafe water quality; although poor water quality effectively results in insufficient water supply. During the recent prolonged drought, while Monterey County was classified as experiencing "exceptional" drought, very few water users in the Greater Monterey County IRWM region actually suffered from a lack of water availability. While the drought had immediate impacts on surface water supplies throughout the State, it tended to have a more gradual impact on groundwater supplies. Groundwater quality, rather than quantity, is of primary concern for drinking water supplies in the Salinas Valley Groundwater Basin, particularly nitrate contamination and seawater intrusion.

Nitrate Contamination

Nitrate contamination is particularly problematic in the Salinas Valley Groundwater Basin, where agriculture dominates the landscape. Nitrate is currently extensively monitored and evaluated by the CCGC and is documented in a report submitted to the CCRWQCB (CCGC, 2015). Nitrate contamination in the Salinas Valley was first documented in a report published by the Association of Monterey Bay Area Governments (AMBAG) in 1978. In 1988, a report by the State Water Board documented that nitrate levels in the Salinas Valley groundwater had impaired its beneficial use as a drinking water supply. In a July 1995 staff report, the SWRCB ranked the Salinas Valley as their number one water quality concern due to the severity of nitrate contamination. All of the Salinas Valley cities have had to replace domestic water wells due to high nitrate levels that exceed the drinking water MCL. Maps prepared by the MCWRA indicate that elevated nitrate concentrations in groundwater were locally present through the 1960s, but significantly increased in the 1970s and 1980s.

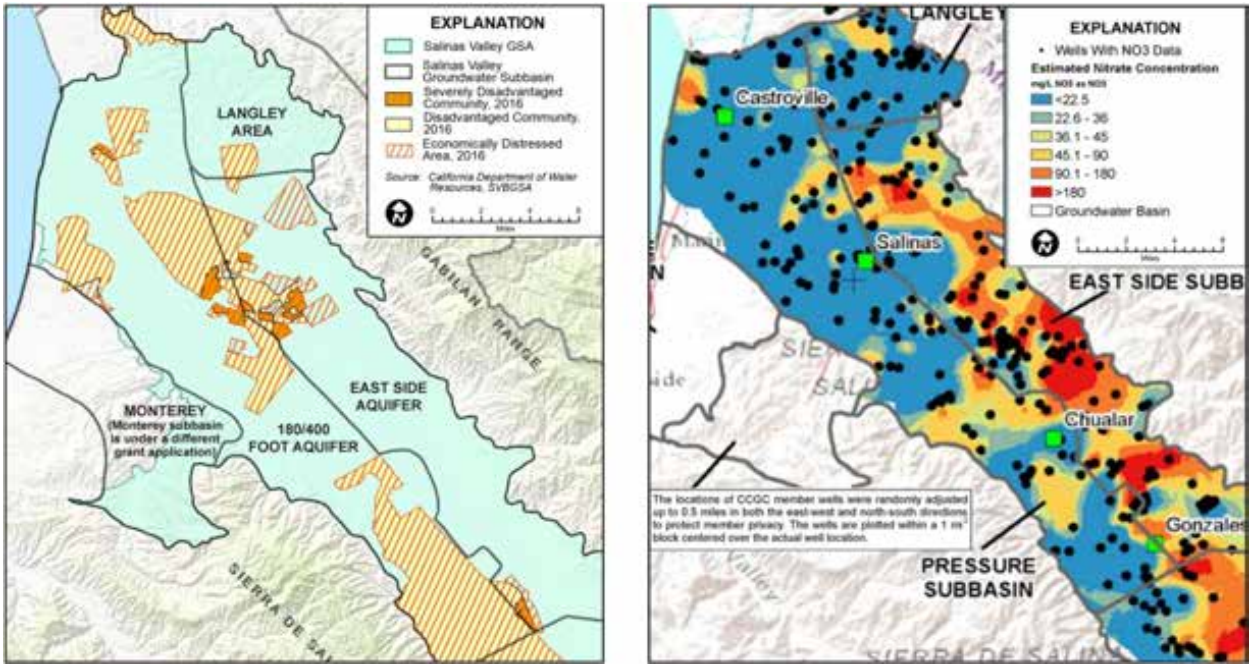


Figure 2. DACs, SDACs, and EDAs in the 180/400-Foot Aquifer Subbasin and Nitrate Concentration Map developed by CCGC (2015)

Seawater Intrusion

Seawater Intrusion is another major water quality concern for DACs and SDACs, primarily impacting coastal communities in the northern part of the Salinas Valley Groundwater Basin. Seawater intrusion has been observed in the 180-Foot and 400-Foot Aquifer Subbasin for over 70 years, and was documented in DWR Bulletin 52 in 1946. By the 1940s, many agricultural wells in the Castroville area had become so salty that they had to be abandoned (Greater Monterey County Regional Water Management Group, 2018). Seawater is high in chlorides. EPA defines the 500 mg/L threshold as an Upper Limit Secondary Maximum Contaminant Level (SMCL). Seawater intrusion is the primary threat to drinking water supplies for many DACs located in the northern coastal portion of the Basin.

Seawater has intruded inland in the 180-Foot and 400-Foot Aquifers, as shown on Figure 3 and Figure 4. Seawater intrusion in the 180-Foot Aquifer covered approximately 20,000 acres in 1995 and had expanded to approximately 28,000 acres by 2010. Since then, the rate of expansion has decreased, with an overlying area of 28,300 acres in 2017. The area overlying intrusion into the 400-Foot Aquifer is not as extensive, with an overlying area of approximately 12,000 acres in 2010. However, between 2013 and 2015, the 400-Foot Aquifer experienced a significant increase in the area of seawater intrusion, from approximately 12,500 acres to approximately 18,000 acres, likely resulting from localized downward migration between aquifers.

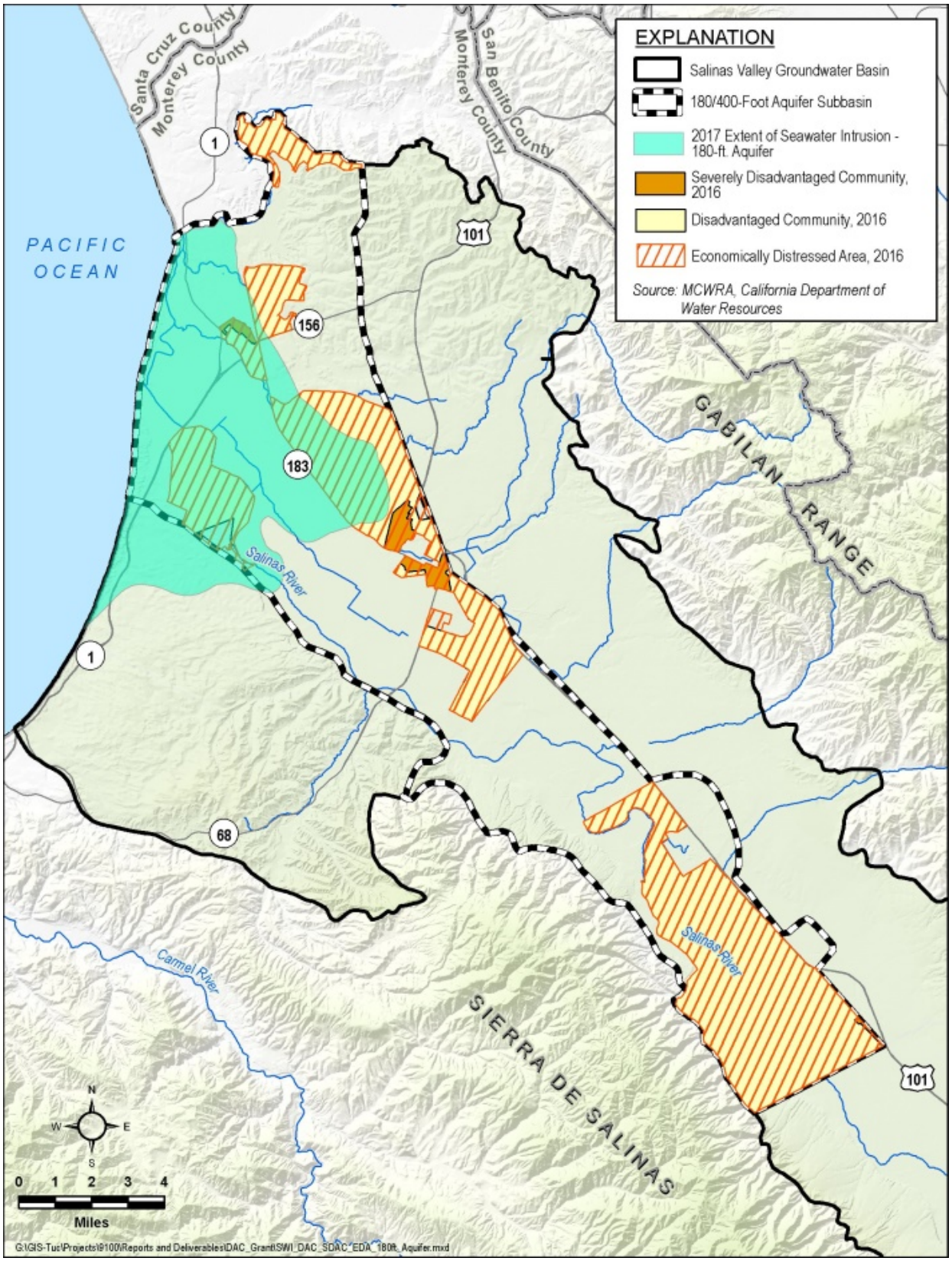


Figure 3. 2017 Extent of Seawater Intrusion in the 180-Foot Aquifer

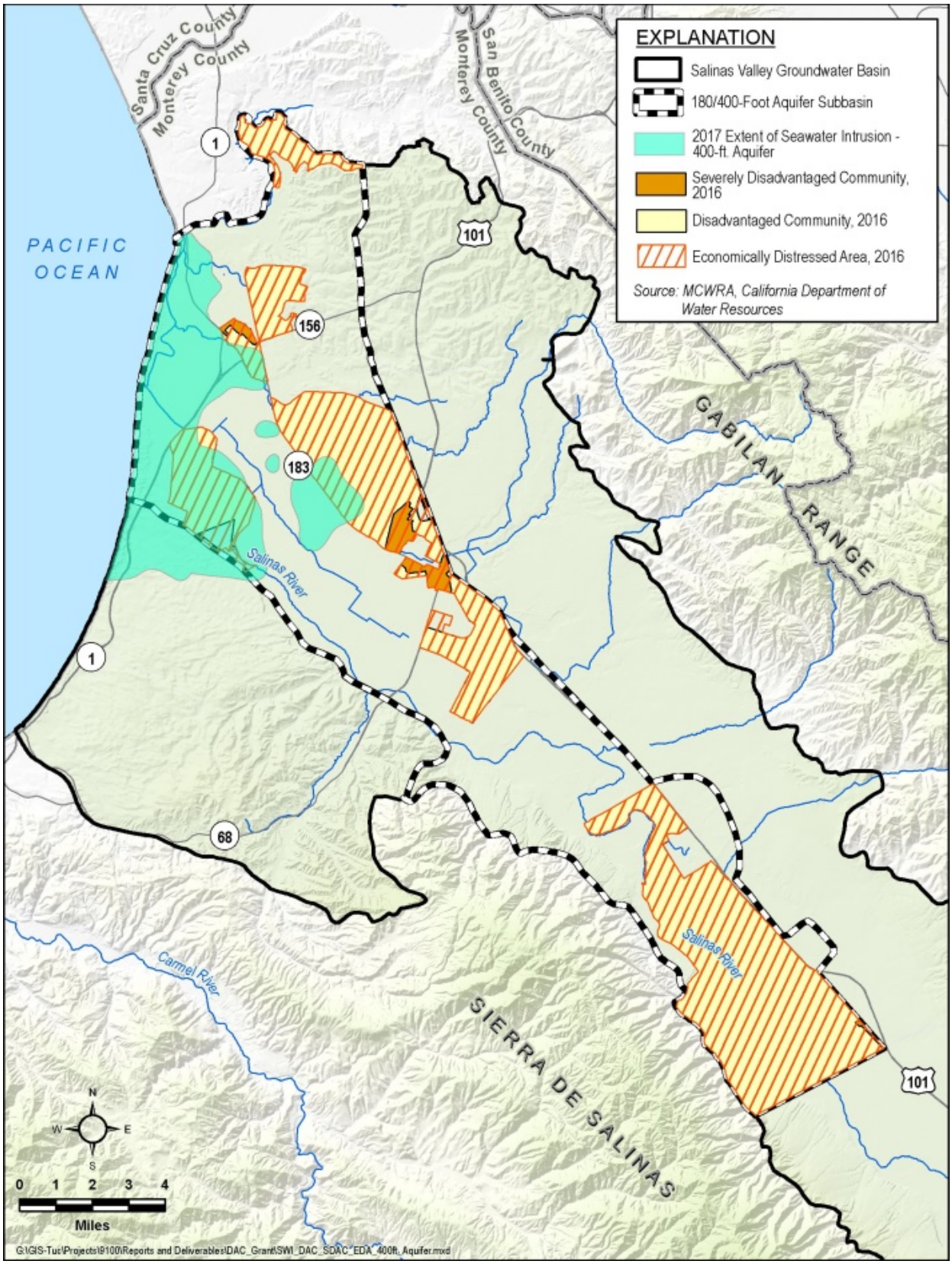


Figure 4. 2017 Extent of Seawater Intrusion in the 400-Foot Aquifer

Other Contaminants of Concern

In addition to nitrates and seawater intrusion, there are a few other contaminants of concern. With the recent passage of Assembly Bill (AB) 1249 (Salas, Chapter 717, Statutes of 2014), the State has recognized the prevalence, and urgency to address, the contamination of drinking water supplies in California by not only nitrate, but specifically by arsenic, perchlorate, and hexavalent chromium. The Greater Monterey County IRWM Regional Water Management Group is currently working with a Technical Advisory Committee, which includes MCDEH and the Central Coast Regional Water Quality Control Board, to identify the extent of nitrate, arsenic, perchlorate, and hexavalent chromium contamination in communities throughout the region. This group will develop a plan to address the contamination from these additional contaminants of concern.

Conclusion

The State of California has recognized the severity of drinking water challenges for DACs with the passage of the 2012 Human Right to Water Act (AB 685), which declared that every person has a right to clean, safe, and affordable drinking water. Further, it emphasized this state-wide focus with the Safe and Affordable Drinking Water Fund in 2019, which provides funding specifically for safe drinking water solutions in DACs that do not have access to safe drinking water.

This appendix highlights the relationship between DACs and groundwater in the Salinas Valley Groundwater Basin, particularly with respect to drinking water. It provides a base for the SVBGSA to engage DACs in a strategic dialogue and support state and local efforts related to drinking water.

References

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APPENDIX 11F. Salinas Valley Basin Groundwater Sustainability Agency Communication & Public Engagement Plan

BACKGROUND

In 2014, the California State Legislature passed the Sustainable Groundwater Management Act (SGMA). SGMA was enacted in response to a robust scientific understanding that, throughout California, groundwater is being used faster than it's being replenished. SGMA requires that medium- and high-priority groundwater basins and subbasins develop Groundwater Sustainability Plans (GSPs) that outline how subbasins will achieve sustainability in 20 years and maintain sustainability for an additional 30 years.

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) was formed in 2017 to implement SGMA locally within the Salinas Groundwater Valley. The SVBGSA is governed by a local and diverse 11-member Board of Directors and relies on robust science and public involvement for decision-making. An Advisory Committee and a Planning Committee have been formed to advise the SVBGSA and these committees represent constituencies that are either not represented on the Board of Directors and/or are considered important stakeholders to developing comprehensive subbasin plans for the Salinas Valley. This governance structure provides for multiple opportunities for engagement in the planning processes the SVBGSA undertakes. Community engagement and transparency on SVBGSA decisions is paramount to building a sustainable and productive solution to groundwater sustainability.

The Salinas Groundwater Valley consists of eight groundwater subbasins, of which six fall entirely or partially under the SVBGSA jurisdiction. One of the eight subbasins, the Seaside Subbasin, is adjudicated and not within the jurisdiction of the SVGBSA. Another subbasin, the Paso Robles Subbasin, lies completely in San Luis Obispo County and is managed by other GSAs. The sixth subbasin is the Monterey Subbasin which is being cooperatively planned for by the SVBGSA and the Marine Coast Water District Groundwater Sustainability Agency (MCGSA). Together, the six Subbasin plans under the SVBGSA will be integrated into the Salinas Valley Integrated Groundwater Sustainability Plan (ISP).

The Communication and Public Engagement Plan addresses the 180/400-Foot Aquifer Subbasin which has been designated by the California Department of Water Resources as "Critically Over-Drafted" requiring a GSP be completed by January 2020 and provided to the Department of Water Resources for approval.

MISSION OF THE SALINAS VALLEY BASIN GSA

The GSA mission is two-fold:

1. Develop a groundwater sustainability plan by 2020
2. Achieve groundwater sustainability by 2040

GOALS OF THE COMMUNICATION PLAN

Ultimately, the success of the 180/400 Aquifer Subbasin Groundwater Sustainability Plan will be determined by the collective action of every groundwater user (that's all of us!). On practical level, this means that in order to meet our ongoing water supply needs, for our drinking water and for our economic livelihoods, we must balance the basin. We know that our current use is unsustainable, and the State has put us on a tight timeline to fix the problem.

Therefore, it is our intention to involve stakeholders and the public early and frequently, and to keep the internal information flow seamless among staff, consultants, committee members, and the Board regarding the goals and objectives of the 180/400-Aquifer Subbasin GSP and associated monitoring and implementation activities. The goals of this communications plan are therefore:

1. To inform the public by distributing accurate, objective, and timely information.
2. To foster open dialogue and stakeholder engagement by hosting opportunities to participate in planning processes and provide feedback.
3. To invite input and feedback from the public at every step in the decision-making process and provide transparency in outcomes and recommendations.
4. To encourage informed Committee recommendations and informed decision-making at the Board.
5. To ensure that the Board, staff, consultants, and committee members have up-to-date information and understand their roles and responsibilities.

PHASES OF COMMUNICATION

Phase 1: GSA Formation (complete)

Phase 2a: Groundwater Sustainability Plan development – 6 subbasin GSPs

- 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan completed January 2020
- Five additional Subbasin GSPs will be undertaken beginning in 2020 through 2022. The Monterey Subbasin GSP will be cooperatively developed by SVBGSA and MCWDGSA.
- Salinas Valley Integrated Sustainability Plan (ISP) development 2022-2023

Phase 2b: Analysis and Determination of Funding Options

- Groundwater Sustainability Fee instituted March 2019

Phase 3: Groundwater Sustainability Plan – Capital Project Funding

Phase 4: Salinas Valley Integrated Sustainability Plan Implementation – 2020-2054

During 2018-2019 the GSA focus was on the completion of the 180/400-Foot Aquifer Subbasin Sustainability Plan and the adopted and implementation of a Groundwater Sustainability Fee. Both these actions will be completed by January 2020. The GSA is now entering additional subbasin planning for five additional subbasins from 2020 through 2022. The focus of this Communications Plan now shifts to continuing with subbasin plan development (Phase 2a) and feasibility of project identification and funding options (Phase 2b and Phase 3 above). At the conclusion of Phase 2 and Phase 3 a Salinas Valley Integrated Groundwater Sustainability Plan will be completed that provides projects and programs for reaching sustainability throughout the entire ISP area by 2040. Phase 4 Plan Implementation will be the focus from 2020 through 2040 with annual reporting and an adaptive management approach to basin conditions, management, and project implementation for the GSPs and ISP.

KEY MESSAGES

"The GSA is on a mission to develop a Groundwater Sustainability Plan by 2020, and achieve groundwater sustainability in the Salinas Valley by 2040. Join us."

Initially, our message points focus on: (1) getting to know your GSA; (2) an overview of groundwater sustainability planning for our community; and (3) how we got here.

We'll expand on the key message as the work evolves, and our talking points will get more specific as the 180/400-Aquifier Subbasin GSP and five other GSPs unfold. These initial talking points are broad enough to consistently come back to over time and will be good pivot points for interviews.

Key Messages: Get to Know Your GSA (& why it's so important)

- The GSA is on a mission to develop a Salinas Valley Integrated Groundwater Sustainability Plan by 2023 and achieve groundwater sustainability in the Salinas Valley by 2040.
- Our groundwater basin is comprised of 6 sub-basins one of which is identified as "Critically Over-Drafted".
- We know that our current use is unsustainable. In order to meet our ongoing water supply needs now and into the future we must balance the basin.
- The State has put us on a tight timeline to fix the problem. We ambitiously accept the challenge.
- In 2020 we'll have a plan in place for the 180/400-foot aquifer and will have scoped projects and programs to bring the subbasin back into balance; then, from 2020 through 2022 we will work on specific sustainability plans for the other five basins. We then have 20 years to implement management actions and projects towards achieving sustainability.
- This matters to everyone. That's why the GSA Board and our advisory and planning committees are made up of diverse stakeholders from every walk of life in the Salinas Valley.

- We have an unprecedented opportunity, and responsibility, to work together collaboratively and develop a science-based Groundwater Sustainability Plan.
- Join us! Visit our website, sign up for updates, and attend the next meeting.

Key Message Points: Groundwater Sustainability Plan

- The 180/400-Foot Aquifer Groundwater Sustainability Plan and Salinas Valley Integrated Sustainability Plan are our 20-year plans to ensure that the Salinas Valley Groundwater Basin will be managed sustainably for our current and future generations.
- Aquifer subbasin planning is not only critical to our future - it's also mandatory. SGMA mandates that a science-based GSPs be developed for the Salinas Valley Basin by 2020 and 2022, and that the plan be implemented by 2040.
- The stakes are high. Should we choose not to act, or fail to meet the 2020, 2022, or 2040 milestones, the State can intervene with required (and hefty) pumping restrictions and extraction fees.
- To meet these milestones, the local GSA has been granted the authority to develop GSPs, monitor and measure the basin and individual wells within the basin, implement capital projects, and assess necessary fees for planning and implementation.
- Six "Sustainability Indicators" will be evaluated in the Plans and used to gauge what we need to do to bring our groundwater supply and demand back into balance.
- Given the hydrologic and geographic diversity of the Salinas Basin, the ISP will identify overlapping projects and programs which benefit the basins. Our planning process includes initiating subbasin planning committees for the subbasins and maintains our governance structure of the board of directors, advisory committee and planning committee.
- Stakeholder engagement is a key component to the development and implementation of the Plan. We encourage and invite the community to get involved. Attend our monthly Board meetings, attend a Subbasin Planning Committee meeting, sign up for our newsletter, or join Gary for one of his coffee chats.

Key Message Points: How We Got Here

- The Salinas Valley Basin GSA is firmly rooted in stakeholder engagement.
- From 2015-2017, local agencies and stakeholders worked with the Consensus Building Institute (CBI) to facilitate the formation of the GSA.
- In 2015, CBI began by conducting a Salinas Valley Groundwater Stakeholder Issue Assessment, which included interviews and surveys and resulted in recommendations for a transparent, inclusive process for the local implementation of SGMA and the formation of the GSA.
- Following the Issue Assessment, The Collaborative Work Group of stakeholders representing a broad range of interests met from March 2016 through April 2017 and developed recommendations on the governance structure, voting, and legal structure of the GSA.
- The Stakeholder Forum was simultaneously held throughout 2016 and served as a critical element for interested stakeholders and the public to learn about and provide input on the GSA.

The Collaborative Work Group integrated input received at the Stakeholder Forum into its recommendations on GSA formation.

- After nearly two years of community engagement led by the top consensus-building professionals in the nation, the Salinas Valley Basin Groundwater Sustainability Agency was formed in April 2017 with a broad and diverse foundation of support.

THE PRESS PROTOCOL

The press is an important partner for getting our message out to the community. We welcome conversations with the press. To maximize our effectiveness in working with the media, a consistent protocol should be followed by all staff, consultants, board members, and committee members.

The Spokesperson(s)

- The primary spokesperson for all media inquiries is the General Manager (GM). Media inquiries should first be directed to the GM to coordinate a response.
- Reporters may want to also interview board and community members. Some board members may enjoy media conversations, while others do not. The GSA will maintain a standby list of a few board and community members, who will be prepared and can be called on for media inquiries.
- In preparation for the interview, the GM and Public Information Officer (PIO) will work closely with the spokespeople in preparation for media interviews. Factual and coordinated talking points will be provided in advance of the interview.

Respond Quickly

- Reporters often work on tight deadlines, and we don't want an opportunity for a feature story to get away. If the media calls, return the call and refer them to the GM at the earliest possible opportunity.

The Back-Up Plan

- If the GM is unavailable and cannot be reached for comment, media inquiries should be directed to the Board's back-up media representative. The Board's representative will contact the PIO to determine whether a response is necessary. If the response is not urgent, offer the media an appointment time for when the GM is available. If it is a time sensitive and urgent matter, a statement will be released from the Board representative in close coordination with the PIO.

"In The News"

- Following the interview or statement, if published, the GM or PIO will circulate the story to the Board and committee members.

SOCIAL MEDIA

Existing well-established social media platforms of our partner agencies and organizations (e.g., Facebook) will be leveraged to share GSA updates and milestones. This action has awaited completion of

the 180/400 Foot – Aquifer Subbasin GSP and will be activated in 2020-2022. The next planning phase for the five additional subbasin GSPs will be undertaken in early 2020.

The PIO will monitor social media sites for mention of the GSA and subbasin planning and implementation efforts. A social media report, including any GSA mentions, positive and negative comments, will be provided to the GM on a monthly basis. Negative posts will be shared and discussed immediately to determine what, if any, response is warranted.

COMMUNICATION GUIDELINES & RESPONSIBILITIES

Board of Directors

Board members should uphold the strongest ethics when communicating about GSA business. The GSA believes that dissenting opinions are valid and important. At the same time, it's crucial that there's no confusion about the official position and decisions of the GSA Board. By serving on the Board, directors agree to act in good faith towards the mission and goals of the GSA at all times. External communications are an inherent part of that responsibility. To avoid confusion in the public, and real or perceived conflicts of interest:

- Board members should strive to communicate fairly and in the best interest of the GSA at all times.
- Board members should not express an opinion (in writing or verbally) on behalf of, or as a member of, the GSA unless authorized by the Board to do so.
- The board-designated spokesperson should not be a spokesperson for another entity with an interest or involvement in ground water.
- Media inquiries should be immediately directed to the GM for a coordinated response.

Committee Members

The Advisory Committee and Subbasin Planning Committees are consensus-seeking and have adopted charters that include communication guidelines. The GSA values the diversity of our committees and understands how difficult it can be to reach agreement. Importantly, committee members are welcome to speak their opinions inside and outside the committee meeting room, but members should take great care to avoid the appearance of speaking on behalf of or as a spokesperson of the GSA. Further, by serving on a committee, members agree to be acting in good faith towards meeting the goals of the GSA. If contacted by the press or an external party concerning Committee discussions, participants are asked to:

- Point out that they are not speaking on behalf of the Committee (unless specifically authorized by the Committee to do so).
- Present their own views and cocientiously refrain from expressing, characterizing, or judging the views of others.
- Avoid using the press as a vehicle for negotiation, confrontation, or grandstanding.

Ambassadors

Ambassadors are community leaders that support the GSA mission and can be counted on to informally speak on-point about the GSA. While Ambassadors are GSA supporters, they also encourage divergent opinions to be shared and heard. Ambassadors may be GSA board or committee members, partner agency staff, elected officials, or members of the public with no official relationship to the GSA. If Ambassadors are approached by the media, they may follow our Media Guidelines above and we can assist with talking points and coordinated messaging as needed. We'll maintain strong relationships with Ambassadors and keep them in-the-know.

Staff & Consultants

The actions of staff and consultants, both on and off work time, are a reflection of the organization and can impact the reputation and credibility of the GSA. Staff and consultants are expected to act and speak with the highest standard of conduct both professionally and personally.

From time-to-time staff and consultants may be asked to provide formal or informal updates on the work of the GSA. All such requests should be brought to the attention of the GM for consideration. All public testimony and statements must be reviewed and pre-approved by the GM.

Affiliates of the GSA should uphold a strong duty of care to the organization's mission and reputation in all external communications, including personal social media posts, public testimonies, and casual conversations. In no circumstances should a personal opinion be misrepresented to be the official position of the GSA.

DECISION-MAKING PROCESS

The Salinas Valley Basin GSA Board of Directors meets monthly. The regularly scheduled board meetings are held on the 2nd Thursday of the month at 3:00 PM. Agendas and meeting details are available online. Board meetings are open to the public.

The GSA Board of Directors is the decision-making body. To facilitate community and stakeholder engagement in the decision-making process, a 25-member Advisory Committee was formed. The consensus-based Advisory Committee is comprised of a diverse range of interests throughout the Salinas Valley, and meets every month to provide input and recommendations to the Board. The Board appoints members to the Advisory Committee based on composition that is representative of the region. Given the hydrologic and geographic diversity of the Salinas Valley, five Subbasin Planning Committees are being developed throughout the Salinas Valley. These Subbbasin Planning Committees will provide even more localized stakeholder input towards the development of the five additional GSPs.

To maintain timely information flow between the committees and the Board, a brief 1-page informational "Committee Key Outcomes" will be prepared following each committee meeting and sent to the Board.

PUBLIC ENGAGEMENT OPPORTUNITIES

Board, Advisory Committee, and Planning Committee meetings are open to the public. The foundation of the Salinas Valley Basin GSA is deeply rooted in stakeholder engagement. Beginning in 2015, local agencies and stakeholders worked with the Consensus Building Institute to conduct a Stakeholder Issue Assessment and develop a broadly supported and agreed upon road map for the establishment of the GSA. The Collaborative Work Group and Stakeholder Forum were instrumental in getting us to where we are today. We intend to continue and build upon this transparent, inclusive public engagement process as we develop the GSP and determine the funding mechanisms necessary to meet the GSA's regulatory responsibilities and achieve groundwater sustainability.

Advisory Committee: Monthly meetings of the Advisory Committee are open to the public.

Local Subbasin Planning Committees: Consultant teams will attend subbasin planning committee meetings to present their findings and interim work products, and to tailor the subbasin GSPs to management areas. Subbasin planning committees will be invited to provide feedback directly to the consultants along the way, and committee recommendations will be carefully considered, tracked, and summarized as part of the subbasin GSPs and ISP.

Interested Parties List: The GSA maintains an Interested Parties List. In addition, we continue to add interested parties to the list on an ongoing basis. Interested parties will be invited to board and committee meetings; GSA staff will also send regular updates to the Interested Parties List (via a monthly e-newsletter and timely updates/ announcements).

Website: The website, https://svbgsa.org/, will be updated and maintained to provide everything that the public will want to know about the GSA and SGMA. The website will include meeting agendas and materials, FAQs, resource links, and consultant work products. Content regarding SGMA and completed plans will be developed and posted in during 2019 – 2020. The website will link associated articles in the broader context of SGMA for additional information and education.

Facebook Page: A Facebook page could provide better real time communication for the next phase of planning for the five subbasins. The overlapping timeline and Subbasin Planning Committees could be organized into a Facebook page framework.

Leveraging Existing Channels of Communication: To expand the GSA's sphere of engagement, we'll partner with existing agencies, committees, and organizations to disseminate information and invite public involvement. GSA staff will request the opportunity to provide articles/updates/announcements for existing social media pages and newsletters (both digital and print). We'll attend board/committee meetings, brief leadership, and coordinate public outreach at key GSA milestones. External organizations include, but are not limited to:

- Water Districts and Utility Companies (California Water Service Company; Monterey Peninsula Water Management District, Cal Am; Monterey One)

- Cities and County
- Chambers of Commerce – Salinas Valley, South County/King City, Latino
- League of Women Voters
- Rotary Clubs
- Strawberry Commission; Leafy Greens Research Board
- Greater Monterey County Integrated Regional Water Management Group
- Grower-Shipper Water & Land Use Committee
- Agricultural Advisory Committee
- Agricultural Land Trust
- Land Watch Monterey County
- Center for Community Advocacy
- COPA (Communities Organized for Relational Power in Action)
- California State University Monterey Bay
- United States Geological Survey

COMMUNICATION TOOLS AND INFORMATIONAL MATERIALS

- Website with current maps, current calendar and overarching plan development flow chart
- Facebook Page regularly updated including meeting dates and Subbasin Planning updates
- Interested Party Email List
- Partner agency/organization social media pages (e.g., Facebook), newsletters (digital and print)
- Annual GSA e-Newsletter
- Timely updates to Interested Party Email List (short *hot off the press* announcements)
- Press Releases: distributed to press, elected and agency officials, and Interested Party List
- 1 to 2-page FAQs for SGMA, SVBGSA, and the GSP
- Project and Program FAQs
- Groundwater Sustainability Fee FAQs
- "In the News" circulation to Board, Committees, and List Serve
- General GSA Talking Points for Board and Committee Members; Talking Points for key milestones, findings, and updates
- Brief "Committee Key Outcomes" - circulated to board and committee members after committee meetings
- Editorial Boards and/or Letters to the Editor
- Open Houses/Forums/Field Trips (meet the consultant team, milestones, periodic GSP updates, etc.)
- Radio interviews and features, particularly Spanish radio

APPENDIX 11G

PUBLIC REVIEW COMMENTS

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW Response	Response
1-3-1			1		11/6/2018	D. Williams notes from November planning committee meeting	Clarify that the 180/400 subbasin is a subbasin.		Page 1 of the PDF and Word document both refer to the 180/400-Foot Aquifer Subbasin.
1-3-2					11/6/2018	D. Williams notes from November planning committee meeting	Clarify what a subbain is and what a GSA is.		Additional explanation added to text.
1-3-3	Section 1.2				11/6/2018	D. Williams notes from November planning committee meeting	Change description of Eastside boundary to "… between this subbasin and the 180/400…"		Text revised
1-3-4	Section 1.2				11/6/2018	D. Williams notes from November planning committee meeting	Correct text to state that the Forebay Subbasin starts at Gonzales		Acknowledged, text revised
1-3-5		Table 3-1			11/6/2018	D. Williams notes from November planning committee meeting	Explain where the Table 3-1 data come from. Describe Idle Cropland (from LandIQ)		Text revised; figure and table will be updated
1-3-6		Table 3-1			11/6/2018	D. Williams notes from November planning committee meeting	Can we discriminate permeant crops from other crops on Table 3-1. Maybe stop differentiating between vineyards and other crops.		Text revised; figure and table will be updated
1-3-7		Table 3-1		3-1	11/6/2018	D. Williams notes from November planning committee meeting	Change the land use to match model land use. Both figure and Table 3-1		Text and table will be revised to be consistent.
1-3-8	3.4.1				11/6/2018	D. Williams notes from November planning committee meeting	Acknowledge the recycled water used in Las Palmas		Text revised
1-3-9			10		11/6/2018	D. Williams notes from November planning committee meeting	the last paragraph Figure number is wrong		Should refer to Figure 2-1; text revised
1-3-10			13		11/6/2018	D. Williams notes from November planning committee meeting	Names of Jurisdictions still don't match between map and text		Text and figures will be checked for consistency
1-3-11			18		11/6/2018	D. Williams notes from November planning committee meeting	When talking about water sources, refer to the SVWP, not just CSIP		Added description of SVWP
1-3-12	3.5				11/6/2018	D. Williams notes from November planning committee meeting	When we talk about the number of existing wells, state that this is from DWR. State that there are other data sources.		Text revised
1-3-13	3.6.1.1				11/6/2018	D. Williams notes from November planning committee meeting	Elminate the "As of 2018".		Text revised
1-3-14				3-4	11/6/2018	D. Williams notes from November planning committee meeting	Remove Cal-Am from the figure		Text revised
1-3-15				3-4	11/6/2018	D. Williams notes from November planning committee meeting	Add Pajaro Sunny Mesa to the figure		The Pajaro Summay Mesa CSD will be added to Figure 3-4.
1-3-16					11/6/2018	D. Williams notes from November planning committee meeting	Always identify data sources throughout the document		Text has been revised to more clearly attribute data sources.
1-3-17	3.7.1				11/6/2018	D. Williams notes from November planning committee meeting	Find citation for Monterey GMP		Comment refes to the Monterey Groundwater Management Plan. Citation added.
1-3-18	3.7.3.2				11/6/2018	D. Williams notes from November planning committee meeting	This section should reference MCWD, not City of Marina		Text revised
1-3-19					11/6/2018	D. Williams notes from November planning committee meeting	Where does MCWD's "allocation" com from on the table that discusses their UWMP		MCWD has an allocation from the Fort Ord Reuse Authority. Text revised.
1-3-20	3.8.7				11/6/2018	D. Williams notes from November planning committee meeting	The second bullet, last sentence is confusing		Text revised
1-3-21					11/6/2018	D. Williams notes from November planning committee meeting	Ask all agencies about the status of the policies in the general plans.		The text was revised to note that plans were summarized based on publically avialable info at time of GSP preparation.
1-3-22		3-4			11/6/2018	D. Williams notes from November planning committee meeting	AMBAG just updated this, are we showing the latest.		Yes, table shows the most recent data.
1-3-23	3.10.6				11/6/2018	D. Williams notes from November planning committee meeting	3.10.6 references Greenfield as a member. It's not.		Correct, Greenfield is not a member. This section addresses all land use plans, not just members.
1-3-24			55		11/6/2018	D. Williams notes from November planning committee meeting	Page 55 references zone 2c. Remove that statement		The reference to Zone 2C is a direct quote out of the Monterey County General Plan
1-3-25					11/6/2018	D. Williams notes from November planning committee meeting	Extraction data only applies to Zones 2, 2A, and 2B. Not 2C or other areas. These will be low estimates. Be sure we state this. Theses are the ONLY extraction numbers, but they are not complete.		Text revised that MCWRA groundwater extraction data are reported for a slightly different area than the 180/400-Foot Aquifer subbasin
1-3-26					12/10/2018	Tom Virsik (PJM Law) email to G. Petersen	At part 3.8, no mention is made of the "regulatory" impact of (1) Ordinance 3790 and (2) the 2017 or 2018 moratorium ordinance on deep aquifer wells.		These are discussed in future sections.

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW Response	Response
1-3-27					12/10/2018	Tom Virsik (PJM Law) email to G. Petersen	The GSP draft seems to understand local regulation is relevant in that it is noting the MCWRA export limitation. The two ordinances may limit operational flexibility of any GSP recommended program or management action, e.g. switching from the 180/400 to the deep.		Comment noted. No change in text required.
1-3-28					12/10/2018	Tom Virsik (PJM Law) email to G. Petersen	GSP draft 3.8.7 The draft GSP includes a General Plan well destruction reference, but that does not seem to be the same as Ordinance 3790's mandatory and time-sensitive destruction. Cites: GSP Emergency Reg 354.8 ©, (d) and (f)		3.8.7 Now refers to Ordinance 3790.
1-3-29			30		12/18/2018	Mike McCullough email to D. Williams	Make sure new name Monterey One Water is used vs Monterey Regional Water Pollution Control Agency (MRWPCA)		Corrected throughout the document.
1-3-30					12/18/2018	Mike McCullough email to D. Williams	Can get an idea of how much water the industries use in and around Salinas. The City should know how much they are extracting each month.		Comment noted.
1-3-31	3.2		10		11/15/2018	Bob Jaques email to D. Williams, G. Petersen	10 under Section 3.2 and to the Management Plan on page 6 under Section 3.2, so that readers will have a general understanding of what is meant by an adjudicated basin, and some specifics about the adjudicated Seaside Basin.		Text added for clarification
1-3-32	3.9		34		11/21/2018	Paul Tran CHISPA email to G. Petersen	Should include the complete language of the settlement agreement in reference to a long-term water supply in the Zone 2C benefit assessment area. This language is contained in the amended Monterey County 2010 General Plan section PS-3.1		Comment noted. No change to text
1-3-33					11/13/2018	Tamara Voss to D. Williams, G. Petersen	Comments received as scanned hand edits in pdf.		Relevant edits in letter were made.

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
4-1	4.3.2					Adam Secondo / SVBGSA Board	Some stakeholders are indicating that there are different water qualities in the deep aquifer	We will check into this.	No public data exist on this that we can put into this report. However, this statement is now included.	
4-2	4.5					Tom Virsik	The chapters present the system as it exists today, which is not necessarily the natural system. Checklist approach vs what is actually needed for sustainability.		There is no intention to attempt to re-create the natural groundwater system.	
4-3	4.4.1					Vera Nelson / EKI for MCWD	Need to be clear about what aquifers are called principal aquifers, particularly the deep aquifer. Also the 180/400. Need to specifically state which ones are principal aquifers.		The deep aquifers are currently identified as principal aquifers. Text has been added to state that the deep aquifers exist in the Monterey subbasin. The extnet of the deep aquifer is now identified as a specific data gap	
4-4	4.4.1					Vera Nelson / EKI for MCWD	Deep aquifers not shown in cross-sections; need to identify data gaps		Deep aquifers are now included in data gaps	
4-5	4.4.2					Vera Nelson / EKI for MCWD	Include tables summarizing K and T for each zone		Data not available for this level of refinment. Chapter 10 includes a program for obtainint T and S data during implementation	
4-6						Emily Gardner	Why was the response to her comment on section 3.4.2 regarding the location of the irrigated cease of water, "no action"?	This may have been a mistake. We should revisit this.	Comment is unclear	
4-7					12/3/18	Anonymous	Should mention nitrates in document and stance of the GSA	Nitrate is in Chapter 5	Nitrate is in Chapter 5	
4-8			32-35		12/3/18	Anonymous	Surprised no mention of nitrates in water quality section. Will the state reject the Plan if it's ignored? Would like to see GSA address it rather than conferring ALL regulatory power to the RWQCB?	Nitrate is in Chapter 5	Nitrate is in Chapter 5	
4-9					12/3/18	Anonymous	Have short section explaining the nitrate problem and provide a map or data about the nitrate in GW. Perhaps carefully states how the GSA intends to work with/defer some responsibility to R3.	Nitrate is in Chapter 5	Figure 5-32 provides a map of nitrate concentrations, and it is discussed in 5.5.3.	
4-10					1/17/19	EKI	Comments received; saved		See discussions below	Draft Hydrostratigraphy Summary_MCWD_2019-01-17_EKI
4-11					2/7/19	Sandi Matsumoto/TNC	The identification of GDEs within GSPs is a required GSP element of the Basin Setting Section under the description of Current & Historical Groundwater Conditions (23 CCR §354.16). Recognizing natural points of discharge (seeps & springs) as GDEs is consistent with the SGMA definition of GDEs1, however, we recommend the identification of GDEs (GDE map Figure 4-11) for the 180-400 Foot Aquifer be moved to Chapter 5: Groundwater Conditions and elaborated upon with a description of current and historical groundwater conditions in the GDE areas.		We have opted to include the identificaiton of GDEs as part of the hydrogeologic conceptual model because GDEs represent natural discharge areas that are addressed in the HCM.	TNC_180-400ftAquifer_Chapter4
4-12					2/7/19	Sandi Matsumoto/TNC	Decisions to remove, keep, or add polygons from the NC dataset into a basin GDE map should be based on best available science in a manner that promotes transparency and accountability with stakeholders. Any polygons that are removed, added, or kept should be inventoried in the submitted shapefile to DWR, and mapped in the plan. We recommend revising Figure 4-11 to reflect this change.		Our assessment of potential GDEs followed the approach developed by TNC. The approach is detailed in Appendix 4A.	TNC_180-400ftAquifer_Chapter4

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
4-13					2/7/19	Sandi Matsumoto/TNC	Best practices for identifying GDEs in GSPs are outlined in detail in Step 1 of The Nature Conservancy's Guidance Document: "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans". Here are some highlights: • The NC dataset is a starting point for GSAs, and needs to be groundtruthed with aerial photography to screen for changes in land use that many not be reflected in the NC dataset (e.g., recent development, cultivated agricultural land, obvious human-made features). • Grouping multiple GDE polygons into larger units by location (proximity to each other) and principal aquifer will simplify the process of evaluating potential effects on GDE due to groundwater conditions under GSP Chapter 7: Sustainable Management Criteria. • Groundwater conditions within GDEs should be briefly described within the portion of the Basin Setting Section where GDEs are being identified. • When using groundwater levels to confirm that a connection to groundwater in a principal aquifer exists, please refer to Attachment C for best practices in doing so. • Not all GDEs are created equal. ...		Our assessment of potential GDEs followed the approach developed by TNC. The approach is detailed in Appendix 4A.	TNC_180-400ftAquifer_Chapter4
4-14					2/7/19	Sandi Matsumoto/TNC	The basin boundary bottom for the aquifer was determined using the 1970 USGS TDS=3,000ppm contour lines ("usable water" boundary), but groundwater extraction well depth data should also be included in the determination of the basin bottom to prevent extractors with wells deeper than the basin boundary from claiming exemption of SGMA due to their well residing outside the vertical extent of the basin boundary. As noted on page 9 in DWR's Hydrogeologic Conceptual Model BMP2 "the definable bottom of the basin should be at least as deep as the deepest groundwater extractions".		As noted in Section 4.3.2, the base of the Subbasin has been set to be consistent with previous reports. While some wells may be deeper than the identified base, the previous reporets provide the most reasonable estimate of the depth of usable groundwater in the Subbasin	TNC_180-400ftAquifer_Chapter4
4-15	4.4.1				3/26/19	EKI	The GSP Regulations specifically define the term "Principal Aquifer" (California Code of Regulations (CCR) §351 (aa)) and have plan development as well as monitoring network requirements for identified Principal Aquifers. Currently, GSP Section 4.4.1 appears to have included all alluvial deposits/valley fill deposits from ground surface to the bottom of the subbasin in a single Principal Aquifer. As agreed upon during the December 6 Planning Committee Meeting, the 180/400 Foot Aquifer Subbasin GSP should define multiple Principal Aquifers given the definable layers of aquifer and aquitard units in the subbasin. At least one Principal Aquifer should be defined for the Deep Aquifers (i.e. the 900-Foot and 1,500-Foot Aquifers). Per GSP Regulations, groundwater elevation contours, hydrographs, minimum thresholds for seawater intrusion, sufficient monitoring network coverage, etc. should be developed for each Principal Aquifer identified in this GSP.		The 180/400 Foot Aquifer Subbains GSP identifies three principal aquifers: the 180-Foot Aquifer, the 400-Foot Aquifer, and the Deep Aquifers	Preliminary Comments_Chapter4_2019-3-26_EKI

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
4-16	4.4.1				3/26/19	EKI	In addition to the comment above, this section discusses extensive continuous clay layers within the 180/400 Foot Aquifer Subbasin. However, there are existing wells and abandoned wells that are potentially acting as "conduits" for saline water to flow to the lower aquifers1. Airborne electromagnetic analysis conducted in the northern Salinas Valley Basin also showed that there are gaps in the 180/400-Foot Aquitard in the 180/400-Foot Aquifer Subbasin near the coast. Please add a discussion of potential conduits of vertical flow in the Subbasin. This comment was not provided during the December 6 Planning Committee Meeting.		Statement added that the clay layers are not continuous	Preliminary Comments_Chapter4_2019-3-26_EKI
4-17	4.4.2				3/26/19	EKI	180/400 Foot Aquifer Subbasin GSP should provide aquifer properties for each of the defined Principal Aquifers. The GSP should provide storativity, conductivity (per CCR §354.14 (b)(4)(B)), and transmissivity for each Principal Aquifer. We understand that Section 4.7 of the January 2019 update discussed aquifer parameters as a data gap. As agreed upon during the Planning Committee meeting, SVBGSA will obtain these aquifer property parameters from the Water Resources Agency to include in this section. This section could benefit from either a table or description on an aquifer and aquitard basis compiling all the relevant data (e.g. from field tests or models) and		Aquifer specific hydrogeologic properties are generally not available for the 180/400-Foot Aquifer Subbasin. This is identified as a data gap in the GSP. The GSP proposes up to six aquifer tests to fill this data gap.	Preliminary Comments_Chapter4_2019-3-26_EKI
4-18				4-6, 4-7, 4-8	3/26/19	EKI	The Deep Aquifers are unrepresented in cross-sections. Please provide a discussion if this is a data gap. This comment has been noted by and concurred to by SVBGSA during the Planning Committee Meeting. Section 4.7 of the January 2019 update has included information on the deep aquifer as a data gap.		Section 4.7 of the GSP states that the hydrostratigraphy, vertical and horizontal extents, and potential recharge areas of the Deep aquifers are poorly known and that these are an important data gap.	Preliminary Comments_Chapter4_2019-3-26_EKI

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
4-19	4.6.2				3/26/19	EKI	Please add the following text after the second paragraph on Page 33. This comment was not provided during the December 6 Planning Committee Meeting. "Groundwater with a total dissolved solid of 3,000 mg/L or less, is groundwater that is considered to be suitable, or potentially suitable, for beneficial uses in accordance with SWRCB Resolution No. 88-63 as adopted in its entirety in the Central Coast Regional Water Quality Control Board's Basin Plan. California Code of Regulations, Title 23, Section 659 – 669 lists the beneficial uses of surface water, which is also applicable to groundwater. Those beneficial uses include (1) domestic use, (2) irrigation use, (3) power use, (4) frost protection use, (5) municipal use, (6) mining use, (7) industrial use, (8) fish and wildlife preservation and enhancement use, (9) aquaculture use, (10) fish and wildlife protection and enhancement, (11) recreational use, (12) water quality use, and (13) stock watering use. In addition, Water Code Section 1242 states that the storing of water underground constitutes a beneficial use."		Text added as appropriate	Preliminary Comments_Chapter4_2019-3-26_EKI
4-20	4				3/26/19	EKI	See attached document		Reviewed the hydrostratigraphic summary. Incorporated as appropriate.	Draft Hydrostratigraphy Summary_MCWD_2019-01-17_EKI
4-21	4				12/6/18	Heather Lukacs	For the Salinas Valley Basin, we would specifically like you to start by considering at least the following contaminants for inclusion in the GSP and your monitoring network: 1. Nitrate 2. Arsenic 3. Hexavalent Chromium 4. Uranium 5. 123-TCP 6. DBCP 7. (also, chloride and TDS, as others have mentioned) See letter for details		Nitrate, arsenic, 123-TCP, and TDS are considered constituents of concern in the GSP. Hexavalent chromium is not included in the monitoring program because there is not currently an actionable limit. Should the State of California establish an MCL or SMCL for hexavalent chromium it will be added to the list of parameters monitored in the drinking water supply wells. Uranium and DBCP have not been found above actionable levels in supply wells.	HeatherLukacs_WaterQuality for Chapter 4_12.06.2018
4-22	4.3.2				12/21/18	Brian Frus	line 4, Error! Reference source not found should be deleted		Done.	GSP 180_400 Aquifer Comments Chs 4 Salinas Brian Frus 18 12 21
4-23	4.5				12/21/18	Brian Frus	line should read "35,000" acre-feet		Done.	GSP 180_400 Aquifer Comments Chs 4 Salinas Brian Frus 18 12 21
4-24	4.6.1				12/21/18	Brian Frus	Suggest this section state in layperson terms what is happening to the concentrations of the constituents discussed as one moves down the valley (or deeper into either the 180 or 400 aquifers)		Changes in general mineral chemistry with depth or location are not clear, and are not the focus of this GSP. More easily understandable language was added regarding the significance of the water quality information.	GSP 180_400 Aquifer Comments Chs 4 Salinas Brian Frus 18 12 21

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
5-1					2/7/19	Director Secondo	Would like to see in full each Hydrographs...all 2/7/19 comments saved	Yes, they will be added	Individual groundwater level hydrographs have been added after the hydrograph maps.	Comments-Feb 7 2019 Planning Committee
5-2				5-2	2/7/19	Director Granillo	The contour data do not extend all the way to the mountain ranges-there should be a note explaning the gaps, where/why exist.		An explanation has been added.	Comments-Feb 7 2019 Planning Committee
5-3				5-10	2/7/19	Director Granillo	It is difficult to see changes over time in the hydrorgraphs for the 180/400 aquifers.	Copies of the hydrographs will be added immediately following the maps.	Individual groundwater level hydrographs have been added after the hydrograph maps.	Comments-Feb 7 2019 Planning Committee
5-4					2/7/19	Public Comment/Mr Horacio with San Gerardo Community	How is water quality going to be monitored?	This will be detailed in the monitoring chapter.	Question answered	Comments-Feb 7 2019 Planning Committee
5-5					2/7/19	Public Comment/Mr Horacio with San Gerardo Community	When is the assessment going to start?	D Williams replied that's for the implementation once the plans are approved the 180/400 should be approved by December of this year	Question answered	Comments-Feb 7 2019 Planning Committee
5-6				5-26	2/7/19	Public Comment/Heather Lukas with Community Water Center	Why do the nitrates concentrations end in 2007?	D Williams indicated it was based on existing maps which were a series of maps that ended in 2007	Question answered	Comments-Feb 7 2019 Planning Committee
5-7					2/7/19	Public Comment/Heather Lukas with Community Water Center	Asked if the County data can be added as its been updated through fall of 2017. The data missing is the state data & county from private domestic wells. Does GSA consider private wells in terms of monioring water quality?	Les Girard replied only on new wells as part of the new process	These data will be identified in the monitoring chapter as a source for filling data gaps.	Comments-Feb 7 2019 Planning Committee
5-8					2/7/19	Public Comment/Patrick (Marina Coast Water)	How wil DWR handle the existing conditions to change the plans of the permiters on the overdraft?	D Williams said it will not change the Plan due to the existing conditions. The conditions are inherit in the Plans are conditions that can change in the future	Question answered	Comments-Feb 7 2019 Planning Committee
5-9					2/7/19	Public Comment/Tom Virsik	What does SMC stand for?	It stands for Sustainable Management Criteria	Question answered	Comments-Feb 7 2019 Planning Committee
5-10					2/7/19	Public Comment/Tom Virsik	Indicated he wrote a letter sent Feb 6, 2019 via email with details comments on the ISPs. Also commented on the lack of focus of fish flows, reservoir's and environmental aspects	D. Williams that these comments will be addressed in the SMC and fish flows will be addressed and other river rights not in detail only on requirement basis	The acronym is defined in its first usage.	Comments-Feb 7 2019 Planning Committee
5-11					2/7/19	Public Comment/Bill Lipe	Inquired about level of seawater intrusion	D Williams clarified that the current esitmate is approximately 14,000 acre-feet per year.	Question answered	Comments-Feb 7 2019 Planning Committee
5-12					2/7/19	Public Comment/Bill Lipe	Asked if the remainder is throughout the valley outside the 180/400?	D Williams advised there is a table in the ISP that lists the assumed overdrafts by subbasins based on groundwater levels. (The table refered to by D. Williams is Tablve 5-2 of the ISP)	Question answered	Comments-Feb 7 2019 Planning Committee
5-13	5.1.1				2/7/19	Chair McIntyre	Commented on the charts need little more explanation of what the contours mean	D. Williams replied it's a great suggestion to make this more readable	More explanation has been added in the text regarding the meaning of the contours and the contour interval	Comments-Feb 7 2019 Planning Committee
5-14	5.1.1				2/7/19	Director Secondo	Added that it could be less scientific	D Williams agreed this needs to be written less scientific and understandable	Not addressed in this draft. Final document edited to be more understandable.	Comments-Feb 7 2019 Planning Committee
5-15	5.1.2		17		2/7/19	Chair McIntyre	Addressed a typo on page 17: the 2007 should be 20017	D. Williams advised that it will be corrected if wrong	Corrected	Comments-Feb 7 2019 Planning Committee
5-16	5.1.3				2/7/19	Chair McIntyre	Asked if groundwater levels were recovered in 1983 & why they can't be recovered today?	D. Williams said there is no indication that water levels can be recovered to 1983 levels	Question answered	Comments-Feb 7 2019 Planning Committee
5-17	5.1.3				2/7/19	Director Brennan	Added it would be helpful to collaborate on the findings	D. Williams agreed	Question answered	Comments-Feb 7 2019 Planning Committee
5-18	5.1.4			5-13	2/7/19	Heather Lukacs	Asked what is represented on figure 5-13	D. Williams indicated these are graphs that are developed by the Water Resource Agency. Graphs that are to represent an average water level in a subbasin	Question answered	Comments-Feb 7 2019 Planning Committee
5-19	5.4				2/7/19	Heather Lukacs	What is represented on figure 5-10	D. Williams replied it's the cumulative total of water that has been lost from storage over time since the early 1940's	Question answered	Comments-Feb 7 2019 Planning Committee
5-20	5.6				2/7/19	Heather Lukacs	Regional Water Boards required ag water collection on farm domestic wells data is an additional source of groundwater quality data	D Williams replied that the current plan is to monitor groundwater quality it will be collected through the ILRP and Division of Drinking Water	These data will be identified in the monitoring chapter as a source for filling data gaps.	Comments-Feb 7 2019 Planning Committee
5-21	5.6				2/7/19	Mr. Horacio	Asked how much of the water quality are from the agency? Or, if the agency is only checking water levels and not the quality of the water	D. Williams indicated the water agency data in this chapter is water levels that will be used to develop a monitoring plan	Question answered	Comments-Feb 7 2019 Planning Committee
5-22	5.6.3				2/7/19	Director Brennan	How do you differ from seawater and chloride intrusion?	D. Williams pointed out they are related. It is a secondary MCL that needs to meet regulations with the GSA	Question answered	Comments-Feb 7 2019 Planning Committee

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
5-23	5.7				2/7/19	Tom Virsik	May be better to avoid the term 'underflow' due to legal implications	D. Williams advised he may have used the wrong term and meant to say 'subterranean stream' and will correct	Underflow has been replaced with suberranean stream.	Comments-Feb 7 2019 Planning Committee
5-24					2/21/19	Dallas Tubbs	Chevron purchases INSAR data from vendors	D Williams stated there is a significant data gap regarding subsidence that will require future surveys. Will need to assess the cost effectiveness	Comment Noted	2-21-19 Advisory Committee comments Chapter 5.doc
5-25					2/21/19	Bob Jaques	Noted decline in groundwater storage following both the Castroville Seawater Intrusion and Salinas Valley Water projects. He would like the text to comment regarding climactic impact or other factors that contribute to this decline.		Text added for clarification	2-21-19 Advisory Committee comments Chapter 5.doc
5-26	5.3				2/21/19	Bob Jaques	Section 5.3 should include the amount of useable groundwater as well as the groundwater storage loss and mentioned that water would not be included in the useable water data [comments saved]	D. Williams expressed concern that this information may mislead readers into believing that there is adequate water for use without considering implications such as further intrusion. D Williams stated that the water data would be addressed in Chapter 6 which will have a water budget with a sustainable yield number.	Question answered	2-21-19 Advisory Committee comments Chapter 5.doc
5-27	5.4				2/21/19	Bob Jaques	Follow up well head survey of the Seaside Basin showed that it was very economical		Comment Noted	2-21-19 Advisory Committee comments Chapter 5.doc
5-28	5.5				2/21/19	Bob Jaques	May have misunderstood Section 5.5 as he was under the impression that the 180/400 aquifer was recharged by the Salinas River, and the dam was to get water into the river beds	D. Williams stated that the intenet is to provide CSIP supplemental water in lieu of recharge. There is some percolation from the Salinas River but the impact is relatively small compared to the Forebay and Upper Valley	Question answered	2-21-19 Advisory Committee comments Chapter 5.doc
5-29					2/21/19	Howard Franklin	Made the distinction between interconnected water and recharge		Comment Noted	2-21-19 Advisory Committee comments Chapter 5.doc
5-30	5.5				2/21/19	Bob Jaques	Pointed out that one sentence states that groundwater greater than 20 feet below the surface may be interconnected and a following sentence states that groundwater greater than 20 feet below the surface is not interconnected to surface water.	D. Williams state that the contradictory sentence is in error	Contradictory sentences have been fixed	2-21-19 Advisory Committee comments Chapter 5.doc
5-31				5-7	2/21/19	Howard Franklin	Stated that figure 5-7 is the wrong map; it is a copy of the map on figure 5-6. For consideration regarding seawater intrusion and stopping the cone of depression, the WRA contours groundwater separately from seawater intrusion lines, which provide an interesting observation. The change in the cone of depression may be slowing down, but if continuing, would flatten out on the Eastside.		Map in Figure 5-7 was corrected	2-21-19 Advisory Committee comments Chapter 5.doc
5-32					2/21/19	EKI	EKI, on behalf of Marina Coast Water District, requested that the shallow aquifer be considered an aquifer and not removed, and they will submit a letter to that effect. Marina Coast Water is coordinating with Monterey		Comment noted	2-21-19 Advisory Committee comments Chapter 5.doc
5-33					2/21/19	Tom Adcock, G. Petersen, Nancy Isakson, Mr. Stefani	T. Adcock asked whether we would have to identify the aquifer or could simply take the coordination information. G. Petersen stated that the Agency would have to analyze the science. N. Isakson agreed with G. Petersen because there are differing opinions. Mr. Stefani stated that there is some data available from testing performed for two to three years		Question answered	2-21-19 Advisory Committee comments Chapter 5.doc
5-34					2/21/19	H Amezquito		D. Williams in response to H. Amezquito stated that the GSA has the responsibility of showing they are not harming groundwater quality, but is not responsible for mediation or cleanup. The Plan will identify existing water conditions to ensure it is not being made worse. Projects will have their own groundwater monitoring programs	Question answered	2-21-19 Advisory Committee comments Chapter 5.doc

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5-35					4/4/19	Glenn Church	Comments received [GChurch_Public Comment Chapters 5]		The SVBGSA technical team acknowledges the impacts of seawater intrusion on the 180/400-Foot Aquifer Subbasin, and the need to address this issue during the GSP development and implementation. A data gap analysis for seawater intrusion monitoring is included in Chapter 7. Chapter 8 will address the seawater intrusion with appropriate sustainable management criteria, and Chapter 9 will offer potential solutions to halt seawater intrusion in this area through a combination of projects and management actions.	GChurch_Public Comment Chapters 5
5-36	5.5				4/11/19	The Nature Conservancy	We recommend that interconnections of surface water with groundwater in the Shallow Aquifer be evaluated in this section of the GSP, since the Shallow Aquifer is within the 180/400-Foot Aquifer Subbasin.		Comment noted. Maps of the shallow water bearing zone sediments are not available - analysis was done with the best available science, data and tools.	TNC_180-400ftAquifer_Chapter5 submitted 04.11.2019
5-37	5.5				4/11/19	The Nature Conservancy	The 180-Foot Aquifer and the 400-Foot Aquifers are confined units, thus comparing groundwater levels of <20 feet below the ground surface with wells screened within a confined aquifer is an incorrect approach. This is because the potentiometric surface of a confined aquifer cannot reflect the position of the true water table. Comparing groundwater levels from the shallow (unconfined) aquifer (that exists above the Salinas Valley Aquitard) with the ground surface is a more appropriate approach for identifying ISW in the basin.		Comment noted. Maps of the shallow water bearing zone sediments are not available - analysis was done with the best available science, data and tools.	TNC_180-400ftAquifer_Chapter5 submitted 04.11.2019
5-38	5.5				4/11/19	The Nature Conservancy	We would like to see groundwater conditions evaluated across the range of seasonal and interannual time frames		Comment noted. Long-term averages and seasonal changes will be developed with the groundwater model once it is available	TNC_180-400ftAquifer_Chapter5 submitted 04.11.2019
5-39					4/11/19	The Nature Conservancy	Mapping ISW locations would be best done using contours of depth to groundwater measured from multiple points in time (different seasons and water year types) rather than only from Fall 2013. If data gaps exist in groundwater level contour data over time, these data gaps should be discussed in the GSP section 5.5.1 (Salinas Valley Basin ISP) and section 5.5 (180-400 Foot Aquifer GSP Draft) and reconciled in the Monitoring Network section, so that ISW maps can be improved in future GSPs		Comment noted. Once we have the model, we will be able to do these types of analysis more efficiently and accurately	TNC_180-400ftAquifer_Chapter5 submitted 04.11.2019
5-40					4/12/19	The Nature Conservancy	The use of piezometric head from confined aquifers should be eliminated from these ISW mapping efforts, since they do not adequately reflect the position of the true water table (see last paragraph on p. 38 of Salinas Valley Basin ISP)		Comment noted. Maps of the shallow water bearing zone sediments are not available - analysis was done with the best available science, data and tools.	TNC_180-400ftAquifer_Chapter5 submitted 04.11.2019
5-41					4/13/19	The Nature Conservancy	It is unclear on Figure 5-19 (Salinas Valley Basin ISP) and Figure 5-22 (180-400 Foot Aquifer GSP Draft), whether missing groundwater levels along certain reaches of the Salinas River are due to groundwater levels >20 feet bgs or due to data gaps in groundwater levels. Mapping the position of wells used for the interpolation of groundwater elevation data used to map groundwater level contours near surface water would help provide further clarification.		Maps were developed by MCWRA	TNC_180-400ftAquifer_Chapter5 submitted 04.11.2019
5-42					4/14/19	The Nature Conservancy	Please elaborate on how depth to groundwater contours were developed		Maps were developed by MCWRA	TNC_180-400ftAquifer_Chapter5 submitted 04.11.2019
5-43					4/15/19	The Nature Conservancy	We recommend mapping the gaining and losing reaches onto Figure 5-19 (Salinas Valley Basin ISP) using the data from Figure 5-23 (Salinas Valley Basin ISP). If this is not possible due to insufficient data, then as with the first bullet above, we would like the data gaps to be addressed by the Monitoring Network.		Maps were developed by MCWRA - data gaps are addressed in Chapters 7 and 10.	TNC_180-400ftAquifer_Chapter5 submitted 04.11.2019

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
6-0	6				6/6/2019	Director Brennan	It would be good to note that the Water Budget chapter will be updated when the model becomes available.		Text Added	
6-1	6				6/6/2019	Director Granillo	Questioned the accurate use of the period that included State mandatory restrictions in the water budget,	D. Williams stated that the historical water budget covers to 2014 because that is the date the historical model went to; therefore the projected model started in 2015.	Question Answered	
6-2	6				6/6/2019	Director Secondo	Wondered about the 1964 historical reference.	D. Williams stated that at some point, we refer to historical as 1964 forward because we are looking at data not in the water budget. However, he will review this.	No reference to 1964 found in document. Future water budget is based on 47 year period starting in Octobver 1967	
6-3	6				6/6/2019	Director Secondo	Questioned the validity when comparing current to historical water budgets, because the numbers do not match well.	D. Williams will more clearly point out that the method of creating short term water budgets is good for for long-term periods which average climatic cycles, but not for the short-term water budget when there are a couple of extreme years, and estimates of inflows and outflows do not match.	Text added to Section 6.1 to help clarify the difference between the historical and current water budgets	6/6/19 Planning Committee Minutes, Chapter 6
6-4	6				6/6/2019	Director Secondo	Expressed concern about the 40% error in the current groundwater budget. He would like to include 2012-2014 for average years, although he understands this creates additional work.	2012 throuhg 2014 is part of the historical water budget, the current water budget is for years other than those	Question Answered	6/6/19 Planning Committee Minutes, Chapter 6
6-5	6	43645	33		6/6/2019	Director Secondo	Table 6-29 incorrectly states "2017" average instead of "2070" average	Will correct this typographical error.	Corrected	6/6/19 Planning Committee Minutes, Chapter 6
6-6	6				6/6/2019	Nancy Isakson	Nancy Isakson stated the Chapter should include an explanation of how the the historical water budget is being created when there is no data back 50 years.	Will clarify that the historical data must include at least ten years data, and they have twenty years. He will include the difference between the historical budget and the future budget.	Text added to Section 6.1.	6/6/19 Planning Committee Minutes, Chapter 6
6-7	6				6/6/2019	Director Brennan	Would like to differentiate between the General Plan projects and imminent projects that currently total 23,000 units and that are not all reflected in urban water management plans. She would like a definition of "existing land use."	Check on the presumption on urban growth and if not in the calculations, include a statement about the uncertainties or possible changes to the future water budget based on potential urban growth. Provide a better explanation regarding assumptions on future land use after consulting with the future modeler on what they are including; he believes they can include this.	Text added to state that no urban growth is modeled to remain consistent with USGS model. Additional explanation added regarding the impact of this assumption.	6/6/19 Planning Committee Minutes, Chapter 6
6-8	6				6/6/2019	Director Secondo	Believes we are losing too much on the evapotranspiration (ET) demand.	Would like more feedback on this from Director Secondo	Comment noted	6/6/19 Planning Committee Minutes, Chapter 6
6-9	6				6/6/2019	Nancy Isakson; Director Brennan	State the sustainable yield will be revised based on monitoring.	Will include	Text added to Sections 6.8.4 and 6.10.6	6/6/19 Planning Committee Minutes, Chapter 6
6-10	6				6/6/2019	Directors Brennan and Secondo	Chapter 8 should explain that the future water budget is based on the Salinas Valley Integrated Hydrologic Model (SVIHM) and the historical water budget is based on historical data. Once the SVIHM historical model is received, this will be simpler.	Will explain that the water budgets will correlate better when the historical model is available	Text added to Section 6.1	6/6/19 Planning Committee Minutes, Chapter 6
6-11	6				6/6/2019	Derrik Williams	Typo on Future Water Budget slide/table 6-31	Correct to reflect 2030 and 2070 instead of 2030 and 2030.	Corrected	6/6/19 Planning Committee Minutes, Chapter 6
6-12	6	6-20;6-31			6/6/2019	Director Secondo; Derrik Williams	Director Secondo like to see the current year also.	Will move the 96,000 AFY to this table; could compare all 3 sustainable yields in a single chart	Historical sustainable yield data adde to Table 6-31	6/6/19 Planning Committee Minutes, Chapter 6
6-13	6				6/6/2019	Directors Secondo and Brennan	Director Secondo would like to see the current and projected water budgets together in the report for easier viewing. Director Brennan stated it should be foot noted so as not to mislead the reader, because they are based on different data.		Done	6/6/19 Planning Committee Minutes, Chapter 6
6-14	6	6-4			6/6/2019	Director Secondo	Blanco Drain has a typo in the number (zeros)	Will correct	Corrected	6/6/19 Planning Committee Minutes, Chapter 6
6-15	6	6-25			6/6/2019	Director Secondo	Should it say outflow instead of inflow?		Inflow is correct	6/6/19 Planning Committee Minutes, Chapter 6
6-16	6	6-20			6/6/2019	Nancy Isakson	Would like a comment on Table 6-20 explaining what is included and to what extent.		Comment noted. Table elements are described in the text above.	6/6/19 Planning Committee Minutes, Chapter 6
6-17	6	6-5			6/6/2019	Nancy Isakson; Tom Virsik	Isakson: There is no true river diversion by ag in the pressure area and the results skew accuracy of report.; Virsik: Is there double counting from the WRA and State reports	Relying on reports to the State	Question Answered	6/6/19 Planning Committee Minutes, Chapter 6
6-18	6				6/6/2019	Tom Virsik	Any lower real performance numbers should be used in future instead of projections. On policy issues, the assumptions could come back as management actions. He finds it odd not to use DWR Bulletin 52 appendices. The Plan should be made to work well now and curtailed if beyond what is needed.		Comments noted	6/6/19 Planning Committee Minutes, Chapter 6

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
6-19	6				6/6/2019	Nancy Isakson	Need reconciliation between USGS model that does not include surface water diversion when presenting comparison.	In response to Ms. Isakson, D. Williams stated that the USGS model includes crops that need to be irrigated. However, he cannot answer how much groundwater the USGS model assumes is needed for crops or whether we can figure out if it balances out.	Question Answered	6/6/19 Planning Committee Minutes, Chapter 6
6-20	6				7/10/2019	Community Water Center	**Recommendation 1:** We strongly encourage you to revise your calculations of sustainable yield to include and abate all six undesirable results enumerated in SGMA. Chapter 6's definition of sustainable yield fails to comport with the statutory definition. SGMA explicitly requires that groundwater be managed in a way that avoids negative impacts to beneficial users and all six undesirable results. Those undesirable results include: (1) chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon; (2) significant and unreasonable reduction of groundwater storage; (3) significant and unreasonable seawater intrusion; (4) significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies; (5) significant and unreasonable land subsidence that substantially interferes with surface land uses; and (6) depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of that surface water. I d. § 10721(x). The undesirable results are cumulative, not disjunctive. GSPs must evaluate all six undesirable results, and any interactions between those results, to satisfy SGMA. Current draft of Chapter 6 relies on only one indicator of sustainability and one undesirable result. The proposed draft defines sustainable yield as "an estimate of the quantity of groundwater that can be pumped on a long-term average annual basis without causing a net decrease in storage." See Draft Chapter 6 180/400-Foot Aquifer Subbasin GSP page 24, section 6.8.4 (June 17, 2019, included in advisory committee meeting packet). There is no legal or scientific basis for that definition of sustainable yield. We are concerned that the current sustainable yield calculation fails to inform the public and GSA of the actual net amount of water that can be extracted		Text has been added to explain that the sustainable yield is a long term management number, not the amount of pumping needed to stop current seawater intrusion. The sustainable yield assumes no seawater intrusion once the intrusion has been halted. Therefore, the future sustainable yield DOES take into account all undesireable results. In other words, the future sustainable yield is the sustainable yield once actions have been taken to reach measureable objectives and avoid undesirable results. Prior to the future sustainable yield there will need to be actions taken to come to sustainability.	Chapter 6 Water Budget_CWC Comments, 7/11/19
6-21	6				7/10/2019	Community Water Center	**Recommendation 2:** We request that you release the data and assumptions underlying Chapter 6's sustainable yield calculations, water budget calculations, and groundwater model. We encourage the GSA to ensure compliance with SGMA and California administrative law by releasing the data, methodologies, technical appendices, model assumptions, model inputs/outputs, sources, and all other relevant model parameters when draft chapters are released to the public for review and comment. We request that the GSA ensure that all relevant data is released concurrently with draft chapters for all future draft chapters.		In accordance with SGMA regulations, copies of all reference documents will be uploaded to the DWR website when the final GSP is uploaded.	Chapter 6 Water Budget_CWC Comments, 7/11/19
6-22	6				7/10/2019	Community Water Center	SGMA, California administrative law, and the Brown Act require GSAs to release to the public all data, research, sources, assumptions and inputs, outputs, the formulae applied to those inputs, and the ultimate results of a formula or model as part of the public comment process. 23 CCR §§ 352.4(f) & 354.14. DWR's Draft BMP also encourages transparency in the use and disclosure of models used to support SGMA's requirements. In the context of GSPs, the purpose of public comment is to allow the public to engage meaningfully in the public decision making process, which in turn will strengthen the reliability and accuracy of GSPs. That data must be publicly accessible and is a critical factor in gaining consensus on groundwater projects, groundwater pumping restrictions, potential groundwater fees, prioritization of beneficial uses, and other groundwater regulations. Draft Chapter 6 currently fails to provide the GSA and the public with sufficient background information to support the chapter's sustainable yield calculations and the groundwater model itself.		In accordance with SGMA regulations, copies of all reference documents will be uploaded to the DWR website when the final GSP is uploaded.	Chapter 6 Water Budget_CWC Comments, 7/11/19

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
6-23	6				7/10/2019	Community Water Center	Timely disclosing source material and key assumptions is necessary to ensure the GSP is accurate and that the public is able to ground truth those assumptions. For example, during the June 20, 2019, advisory committee meeting, the GSA's consultant informed the public that the proposed "sustainable yield" calculation assumes that the Castroville Seawater Intrusion Project (CSIP) will function "perfectly." Many of those in attendance questioned that assumption, as it is impossible to ensure a project will operate perfectly. Failure to account for the reality that the project will not always operate "perfectly" introduces unquantified uncertainty into the sustainable yield calculation. As a result, the proposed calculation may be inaccurate, which may exacerbate undesirable results—including seawater intrusion—in the subbasin. At a minimum, the GSP must consider alternative calculations that account for the reasonable and foreseeable possibility that the project may operate below "perfect" performance in order to create an accurate accounting of sustainable yield. In fact, in its Draft BMP, DWR explicitly notes that GSPs must acknowledge uncertainty and address how the plan will address that uncertainty. By failing to disclose to the public the assumptions incorporated in draft Chapter 6, the GSP may rely on any number of faulty assumptions that undermine the reliability, reality, and accuracy of the sustainable yield calculation and groundwater model. We are asking the GSA to make all assumptions transparent and clear in the plan itself, to engage stakeholders and the public in discussion of those parameters and assumptions, and to make decisions with knowledge of the limitations of whatever formulae or models are adopted. When DWR reviews plans, it will assess "[w]hether the projects and management actions are feasible and likely to prevent undesirable results and ensure that the basin is operated within its		We agree that the water budgets have uncertainty, and state so in the GSP. We additionally state that the uncertainty will be reduced as addtiional data and tools become avaialble. The existing water budget is based on best available data and methods.	Chapter 6 Water Budget_CWC Comments, 7/11/19
6-24	6				7/10/2019	Community Water Center	It is challenging to provide feedback regarding Chapter 6's models and its sustainable yield calculation without publicly available supporting documentation on how calculations have been made. We request that the GSA immediately: 1. Disclose the technical appendix, supporting documentation and research, groundwater model, sustainable yield formula, methodologies for the groundwater model and sustainable yield formula, and model assumptions and limitations at the time it releases draft Chapter 6 for public review and comment. Disclosure should be made by posting this information to the GSA website and contacting all interested parties. 2. Update its timeline to ensure technical appendices, supporting data and research, and all related information are released when public comment opens for each draft chapter and the final draft GSP; 3. Distribute a revised draft Chapter 6 that includes the Advisory Committee and stakeholders' requested changes.		The appendix has been updated.	Chapter 6 Water Budget_CWC Comments, 7/11/19
6-25	6	6-20			7/11/2019	Thomas Virsik	The current sustainable yield calculation is still absent. That has not changed in any iteration to date. At 6.8.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. Table 6-20 at 25/42. (Note that the text right above the table uses a different figure of 97,300 AFY.)		Thank you for catching this. Current sustainable yield has been added to the text and tables.	GSABOD comment 7-11-19

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6-26	6	6-15, 6-30			7/11/2019	Thomas Virsik	FUTURE SUSTAINABLE YIELD STILL BASED ON QUESTIONABLE ASSUMPTIONS. The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 37/54 and 18/35. Consultant Williams explained that the difference arose from the CSIP projects coming online, i.e., the projects were built and started performing during the historical period while the future projections assumed the projects were preforming at full capacity. My follow-up comment after the explanation was that it was unrealistic to assume the projects would perform perfectly (now and) in the future and not founded on the "best available" data. I and others noted that the Monterey County Resources Agency (MCWRA) has substantial data on the real-world efficiency/performance of the projects. The GSA can obtain that data, (1) disclose and (2) use it in its future projections of water needs. As it stands, the future projections of Chapter 6 are at best aspirational, when ready data exists that could support realistic projections.		The future water budget is based on current assumptions in the SVIHM, which includes a fully efficient CSIP project. These are the best available data for esitmating the future sustainable yield. When the SVIHM becomes available, the SVBGSA can modify assumptions for the CSIP project as necessary.	GSABOD comment 7-11-19
6-27	6				7/11/2019	Thomas Virsik	On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft. If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 subbasin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP. March 2017 letter, pages 6-7. The current iterations of Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential "management action" in SGMA nomenclature).		Mitigation of overdraft is included in Section 9.6.	GSABOD comment 7-11-19
6-28	6	6-19			7/11/2019	Thomas Virsik	SURFACE WATER EXTRACTIONS STILL UNRELIABLE "Surface" water reports to the State are public, unlike "groundwater" reports to the MCWRA. Total surface water diversions are quantified but have not been cross-checked to eliminate double-counting. My letter of June 4, 2019 provided a real-world example of a state report from the 180/400 area that the GSA -- but not the public -- can check against the MCWRA data to find out if there is double-counting. Appendix 6A contains the data used to calculate the surface water diversions in draft Chapter 6, but the data is a mere aggregation. There is no reason for the GSA to withhold the public data it obtained from the state database, eWRIMS, that it then aggregated. The order of magnitude of surface pumping reported is not trivial, being around 7,900 AFY on average. 10/27. Changes of similar orders of magnitude have occurred between the initial version of Chapter 6 seen by the Planning Committee to the one before the Board. Updating the draft Chapter because of better data and analyses is good, but it begs the question of why those data command renewed attention while others, e.g., the real-world performance of the CSIP projects and the double-counting of surface/groundwater, do not. (See highlighted examples in GSABOD comment 7-11-19.pdf).		The GSP acknowledges the potential double counting of extractions, and identifies this as an uncertainty in the water budget. Because of the many uncertainties in the historical water budget, it was deterimined that attempting to identify all double counting was not cost effective. The cost effective approach is to refine the water budget with the SVIHM when it becomes availalbe. The SVIHM does not double count surface water diversions and groundwater pumpiong. This is the approach specifically identified in the GSP.	GSABOD comment 7-11-19
6-29	6				7/11/2019	Thomas Virsik	Iterating the data and analyses is good in general, but not when the effort is selectively applied. In its third iteration, draft Chapter 6 still fails (1) to address a key regulatory requirement (explicitly calculating and disclosing overdraft and the current sustainable yield), (2) report and use MCWRA data about the CSIP projects' on-the-ground efficiency and performance, and (3) address doublecounting from surface and groundwater reports.		Chapter 6 discloses overdraft in Sections 6.8.5 and 6.10.5. The important CSIP values, suchas annual deliveries, are included in the GSP. CSIP efficiency has not been calculated by any known entity. Double counting of groundwater extractions and surface water diversions is addressed inthe previous comment.	GSABOD comment 7-11-19

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6-30	6				7/2/2019	Marina Coast Water District	**Estimated Sustainable Yield Inconsistent with SGMA** We recommend that the following language be included: The "sustainable yield estimate" presented in the draft Water Budget chapter does not consider all of the sustainability indicators or sustainable management criteria. As such, it is not equivalent to the quantity of groundwater that can be extracted without causing undesirable results. The plan for achieving sustainability in the basin will be addressed through projects and management actions, where SVBGSA will compare the projected and actual outcomes of project and management actions against sustainable management criteria and ultimately evaluate how much groundwater can be extracted, based upon the projects and management actions that are selected and implemented.		The future sustainable yield DOES take into account all undesireable results. In other words, the future sustainable yield is the sustainable yield once actions have been taken to reach measureable objectives and avoid undesirable results. Prior to the future sustainable yield there will need to be actions taken to come to sustainability.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-31	6				7/2/2019	Marina Coast Water District	**The 180/400 Subbasin GSP must not preclude the Monterey Subbasin from Achieving Sustainability.** We recommend that the following language be added to the GSP: *Pursuant to GSP Regulation 350.4 (f), the 180/400 Subbasin GSP will consider the effects of its implementation on the adjacent Monterey Subbasin, and its ability to achieve and maintain sustainability.* *"A Plan will be evaluated, and its implementation assessed, consistent with the objective that a basin be sustainably managed within 20 years of Plan implementation without adversely affecting the ability of an adjacent basin to implement its Plan or achieve and maintain its sustainability goal over the planning and implementation horizon."* *The Monterey and 180/400 Subbasins are hydraulically connected. Therefore, the sustainable yield and sustainable management criteria for the 180/400 Subbasin and the Monterey Subbasin must consider the effects of cross-boundary groundwater flows between subbasins and/or the provision of alternative water supplies. The Monterey Subbasin GSP will also include projects and management actions that could benefit both subbasins.*		The 180/400-Foot Aquifer Subbasin GSP will not preclude any surrouning subbasin from achieving sustainability. Similarly, the GSP for any surrounding subbasin cannot preclude the 180/400-Foot Aquifer Subbasin from achieving sustainability.The GSPs for all surrounding subbasins will be developed by January 31, 2022. Until these surrounding GSPs are developed, there is no defintion of sustainability in the surrounding subbasins. Only after the surrounding subbasins establish sustanaible management criteria can the SVBGSA assess whether any one subbasin's plan precludes a neighboring subbasin from achieving sustainability.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-32	6				7/2/2019	Marina Coast Water District	In addition, we recommend that the following information/language be added to the GSP: **1993 Fort Ord Annexation Agreement** Under the 1993 Fort Ord Annexation Agreement the MCWRA annexed the Fort Ord lands into Zones 2 and 2A and allocated to the Army 6,600 acre-feet per year of potable groundwater from the Salinas Valley Groundwater Basin. The Army paid an annexation fee of $7.4 million to be used by MCWRA to complete the design of the Castroville Seawater Intrusion Project (CSIP). In addition, the Army received a $400,000 credit for money spent on planning and information for the EIR/EIS for CSIP, the Salinas Valley Reclamation Project, and the Fort Ord Annexation. The September 10, 1993 "Annexation Assembly and Evaluation Report for the Annexation of Fort Ord by the Monterey County Water Resources Agency," which was incorporated as Appendix D to the 1993 Annexation Agreement, provides the background and justification for the annexation. The Executive Summary to that report states in part the following: The purpose of this annexation by [MCWRA] is to provide the basis for a long term, reliable, potable water supply to supply the Army's residual mission at Fort Ord after it is realigned per the Base Closure and Realignment Act of 1990. Annexation will also facilitate the disposal and reuse of the portions of Fort Ord not needed to support the Army's residual mission.		GSP implementation will abide by all existing agreements.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19

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6-33	6				7/2/2019	Marina Coast Water District	**1993 Fort Ord Annexation Agreement (continued)** Section 4, Terms and Conditions of the 1993 Annexation Agreement state the following: 4.c. After execution of this agreement and until Project Implementation4, Fort Ord/POM Annex/RC may withdraw a maximum of 6,600 acre-feet of water per year from the Salinas Basin, provided no more than 5,200 acre-feet per year are withdrawn from the 180-foot aquifer and 400-foot aquifer. The 6,600 and 5,200 acre-feet thresholds correspond to the annual peak (1984) and recent average (1988-1992) amounts of potable water Fort Ord has withdrawn from the Salinas Basin (does notinclude pumpage-from the-non-potable golf course well in the Seaside Basin). …The MCWRA agrees not to object to any Fort Ord/POM Annex/RC withdrawal under 6,600 acre-feet per year, except in compliance with California Water Code Appendix, Chapter 52, Section 22.		Comment noted. GSP implementation will consider all existing water rights and agreements.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-34	6				7/2/2019	Marina Coast Water District	**1993 Fort Ord Annexation Agreement (continued)** 4.g. Should future litigation, regulation or other unforeseen action diminish the total water supply available to the MCWRA, the MCWRA agrees that it will consult with the Fort Ord/POM Annex Commander. Also, in such an event, the MCWRA agrees to exercise its powers in a manner such that Fort Ord/POM Annex/RC shall be no more severely affected in a proportional sense than the other members of the Zones.		Comment noted.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-35	6				7/2/2019	Marina Coast Water District	**1993 Fort Ord Annexation Agreement (continued)** 4.h. If prior to Project Implementation, any Fort Ord/POM Annex well (including any located in the Seaside Basin) becomes contaminated with seawater, or is adversely affected by regulatory or legal action, the MCWRA: shall cooperate with the Government in finding an interim water supply; shall assist the Government in any permit processes necessary to obtain such an interim water supply; and shall provide the same services to the Government as it would to any other municipal water supplier in the Zones under similar circumstances. The Government will bear the costs of obtaining such an interim water supply. Such costs will not include the cost of MCWRA staff time in providing services to the Government hereunder. The MCWRA will continue to monitor the rate of seawater intrusion, and will keep the Fort Ord/POM Annex Commander informed as to: the rate of seawater intrusion; the progress of plans for its Project; and the estimated remaining life of the Fort Ord/POM Annex wells. The MCWRA shall pass to the Fort Ord/POM Annex Commander any information they may obtain related to the continuing yield of Fort Ord/POM Annex wells located in the Seaside Basin.		Comment noted.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-36	6				7/2/2019	Marina Coast Water District	In addition, we recommend that the following information/language be added to the GSP: **1996 Marina Lands Annexation Agreement** Under the 1996 Marina Lands Annexation agreement the MCWRA annexed MCWD's Central Marina service area into Zones 2 and 2A and allocated to MCWD 3,020 AFY from the Salinas Valley Groundwater Basin for use in the Central Marina service area. MCWD paid a net annexation fee of $2,449,410 after receiving a $400,000 credit against the annexation fee. Section 1.1, Purpose, of the 1996 Annexation Agreement states: The purpose of this Agreement and Framework is to help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin through voluntary commitments by the Parties to limit, conserve and manage the use of groundwater from the Salinas River groundwater basin, and to provide the terms and conditions for the annexation of certain territory in the Marina area to the [MCWRA's] benefit assessment Zones 2 and 2A as a financing mechanism providing additional revenues to the [MCWRA] to manage and protect the groundwater resource in the Salinas River Groundwater Basin and to reduce seawater intrusion.		As stated in the GSP, GSP implementation will abide by all existing agreements; however, SGMA does not require that GSPs detail all existing agreements.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19

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6-37	6				7/2/2019	Marina Coast Water District	**1996 Marina Lands Annexation Agreement (continued):** Terms and conditions in Sections 5 and 8 of the Agreement states: 5.1.1 Commencing on the effective date of this Agreement and Framework and continuing until Mitigation Plan Implementation, MCWD will limit its withdrawal of potable groundwater from the Basin for land in the Marina area and outside the former Fort Ord Military Reservation to 3,020 afy of potable groundwater, and only such additional quantities as are permitted by this paragraph 5.1. MCWRA's groundwater resource planning for the existing MCWD service area will be based on the latest information and projections contained in the MCWD Water Plans, using 3,020 afy as a planning guideline for potable water use. 5.1.1.1 After Compliance with all applicable requirements of law, including but not limited to CEQA, MCWD may improve the interconnection between the MCWD water system and the water system serving Fort Ord, to provide for join, conjunctive and concurrent use of all system facilities to serve Fort Ord and other areas served by MCWD, and the other Parties will cooperate on MCWD's increased withdrawal of potable groundwater by up to 1,400 afy from the 900-foot aquifer to enable the increased withdrawals from 5200 afy to 6600 afy for use on Fort Ord, as provided in paragraph 4.c. of the September 1993 Agreement between the The United States of America and the MCWRA. 5.2. No objection by MCWRA to MCWD withdrawals except pursuant to section 22 of Agency Act. The MCWRA shall not object to any withdrawal by MCWD which is mentioned in section 5.1 above, except in compliance with section 22 of the Agency Act. All groundwater withdrawn from the Basin by MCWD may be used only within the Basin.		Comment noted. As stated in the GSP, GSP implementation will abide by all existing agreements.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-38	6				7/2/2019	Marina Coast Water District	**1996 Marina Lands Annexation Agreement (continued):** 8.1. Equal treatment by MCWRA and MCWD. If future litigation, regulation or other unforeseen action diminishes the total water supply available to MCWRA, MCWRA agrees that it will exercise its powers so that MCWD, Armstrong and Lonestar shall be no more severely affected in a proportional sense than other lawful users of water from the Zones, based on the right before the imposition of any uniform and generally applicable restrictions as described in paragraph 8.2 to use Terms and conditions in Sections 5 and 8 of the Agreement states: 5.1.1 Commencing on the effective date of this Agreement and Framework and continuing until Mitigation Plan Implementation, MCWD will limit its withdrawal of potable groundwater from the Basin for land in the Marina area and outside the former Fort Ord Military Reservation to 3,020 afy of potable groundwater, and only such additional quantities as are permitted by this paragraph 5.1. MCWRA's groundwater resource planning for the existing MCWD service area will be based on the latest information and projections contained in the MCWD Water Plans, using 3,020 afy as a planning guideline for potable water use. 5.1.1.1 After Compliance with all applicable requirements of law, including but not limited to CEQA, MCWD may improve the interconnection between the MCWD water system and the water system serving Fort Ord, to provide for join, conjunctive and concurrent use		Comment noted. As stated in the GSP, GSP implementation will abide by all existing agreements.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19

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6-39	6				7/2/2019	Marina Coast Water District	**1996 Marina Lands Annexation Agreement (continued):** 8.1. Equal treatment by MCWRA and MCWD. If future litigation, regulation or other unforeseen action diminishes the total water supply available to MCWRA, MCWRA agrees that it will exercise its powers so that MCWD, Armstrong and Lonestar shall be no more severely affected in a proportional sense than other lawful users of water from the Zones, based on the right before the imposition of any uniform and generally applicable restrictions as described in paragraph 8.2 to use at least the quantities of water from the Basin described in paragraphs 5.1., 6.9., and 7.2. MCWRA shall not at any time seek to impose greater restrictions on water use from the Basin by MCWD, Armstrong or Lonestar than are imposed on users either supplying water for use or using water within the city limits of the City of Salinas. MCWD, Armstrong and Lonestar will comply with any basin-wide or area-wide water allocation plans established by the MCWRA which include MCWD, Armstrong and Lonestar, and which do not impose on use of water on the lands described in Exhibits "B", "C", and "D" restrictions greater than are imposed on users either supplying water for use or using water within the City of Salinas, and which satisfy the requirement of paragraph 5.2 of this Agreement and Framework.		Comment noted. As stated in the GSP, GSP implementation will abide by all existing agreements.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-40	6				7/2/2019	Marina Coast Water District	**Uncertainty in Water Budget Estimate of Groundwater Inflow Components.** There appears to be significant uncertainty in the quantity of each of the groundwater inflow components (streamflow percolation, deep percolation of precipitation, and deep percolation of excess applied irrigation) as evidenced by the variability in the estimate of deep percolation between the Historical (97,300 AFY) and Future Projected (148,000 to 153,000 AFY) water budgets. Further, the conceptualization of sources of inflow to the groundwater system is at odds with the description of recharge sources in the Draft Chapter 4. The amount of recharge stated to occur from the deep percolation sources (97,300 AFY) far outweighs the amount coming from subsurface inflow (20,000 AFY total), which is inconsistent with the description of the recharge sources in Chapter 4. We understand that there is insufficient information currently available to accurately assess these inflow components. As such, we recommend that the GSP acknowledge this uncertainty and identify it as a data gap. The GSP should provide a plan to further assess both deep percolation and other basin inflow components. Doing so may reveal significantly different recharge sources for the shallow unconfined aquifer system versus the deeper aquifer system which could have important management implications and be critical for evaluating the effectiveness of potential recharge projects.		Uncertainty is noted in Chapter 6. As clarified and explained in Chapter 4, the shallow sediments are not considered a principal aquifer (according to the DWR definition) and therefore are not managed by this GSP. The Water Budget in Chapter 6 is the water budget for the entire groundwater system (described in Chapter 4), including the groundwater in the shallow sediments and the principal aquifers - 180/400-Foot Aquifer and Deep Aquifers.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-41	6				7/2/2019	Marina Coast Water District	**Water budget Information Should be Developed for each Principal aquifer**		Comment noted. The GSP opts to develop a single water budget for the entire Subbasin.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-42	6				7/2/2019	Marina Coast Water District	**Inclusion of "Baseline Condition" Projected Water Budget**		Comment noted	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-43	6				7/2/2019	Marina Coast Water District	**Qualification of Data Gaps and Uncertainty**		Comment noted	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-44	6.2				7/2/2019	Marina Coast Water District	It appears that in the historical water budget, the surface water budget is limited to just the river channels (i.e., Salinas River, other tributaries, and agricultural drains). It seems that there should be a land surface balance, like there is in the SVIHM-based Projected Water Budget, that estimates precipitation and irrigation percolation based on evapotranspiration (ET) and land use.		Comment noted	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19

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6-45	6.6.2				7/2/2019	Marina Coast Water District	Riparian ET rates were described to be 20 AFY/acre per personal communications with Rhode, whose detailed information was not provided in the Chapter's references. The rates were then assumed to be 16 AFY/acre in the water budget calculation without further justification. Riparian ET rates should be better substantiated, especially since the resulting riparian ET values are significant compared to the average change in storage over the historical period. In addition, it is unclear why riparian ET is considered as an outflow from groundwater, rather than from surface water.		It is unclear whether riparian ET impacts surface or groundwater to a greater extent. The chapter is no longer based on the information provided by Rhode.	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-46	6.8.4, 6.9, 6.10.5, 6.10.6				7/2/2019	Marina Coast Water District	• Tables 6-20 and 6-31: We recommend that these tables show the change in storage and seawater intrusion as negative values. • Table 6-22: A note should be added to Table 6-22 indicating that although seawater intrusion is identified as an inflow to quantify the overall basin water budget, it is not considered pait of the sustainable yield. • Tables 6-27 and 6-28: It is unclear why seawater intrusion is not shown as an inflow component on these tables, given that it is shown as an inflow component in Table 6-25. These tables should be made consistent and clarify that although seawater intrusion is an inflow, it is not considered part of the usable groundwater or sustainable yield. • Section 6.10.5 and Table 6-30: We suggest clarifying that change in groundwater storage discussed here are decreases in groundwater storage.		Some modifications were made as suggested	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-47	6	6-22			7/2/2019	Marina Coast Water District	Table 6-22 shows a decrease of only 600 AFY, on average, of groundwater in storage based on water level declines during the "current period" (2015-2017). This implies no real decline in water levels - is that what is seen?		Yes, this is what is observed according to MCWRA average hydrograph data	MCWD letter to SVBGSA_Chapter 6 Comments, 7/2/19
6-48	6				7/10/2019	Anderson, MC Water Systems	Future model is unrealistic, based on unsound projections, promotes further expansion of high use water operations (farms) does not encourage responsible water conseration practices, and does not factor in urban growth.		This is the best available tool to compute future projected water budgets at this time.	Chapter 6. MOCOW Comments.pdf
6-49	6				7/10/2019	Anderson, MC Water Systems	Precipitation - future projections show the average annual precipitation in the 180/400 basin to be 35% higher in 2030 from the current budget and 41% in 2070. These are not reasonable projections. There is no evidence that average precipitation will ever increase to these levels. Historical data should provide the basis for future precipitation projections.		Precipitation increase is based on DWR climate change factors. Table 6-8 shows that historical precipitation is approximately 114,100 acre-feet per year over the Subbasin. Table 6-24 shows that the predicted precipitation is 135,700 acre -feet in 2030; and 141,200 acre-feet in 2070. This represents an 19% and 24% increase, respectively. It should be noted that the historical and future water budgets were estimated with different tools, and are therefore not strictly comperable. Comperable histocal and future water budgets wiell be developed with the SVIHM becomes available.	Chapter 6. MOCOW Comments.pdf
6-50	6				7/10/2019	Anderson, MC Water Systems	Why does agricultural pumping increase in 2030 and 2070 by 6.5% ad 11.8%, respectively, over historical average pumping amount? How is this consistent with raising groundwater to 2003 levels, minimizing expansion of high water using activities like farming and implementing responsible water conservation practices?		This is the base future projected conditions model, prior to implementing projects and actions, that are described in Chapter 9.	Chapter 6. MOCOW Comments.pdf
6-51	6				7/10/2019	Anderson, MC Water Systems	Why do the models say that land use is assumed to be static and that no urban growth is included in the model simulation? Future urban growth according to LAFCO projections are contained		This is an assumption that is consistent with how DWR recommends to approach the modeling, because it is very difficult to estimate exactly where future land use changes will occur; refinements in land use change projections can be made to the model in a subsequent iteration of the model.	Chapter 6. MOCOW Comments.pdf
6-52	6				8/5/2019	LandWatch	**Substantial uncertainty mandates a conservative estimate of sustainable yield.** We are concerned that the extensive data gaps and high level of uncertainty are inconsistent with the general principle that "groundwater conditions must be adequately defined and monitored to demonstrate that a Plan is achieving the sustainability goal for the basin." We urge that the GSA adopt a conservative estimate of the sustainable yield in developing sustainable management criteria, projects, and management actions.		The GSP acknowledges uncertainties in the historical water budget. The historical water budget is based on best available data and tools. A more accurate historical water budget will be developed when the SVIHM is made available.	LandWatchCommentsChapter6

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
6-53	6				8/5/2019	LandWatch	We also recommend that the GSA further reduce that lower estimate with reference to some quantification of its uncertainty. For example, until the effect of double counting has been resolved, the 95,700 AFY historical budget sustainable yield should be reduced by the best estimate of this double counting error.		The GSP acknowledges uncertainties in the historical water budget. The historical water budget is based on best available data and tools. A more accurate historical water budget will be developed when the SVIHM is made available.	LandWatchCommentsChapter6
6-54	6				8/5/2019	LandWatch	A conservative estimate of sustainable yield here is mandated by the requirement that "sustainable management criteria and projects and management actions shall be commensurate with the level of understanding of the basin setting, based on the level of uncertainty and data gaps." (23 CCR § 350.4(d).) We note that the minimum thresholds for sustainability indicators must be "qualified by uncertainty in the understanding of the basin setting." (23 CCR § 354.28(b)(1).) Measurable objectives must also "be commensurate with levels of uncertainty." (23 CCR § 354.30(c).) The SVGBGSA must "take into account the level of uncertainty associated with the basin setting when developing projects or management actions." (23 CCR § 354.44(d).) And in deciding whether to approve the Plan, DWR must consider "whether sustainable management criteria and projects and management actions are commensurate with the level of understanding of the basin setting, based on the level of uncertainty, as reflected in the Plan." (23 CCR § 354.4(b)(3).)		We disagree thata conservative esitmate of the sustainable yiled is mandated. The historical and future sustaniable yileds are based on best available data and tools.	LandWatchCommentsChapter6
6-55	6				8/5/2019	LandWatch	**Uncertainty must be quantified.**The quantitative discussion of the uncertainty of the historic and current water budgets in section 6.9 only assesses "net uncertainty." The "net uncertainty" concept is in effect limited to a comparison of calculated versus estimated change in storage. The discussion acknowledges that there has been no effort to determine the uncertainty of each historic water budget component. It is not clear that the "net uncertainty" concept adequately reflects the uncertainty that may be caused by data gaps. For example, Chapter 6 now acknowledges as a data gap some amount of unresolved double counting of extractions caused by the practice of reporting extractions as both groundwater pumping and as surface water diversion. Such duplicate reporting would clearly bias the calculated change in storage, tending to minimize it. If this error also biases the estimated change in storage, then the "net uncertainty" concept is an insufficiently robust assessment of uncertainty because it would not account for the duplicate reporting error.1 Alternatively, if the estimated change in storage is independent of historic extraction data, then the relatively small reported "net uncertainty" of the historic budget masks the fact that the calculated storage change actually differs from the estimated storage. Similar considerations would apply to any water budget components for which there are data gaps, depending on whether and how they bias the change in storage determinations.		Comment noted. The GSP acknowledges the potential double counting and notes it as a data gap. The water budgets will be re-assessed when the SVIHM model is available.	LandWatchCommentsChapter6

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6-56	6				8/5/2019	LandWatch	The "net uncertainty" concept in section 6.9 used to evaluate the historical water budget is an inadequate quantitative measure of uncertainty. Accordingly, it is not clear that the "net uncertainty" calculations actually support the conclusion that the historical budget is "reasonably reliable." (Chap. 6, p. 28.) There is no quantitative assessment of the uncertainty of the projected water budget in Chapter 6. Section 6.10.8 merely offers the truism that models inherently contain some uncertainty. The projected future water budget cannot be used to manage the basin without some quantitative assessment of its uncertainty. That assessment of uncertainty requires calibration of the model for the projected future water budget based on the historic water budget. In particular, the regulations require that the historical water budget include information that is "sufficient to calibrate and reduce the uncertainty of the tools and methods used to estimate and project future water budget information and future aquifer response to proposed sustainable groundwater management practices over the planning and implementation horizon." (23 CCR § 354.18(c)(2)(B).) However, we understand that because the USGS has not yet completed the historic model, the modeling of a future water budget has not yet been calibrated with reference to historic data.		Comment noted. The uncertainty and calibration of the model used to determine the water budget will be completed when the SVIHM is available.	LandWatchCommentsChapter6
6-57	6	6-11			7/10/2019	Anderson, MC Water Systems	If no urban growth is included in the model, why does the model project a 7.9% to 11% increase in pumping for urban purposes		The historical and future pumping estimates are based on different sets of assumptions. The historical urban pumping estimates are based on reported pumping. The futre urban pumping estimates are derived from the SVIHM and include estimates of per-capita use as well as pumping changes due to climate change.	Chapter 6. MOCOW Comments.pdf
6-58	6	6-24, 6-25			7/10/2019	Anderson, MC Water Systems	See letter for details. The numbers for deep percolation, stream leakage, underflow, mountain front recharge, are unrealistic and based on unreasonable precipitation projections.		The historical and future water budgets are based on different sets of assumptions. The historical water budget is based on historical reports, and contains significant uncertainty. The futre waer budget is derived from the SVIHM. It is difficult to directly compare components of the historical and future water budgets.	Chapter 6. MOCOW Comments.pdf
6-59	6	6-25			7/10/2019	Anderson, MC Water Systems	Why does seawater intrusion increase from 3,500 af/yr in 2030 to 3,900 in 2070 if sustainability is in the process of being achieved during that timeframe?		The future water budget is based on a no further actions simulation. The SVIHM includes an estimate of reasonable sea level rise. If no further actions are taken, seawater intrusion will increase over time due to sea level rise.	Chapter 6. MOCOW Comments.pdf
6-60	6	6-25			7/10/2019	Anderson, MC Water Systems	2030 and 2070 projected outflows are above and beyond the historical outflow of 129,800 af/yr by 40% and 46% respectively which is even more than the unrealistic projecte increase in rain. Why is this?		The historical and future water budgets are based on different sets of assumptions. The historical water budget is based on historical reports, and contains significant uncertainty. The futre waer budget is derived from the SVIHM. It is difficult to directly compare components of the historical and future water budgets.	Chapter 6. MOCOW Comments.pdf
6-61	6	6-11			7/10/2019	Anderson, MC Water Systems	Why is total pumping (both agricultural and non-agricultural) projected to go up by 25% in 2030 and 31% in 2070? HOW WILL THIS ENABLE GROUNDWATER LEVELS TO BE INCREASED TO 2003 LEVELS AND SALT WATER INTRUSION AREAS TO BE PUSHED BACK TO HIGHWAY 1?		The historical and future water budgets are based on different sets of assumptions. The historical water budget is based on historical reports, and contains significant uncertainty. The futre waer budget is derived from the SVIHM. It is difficult to directly compare components of the historical and future water budgets.	Chapter 6. MOCOW Comments.pdf
6-62	6	6-26			7/10/2019	Anderson, MC Water Systems	Why are the Groundwater Extraction figures in table 6-27 different from the pumping figures?		This has been fixed.	Chapter 6. MOCOW Comments.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
6-63	6	6-8			7/10/2019	Anderson, MC Water Systems	The model projects 588% to 636% increase in deep percolation above historical deep percolation levels		The historical and future water budgets are based on different sets of assumptions. The historical water budget is based on historical reports, and contains significant uncertainty. The futre waer budget is derived from the SVIHM. It is difficult to directly compare components of the historical and future water budgets.	Chapter 6. MOCOW Comments.pdf
6-64	6				6/18/2019	Virsik	EWRIMS (SURFACE WATER DIVERSION) DATA NOT VETTED The enclosed email explains the simple process the GSA has available to it to determine if the surface water diversions used in the water budgets are "double counting" water. To put it starkly, the publically available statements of water diversion near Speckles sent along with the email claims that the surface water diversion reported to the State is -- in the view of the filer -- actually groundwater. See response to "Additional Remarks" of the State form (enclosed with email). Presumably, the filer (an affiliate/proxy for the well-regarded local ag interest Tanimura & Antle) is also following local requirements and providing the exact same water extraction numbers to the MCWRA per local Ordinance. Unless the GSA compares the (limited) set of eWRIMS data for the 180/400 with the MCWRA groundwater pumping reports for the nearly identical zone (the "Pressure"), the water budget numbers will erroneously assume water users in the 180/400 draw from two separate sources and hence their reduction to meet "sustainable yield" may be inaccurate. SGMA requires the "best available" data and transparency, which would not be met and the Plan may fail at DWR if the GSA continues to ignore the data and simple analytical approach1 at its fingertips. The historical water budget reports surface water diversions on the order of nearly 10,000 AFY, which is a magnitude material to projecting a reliable sustainable yield. Chapter 6 at Tables 6-5 and 6-16, pages 10 and 18.		The GSP acknowledges the potential double counting of extractions, and identifies this as an uncertainty in the water budget. Because of the many uncertainties in the historical water budget, it was determined that attempting to identify all double counting was not cost effective. The cost effective approach is to refine the water budget with the SVIHM when it becomes available. The SVIHM does not double count surface water diversions and groundwater pumping. This is the approach specifically identified in the GSP.	Public Comments, Tom Virsik, Chapter 6 cc'd Derrik Williams.pdf
6-65	6				6/18/2019	Virsik	FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS ABOUT CURRENT PROJECTS The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15, pages 36 and 17. Consultant Williams explained that the delta is due (1) to the seawater intrusion projects (CSIP, SRDF) coming online during the historical period and (2) an assumed current and future "100%" level of performance of the. Again, what does the "best available" data show about the efficiency or performance of the MCWRA projects? If the data compiled by the MCWRA for its projects reflect a 50% or a 25% level of efficiency, then the model should use that metric instead of assuming the projects will magically perform far better than they have to date.		The future water budget is based on current assumptions in the SVIHM, which includes a fully efficient CSIP project. These are the best available data for esitmating the future sustainable yield. When the SVIHM becomes available, the SVBGSA can modify assumptions for the CSIP project as necessary.	Public Comments, Tom Virsik, Chapter 6 cc'd Derrik Williams.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
6-66	6				6/18/2019	Virsik	FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 34/53 and 15/34. How that significant reduction occurs while projected pumping increases beyond historical levels is not explained. 34/53 (pumping of 86,500 AFY for historical sustainable yield v. pumping of 115,300 to 120,600 AFY for projected). Moreover, the calculated historical sustainable yield in Chapter 6 did not use a total pumping value of 86,500 AFY, but 108,300. Table 6-20 at 22/41. Clearly the two halves of Chapter 6 have not been checked against each other. The "black box" quality of the SVIHM -- at least in its current state when it cannot be publicly peer reviewed by third parties -- undermines the credibility of the 180/400 GSP. A GSP based on assuming seawater intrusion radically decreases while pumping increases strains credulity. It is possible that the model is "correct" per its myriad assumptions and interconnections used to project results, if only one could review and reality test all of them. But at least as recited in draft Chapter 6, its calculation of a 7% reduction in pumping to balance the 180/400 comes across as far-fetched and unrealistic. On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft. March 2017 letter, pages 6-7. Lacking specific quantification of overdraft in the several water budgets, draft Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential		The future sustainable yield is after the basin has met the sustainability goals. Future pumping also depends on projections of future precipitation throughout the Valley. Its interaction with seawater intrusion also depends on where in the Subbasin pumping is occurring, as the water budget does not differentiate spatially but rather are aggregate numbers for the whole subbasin. The water budgets will be checked and rerun when the USGS releases the SVIHM.	Public Comments, Tom Virsik, Chapter 6 cc'd Derrik Williams.pdf
6-67					6/18/2019	Virsik	DATA REFERENCES CONFUSING Draft Chapter 6 states that the 180/400 basin accounts for 7% of the surface water extractions per eWRIMS. 7/26 The data relied upon is listed in Appendix 6-A. ??/58, 62. Data on eWRIMS has always been public and in the current era can be downloaded. 7/26 Yet, the Appendix does not contain the public information on who, where, and when the diversions are occurring. If the omission is due to convenience or time pressures, the next iteration of the chapter should make such data available in the sprit (if not requirement) of transparency. The relevance of the data from eWRIMS is less "who," but where (the intruded area?) and when (winter rains or parched river?), which may impact the mandatory demand reduction analysis, i.e., assuming a 7% reduction, when and in what areas of the 180/400 does one curtail pumping?		Comment noted. This data is not required by SGMA.	Public Comments, Tom Virsik, Chapter 6 cc'd Derrik Williams.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
7-0					4/18/19	Harold Wolgamott	Stated they report to the State monthly on shallow wells [comments received, saved]	D Williams would like to look at those reports	Chapter revised to include ILRP shallow wells once Ag. Order 4 is released	Chapter 7 Advisory Committee Comments 4-18-2019
7-1					4/18/19	Norman Groot	Inquired about duplication of water quality monitoring already required [comments received, saved]	D Williams stated that he would like to integrate this information and he would appreciate Mr Groot's assistance in filling in some of the data gaps	Question answered.	Chapter 7 Advisory Committee Comments 4-18-2019
7-2					4/18/19	Tom Ward	Had a question about well meter reading	D Williams replied to T Ward and stated well meter reading to confirm pumping data is an option. Added that he hasn't included meter reading because this option will come up in 1-2 months when discussing management actions	Question answered.	Chapter 7 Advisory Committee Comments 4-18-2019
7-3					4/18/19	Nancy Isakson	Thought they were required to provide data for the deep aquifer	D. Williams stated that Howard Franklin has confirmed there is a new ordinance that public reporting is required	Comment noted	Chapter 7 Advisory Committee Comments 4-18-2019
7-4					4/18/19	Nancy Isakson	Stated there were informative comments at the Planning Committee meeting regarding the different ways Ag growers measure for pumping. She would like information on the different methods and accuracy	D Williams stated that this would come up in 1-2 months; by law pumping has to be reported	Question answered.	Chapter 7 Advisory Committee Comments 4-18-2019
7-5					4/18/19	Tom Adcock	Stated that public water systems have a safety issue about publicly disclosing location of water facilities	D Williams will discuss the concern for privacy regarding precise locations with the Department of Water Resources (DWR)	The SVBGSA only discloses the location of wells that are already publicly available, such as MCWRA-owned wells and CASGEM wells.	Chapter 7 Advisory Committee Comments 4-18-2019
7-6					4/18/19	Brian Frus	Asked how critical is the data that the Water Resources Agency is currently collecting confidentially but may become public	D. Williams stated that he does not believe that any of the significant amount of data will be public unless explicitly authorized	Question answered.	Chapter 7 Advisory Committee Comments 4-18-2019
7-7					4/18/19	Howard Franklin	Stated that the data collection essentially has been constrained to seawater intrusion in the coastal area due to funding constraints. This year, they will not include the confidentiality clause in the request for data. Water quality has diminshed since 1941 but there is no measureable susidence.		Comment noted.	Chapter 7 Advisory Committee Comments 4-18-2019
7-8	7				4/18/19	Howard Franklin	Stated that estimating surface water depletion due to groundwater pumping may be difficult for highly managed rivers. Believes groundwater levels and storage is a good approach, but consideration should be given to the historical simulation being worked on.	D Williams stated that this does not mean that this would the primary approach to determining whether we are maintaining current storage	Comment noted	Chapter 7 Advisory Committee Comments 4-18-2019
7-9					4/18/19	May Nguyen	Stated the Environmental Justice Coalition developed a water quality mapping tool that they may have shared with D. Williams for integration with data for this plan. It is available online and will be rolled out the end of this month.	D Williams stated they have not received a response from Monterey County Health Dept for the requested data, and he noted Mr. Adcock's question as to whether well location should be publicized	Received County GW quaility data, however it is not associated with specific well locations. This is a data gap now identified in Chapter 7 that will be addressed during implementation	Chapter 7 Advisory Committee Comments 4-18-2019
7-10					4/18/19	Jeff Johnson	Stated that Mr. Williams mentioned that the current assumption of the relationship between subsidence and depletion needs to be demonstrated. They would like a revision to eliminate the assumption until ample hydrographic and satellite data is available. He referred to the information on data providers that was previously provided to draw our own Salinas Valley graph	We have added the InSAR analysis to the SMC Chapter 8. The SMC chapter is where the analysis suggested by Mr. Johnson belongs.	Comment addressed.	Chapter 7 Advisory Committee Comments 4-18-2019
7-11	7.21				4/18/19	Jeff Johnson	Referenced 7.21 and stated that new CASGEM wells will likely be needed. The last paragraph suggests uncertainty about monitoring. They suggest this is an opportunity for the GSA to recommend that wells be added and that monitoring remain with the Water Resources Agency	D. Williams stated that multiple agencies can provide data to the State under CASGEM	Correction from DW response. All CASGEM wells used in GSP monitoring will be migrated to the GSA as part of the GSP submission process.	Chapter 7 Advisory Committee Comments 4-18-2019
7-12					4/18/19	James Bishop	Stated that the Regional Board is working with the Ag community on regional monitoring for water quality. It would be great for the Regional Board to work with the GSA to avoid duplicate monitoring networks		Comment noted	Chapter 7 Advisory Committee Comments 4-18-2019

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7-13					4/18/19	Diane Kukol	[only response included in Advisory Committee Comments]	In response to Diane Kukol, D Williams estimated that the timing for working together on the Chapter would be near future. He supports the integration of monitoring, but the GSP must be submitted by January 2020. The monitoring system in the Plan may change within a year, which is not problematic. Coordination sooner than that would be great, but the SVBGSA schedule should not drive them	Question answered.	Chapter 7 Advisory Committee Comments 4-18-2019
7-14					4/18/19	Heather Lukacs	Stated that San Luis Obispo should be able to provide data in a quick time frame	D Williams stated they can differentiate between types of wells, but it was rough to differentiate at the time the data was downloaded for the draft chapters	Comment noted.	Chapter 7 Advisory Committee Comments 4-18-2019
7-15					4/18/19	Howard Franklin to Horacio Amezquita	Stated that water elevation monitoring information is on the Water Resources Agency's website		Comment noted	Chapter 7 Advisory Committee Comments 4-18-2019
7-16					4/18/19	Diane Kukol	[only response included in Advisory Committee Comments]	In response to Diane Kukol, D Williams stated they do not have better data than the Irrigated Lands Regulatory Program (ILRP) data. Current requirement is to look at the number of supply wells and see what is happening with them. Our job is to ensure our management does not make it worse. SGMA could be expanded in the future to include monitoring water quality, but that is not advisable during these first couple of years of the legislation	Comment noted	Chapter 7 Advisory Committee Comments 4-18-2019
7-17					4/18/19	Heather Lukacs	Stated that not much is known about shallow aquifers used for drinking water, and this should be considered a data gap. Private domestic wells should be incorporated into the monitoring networks, especially because they count as supply wells		Domestic wells that are regularly monitored as part of the ILRP will be included into the monitoring network for water quality once Ag. Order 4.0 is finalized. This is now explicitely stated in the GSP	Chapter 7 Advisory Committee Comments 4-18-2019
7-18	7				6/10/19	LandWatch	Recommend that GSA adopt an ordinance that requires 1) Independently calibrated and monitored flowmeters on agricultural pumps throughout the Salinas Valley Groundwater Basin; and 2) Annual pumping reports that are independently validated for accuracy. The ordinance should also include strict enforcement provisions that help assure full compliance. LandWatch's comments support these recommendations. We reject the proposed use of the existing monitoring program, as described in Chapter 7, to monitor annual groundwater pumping because it will generate inaccurate results and potentially lead to unfair cost allocations.		Comment noted. Expanding and updateing the well metering sytem is included as an implementation action in Chapter 10.	LandWatchComments_GSPChapter 7.pdf
7-19	7				6/10/19	LandWatch	Ordinance No. 3717 Has Not Been Enforced		Comment noted. Expanding and updateing the well metering sytem is included as an implementation action in Chapter 10.	LandWatchComments_GSPChapter 7.pdf
7-20	7				6/10/19	LandWatch	**Proposed Monitoring in Chapter 7 for Groundwater Agricultural Pumping.** Chapter 7 does not propose to require enforcement of the requirement for flowmeters.		Any additional enforcement mechanisms will be part of the expanded and updated well metering system included as an implementation action in Chapter 10	LandWatchComments_GSPChapter 7.pdf
7-21	7				6/10/19	LandWatch	Electricity Consumption Inaccurately Estimates Water Volumes Pumped		Comment noted	LandWatchComments_GSPChapter 7.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
7-22	7				6/10/19	LandWatch	There is uncertainty and a potentially serious data gap regarding groundwater pumping in the 180- and 400-foot aquifer subbasin. Chapter 7 ignores the following problems or potential problems with historic and future data collection: Failure to enforce the requirement to submit flowmeter-based pumping data and the use of less reliable means to estimate pumping • Apparent failure to require that flowmeter data be independently calibrated and reported by approved testing organizations on an annual basis • Failure of 5% of known wells to report at all • Potential uncertainty as to the number and location of other wells • Potential confusion if action plans are predicated on a water balance and hydrological model using inaccurate historic data while subsequent compliance benchmarks and fair share contributions are based on more accurate future water use data.		Comment noted. Expanding and updateing the well metering sytem is included as an implementation action in Chapter 10.	LandWatchComments_GSPChapter 7.pdf
7-23	7				6/10/19	LandWatch	To assure that pumping data are complete and verifiably accurate, Chapter 7 should be updated to address the following questions: 1. When will pumping data for the years 2016, 2017 and 2018 be made available? Will it be used to inform the Chapter 6 water balance data and the hydrologic model? 2. Has historic pumping data been systematically or materially misreported? If so, what action should be taken to correct the data and, if necessary, to re-assess the water balance data and hydrologic model? 3. How are current wells mapped? If they are not reliably mapped, how will unmapped wells be identified and pumping reported? 4. How will new wells be tracked? 5. How will the requirement to install flowmeters to and report pumping based on flowmeters be enforced? 6. How will flowmeters be tested and verified for accuracy? 7. How will the requirement for independent reporting of		1. Pumping for 2019 will be made available during the 2020 annual report. Puming for 2016 through 2018 are currently available from MCWRA. 2. We made no attempt to assess if historical pumpoing has been systematcally misreported. Any additional enforcement of pumping data will be discussed and implemented as part of the action items in chapter 10. 3. Current wells are mapped using data from MCWRA. Mapping all wells is an action item in chapter 10. 4. All new wells must be premitted by the County of Monterey, and will be tracked through the permitting system. 5. Any additional enforcement of pumping data will be discussed and implemented as part of the action items in chapter 10.	LandWatchComments_GSPChapter 7.pdf
7-24	7				6/10/19	LandWatch	Chapter 7 should acknowledge that SVBGSA does not need to rely on Ordinance 3717 and MCWRA's limited budget for enforcement. The SVBGSA has the independent statutory authority to mandate reporting and data collection methods and to use its fees to collect essential data.		Comment noted. Any additional enforcement of pumping data will be discussed and implemented as part of the action items in chapter 10.	LandWatchComments_GSPChapter 7.pdf
7-25	7	7.2	4		6/18/19	TNC	The wells listed in the table and proposed for monitoring do not include any wells completed in the Shallow Alluvial or Dune Sand Aquifers. As such, the proposed monitoring well network is inadequate to assess the potential effects of groundwater pumping and management on ISWs and GDEs. This fact should be acknowledged with a cross reference to Section 7.2.4 which describes the proposed work to remedy this situation.		The shallow aquifer and dune sands aquifers are not identified and principal aquifers, and therefore do not require monitoring networks. The chapter identifies two shallow wells that will be installed to verify stream/aquifer interaction assumptions.	TNC_180-400ftAquifer_Chapter7+8.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
7-26	7.7		23-24		6/18/19	TNC	Please revise this section to reflect what is known and published regarding potential surface-groundwater interactions in the subbasin and related groundwater level and budget trends, identify the existing data gaps, and provide recommendations for an adequate number of monitoring wells to assess surface-groundwater interaction and shallow groundwater level trends.		Limited information is available concerning surface water-groundwater interaction. Chapters 5, 7, 8, and 10 provide a review of the information available and propose to remedy this data gap with the use of the USGS integrated surface water/groundwater model and the installation of shallow groundwater monitoring wells during further investigations.	TNC_180-400ftAquifer_Chapter7+8.pdf
7-27	7.7		23-24		6/18/19	TNC	Please specify what other monitoring data and methods will be implemented to inform a determination whether significant and unreasonable impacts to GDEs are occurring, and explain how they will adequately meet the requirements of 23 CCR §354.34(c)(6) relative to GDEs and ISWs.		This information is provided in Chapters 5 and 8.	TNC_180-400ftAquifer_Chapter7+8.pdf
7-28	7A app		8		6/18/19	TNC	Please include monitoring protocols that meet the requirements of 23 CCR §354.34(c)(6) relative to GDEs and ISWs.		Monitoring protocols will be added in a later version of the GSP when data gaps for this monitoring network are filled and wells have been identified/installed.	TNC_180-400ftAquifer_Chapter7+8.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-1					5/2/19	Director Secondo	Director Secondo suggested including the seven percent in Chapter 8 also as a reference to how it compares to the 112,000 acre feet future long-term sustainable yield		Comment incorporated into Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-2					5/2/19	Tom Virsik	Tom Virsik wrote a letter of concern about the chapters not being completed in order, because it is difficult for the Board to make policy decisions. He questioned whether the DWR would find that the process is transparent with incomplete information		Comment noted. No change to Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-3			11		5/2/19	Director Brennan	Stated that the text is unclear on page 11 as to whether 2003 is the measurable objective unless referencing the quantification	D Williams will state more clearly that the 2003 water level is the mesurable objective	Comment incorporated into Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-4					5/2/19	Director McIntyre		In response to Director McIntyre, D Williams stated that he would prepare a table similar to the handout that Director Brennan distributed today summarizing all minimum thresholds and measureable objectives	Table included as Section 8.5	5-2-19 Planning Committee Minutes_Chapter 8
8-5					5/2/19	Director Secondo	Noted the error messages where the link was broken in the document. Would like the measurable objectives and historical data to be clear throughout the document and would like to express the threshold as a number instead of a percentage due to the small sampling	D Williams stated that we do not have the historical data for the deep aquifer and only have access to one well. D Williams will clarify the minimum thresholds in the deep aquifer and that we have the optoin to change the undesireable result as a number of exceedances instead of a percentage, but that is a policy decison	Question answered	5-2-19 Planning Committee Minutes_Chapter 8
8-6					5/2/19	Director McIntyre	Would like to choose a more recent year such as 2016 rather than 1991 for the Forebay for measurable objectives		Comment not incorporated at this time, as it does not pertain to the 180/400-Foot Aquifer Subbasin GSP	5-2-19 Planning Committee Minutes_Chapter 8
8-7			16		5/2/19	Director Brennan	Noted that the last sentence on page 16 is incomplete. The overhead on the 180/400 foot aquifer includes the Forebay and Upper Valley data, which was confusing	D Williams stated there is an ISP chaper on this. He would like to leave it in context.	No change to Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-8					5/2/19	Director Secondo	Stated that all four graphs for th esubbasins should be in the ISP section and only the 180/400 should be in the 180/400 section	Comment noted	Chapter 8 for the 180/400-Foot Aquifer Subbasin only includes the appropriate graphs	
8-9					5/2/19			D Williams stated that we may want to differentiate between how to address and manage the sustainable criteria in the projects and actions part. Then we may want to revisit this criteria to decide if we are managing differently than this model's assumptions, in which case this may be the wrong number to report. We should revisit these numbers when we are managing, because the numbers are based on how much pumping has to occur to meet crop demand	No change to Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-10			17		5/2/19	Director Brennan	Stated that page 17 references natural recharge versus unnatural recharge, and it would be helpful to have an example		Comment incorporated into Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-11					5/2/19	Director Brennan and Director McIntyre	They would like more robust metering and reporting		Policy Decision included in list of policy issues that the Board must take up.	5-2-19 Planning Committee Minutes_Chapter 8
8-12					5/2/19	Nancy Isakson		D Williams, in response to N Isakson, will add that there is a data gap for domestic reporting for rural residential pumping, e.g. north county that is experiencing water quality issues	Sentence added to section 8.9.2 that identifies this as a possible data gap, but does not comit the SVBGSA to collecting additional groundwater quality data.	5-2-19 Planning Committee Minutes_Chapter 8
8-13					5/2/19	Director Secondo	Recommended considering abandoned wells as a groundwater extraction barrier	Comment noted	No change to Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-14					5/2/19	Tom Virsik	Stated there is not remotely enough information to make policy decisions. A consensus that we are looking at maintaining rather than improving the current situation, and the speaker would like the policy to state that instead of requiring a project	Comment noted - policy considerations for Board	No change to Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-15					5/6/19	Director Secondo	Referred to the statement "no new groundwater quality exceedances" so we should keep it to existing wells	D Williams stated that he would change this to "based on new new exceedances in existing monitoring wells"	Comment incorporated into Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-16					5/6/19	Director Brennan	Referred to the statement in the Groundwater Quality Undesirable Result slide, "on average during one year, no groundwater quality minimum threshold shall be exceeded." She asked how zero can be averaged	D Williams stated he will rewrite this as he meant the average of mulitple water quality samples	Comment incorporated into Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-17					5/6/19	Nancy Isakson		D Williams, in response to N Isakson, stated he would include the Groundwater Quality Parameters table in Chapter 8	Table incorporated into Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-18	8.8.2.3				5/6/19	Nancy Isakson	Wondered where the data for Section 8.8.2.3 came from, given that 8.8.2 states that the dataset does not distinguish between agricultural and domestic and cannot be used for purposes of developing minimum thresholds and measurable objectives	D Williams will check to determine whether his staff made this distinction from the material that they downloaded and whether the statement in 8.8.2 should be deleted	Text revised	5-6-19 PC Special Meeting Minutes_Chapter 8

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-19					5/6/19	Director Brennan	Confirmed that the earlier direction was related to existing monitoring system versus new wells.	D Williams stated that he understands that the discussion was regarding existing wells that we have included	No change to Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-20					5/6/19	Les Girard	Noted that the requirements of the National Marine Fisheries biological opinion have been withdrawn, but the Water Resources Agency is operating under it as a safe harbor	D Williams will coordinate with Mr. Girard on the accurate phrasing	Text revised	5-6-19 PC Special Meeting Minutes_Chapter 8
8-21					5/6/19	Director Granillo	Director Granillo notes we will see water quality changes with release of summer flows		Comment noted	5-6-19 PC Special Meeting Minutes_Chapter 8
8-22					5/6/19	Director Brennan		D Williams, in resopnse to Director Brennan, stated he will add language that the GSA does not have any authority over the releases from the reservoir	Comment incorporated into Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-23					5/6/19	Director Brennan	Would like the policy questions identified	LP: a summary table of policy questions was developed and sent to Gary Petersen on 5/24/2019	No change to Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-24					5/6/19	Director Secondo	Asked whether we should be monitoring water quality if we do not control the river flow	D Williams stated there is no problem in looking at the information, but he defers to the Directors	Question answered	5-6-19 PC Special Meeting Minutes_Chapter 8
8-25					5/6/19	Director Secondo	Expressed concern about locking the GSA into monitoring when it does not have the authority	Commnet noted	No change to Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-26					5/6/19	Director Granillo	Stated that the language should say there are water quality changes that we cannot impact		Sentence added to section 8.9.4.1	5-6-19 PC Special Meeting Minutes_Chapter 8
8-27			50		5/6/19	Nancy Isakson	Referred to page 50 regarding land owners' property rights next to the river. She would like Mr. Williams to revisit this section because neither the State nor courts have made a determination as to underflow, and the section ignores the overlying groundwater rights.		The text makes no assessment regarding underflow or overlying groundwater rights. The SVBGSA will evaluate water rights within the implementation period of the GSP.	5-6-19 PC Special Meeting Minutes_Chapter 8
8-28		8.8			5/6/19	Nancy Isakson	Questioned whether the amount of acre feet diverted from the Salinas River is that large, e.g. 185,000 acre feet in 2010. Stated that the Salinas Valley Water Coalition's litigation is ongoing and water law should be referenced in this section instead of the opinion that was included. A table of policy issues would help both the Advisory Committee and the Board to identify the policy issues and options	D Williams stated the data is self reported to the State (in response to N Isakson's question regarding Table 8.8)	Table was corrected in Chapter 8 to reflect revised calculations.	5-6-19 PC Special Meeting Minutes_Chapter 8
8-29					5/6/19	Tom Virsik	Stated that skewed diversion numbers may skew the 7% of pumping reduction. The Upper Valley suggests that ignoring surface water distrinctions is not what the DWR is looking for	D Williams responsed that the GSP will not solve all problems and is reiterative. But it should reflect the Agency's priorities	No change to Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-30					5/6/19	Nancy Isakson	Stated concern regarding the need for reconciliation	D Williams will note that there may be a data gap in the State Board's diversion reporting that should be addressed in the future	Comment incorporated into Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-31					5/1/19	Tom Virsik	The draft Chapters prominently cross-reference to a non-existent Chapter 6 (water budgets). Until Chapter 6 is/are reviewed, it is unfair to opine on draft Chapters 8. For example, one learrns of the "Basin" sustainable yield but not that of the individual Subbasins (other than the 180/400 in its own GSP). That basic information will inform the public on whether the GW levels are set correctly, among other metrics impossible to consider without Chapter 6		Chapter 6 draft has now released - Chapter 8 will be reviewed again after all Chapters have been released for comment	PlanningCommitteeComments_05012019_TomVirsik.
8-32			17/33		5/1/19	Tom Virsik	In varying degrees, the drafts lack consistency in the use of certain terms, specifically: basin, Basin and subbasin ("sub-basin" is used once). Broadly, it appears that "Basin" is meant to refer to the entire Valley as referenced in (the not yet updated post boundary changes) Bulletin 118. Yet, "Basin" is at times used to refer to what in other parts of the draft Chapters is termed a "subbasin." Cf. e.g. 17/33 (112 K AFY yield for the "Basin" -- the 180/400 with 17/193 (494 K AFY yield for the "Basin" -- an array of subbasins).		We will review the consitency in terminology prior to finalizing all GSP Chapters	PlanningCommitteeComments_05012019_TomVirsik Note: **xx/yy** in Page (xx represents page of the Chapter and yy is the page of the paginated packet)
8-33			10/26, 10/186		5/1/19	Tom Virsik	The draft content uses a term without (explicity) defining it. At several points, the content references "pumping allowances." See e.g. 10/26 and 10/186. The term needs a definition or reference as it is not a SGMA term of art		The phrase pumping allowance has been removed.	PlanningCommitteeComments_05012019_TomVirsik

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-34			50/66, 50/226		5/1/19	Tom Virsik	A so-called "Report of Referee" is quoted for a point of law. 50/66 and 50/226. That Report comes from a lawsuit being actively litigated, which cannot be precedential in any legal sense. Salinas Valley Water Coalition v. MCWRA et al, 17CV000157 (Monterey County Superior Court). That litigation does not involve the GSA, so its interests and views were absent from the process that led to the Report. Nor is a lawsuit a public or transparent process (in a SGMA sense) where others may influence, correct, or steer the Report based on the best available data. Moreover, that "Report" contains many other findings and views, some of which contradict directly or indirectly other parts of draft Chapters 8. The Report--whether its content is good or bad by whatever metric--should not be relied upon.		Although the Report of Referee I not precidential, it provides guidance for our GSP and is therefore included in the GSP. This GSP is a policy document, not a legal finding.	PlanningCommitteeComments_05012019_TomVirsik
8-35			57,73, 57,233		5/1/19	Tom Virsik	Surface (water) depletion thresholds are quantified in the draft content. But the relationship of the surface depletion to the sustainable yield is far from clear. Is the amount of depletion part of, in addition to, or bears no relationship to the sustainable yield figure for the Basin (or Subbasin)? See 57/73 and 57/233.		There is not effort to relate surface water depletion to sustainable yield in this chapter. This chpater only addresses sustainable management critera.	PlanningCommitteeComments_05012019_TomVirsik
8-36			57,73, 51,227, 51/67		5/1/19	Tom Virsik	The sections addressing the surface and groundwater interactions are insufficiently clear or documented. It appears the model is not yet ready for surface water interactions. See 57/73 ("once the calibrated historial SVIHM is made available") and 51/227. The content includes tables and graphics quantifying surface water diversions. See 51/67 et seq and 51/227 et seq. Were surface water diversions from the eWRIMS database taken into account? Are they double-counted with the "groundwater" diversions reported (per Ordinance) to the MCWRA?		Surface water diversions were accounted for in the Water Budget portion of the GSP	PlanningCommitteeComments_05012019_TomVirsik
8-37			58/74, 58/234		5/1/19	Tom Virsik	Oddly, the two Chapters 8's deviate noticeably at 8.10.4.2 Cf 58/74 with 58/234. In the 180/400 GSP, one of the bullet points states that riparian water rights holders are not regulated. In the ISP version of this section, the bullet point about riparian rights is replaced by one about de minimis pumping. Why the difference? Moreover, there is no lack of riparian pumpers with wells next to the river south of the 180/400, so why is that discussion absent in the ISP? Perhaps both riparian pumpers and de minimis pumpers belong at least in the ISP.		Versions will be reconciled.	PlanningCommitteeComments_05012019_TomVirsik
8-38			19/195		5/1/19	Tom Virsik	The ISP content lacks information about the newly added Paso Robles formation lands. No blame or fault is asserted -- only that with a lack of data and experience about the substantial "new" lands, the GSP should be explicitly note the "data gap" at this time. Whatever occurs with an Upper Valley GSP, the facts and circumstances may require that the Paso Robles lands be managed differently given the lack of data, i.e. a SGMA management area with its own sustainable yield, etc. The draft Chapter for the ISP should note that option for the Paso Robles lands instead of painting with a broad brush that implies the Paso Robles cannot be developed. See 19/195 (the Paso Robles lands are primarily not currently irrigated).		This comment will be addressed in the Upper Valley GSP.	PlanningCommitteeComments_05012019_TomVirsik
8-39					5/1/19	Tom Virsik	Conclusion: A great deal of work was put into the current (and all prior) Chapters, but the lack of Chapters 6, a far too hasty treatment of the newly added Paso Robles lands, a lack of clarity on the sources and relationship of the surface diversion numbers to the "groundwater" ones, and possibly incorrect separation of bullet points between the GSP and ISP -- among other noted instances of confusion or inquiry -- militate towards additional revisions before the drafts are further reviewed.	Comment noted	No change to Chapter 8	PlanningCommitteeComments_05012019_TomVirsik
8-40	8.5.2.3		7		5/16/19	Bob Jaques	1st paragraph - change word *"to"* to from…*"monitoring site is similar to or different from water level thresholds in nearby representative……"*		Comment incorporated into Chapter 8	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-41	8.5.4.1		15		5/16/19	Bob Jaques	2nd pararaph, text reads *"Over the course of any one year, no more than 15% of the groundwater elevation minimum thresholds shall be exceeded in any single aquifer."* Comment: The same wells should not have their Minimum Thresholds exceeded more than "X" times in any "Y" year period		Text revised	5-16-19 AC Meeting Packet with Comments from Bob Jaques

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-42	8.5.4.2		16		5/16/19	Bob Jaques	2nd bullet point under Expansion of de-minimis pumping, text reads, *"Individual de-minimis pumpers do not have a significant impact on groundwater elevations. However, many de-minimis pumpers are often clustered in specific residential areas. Pumping by these de-minimis users is not regulated under this GSP. Adding additional domestic de-minimis pumpers in these areas may result in excessive localized drawdowns and undersirable results."* Comment: This problem should be addressed as it could have a potential impact on the basin.		Comment noted	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-43	8.5.4.3		16		5/16/19	Bob Jaques	1st paragraph of Effects on Beneficial Users and Land Uses: The same wells should not have their Minimum Thresholds exceeded more than "X" times in any "Y" year period.		Text revised	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-44	8.6.2		17		5/16/19	Bob Jaques	2nd paragraph, text reads, *"As noted in the regulatory definition of minimum thresholds quoted above, the reduction on groundwater storage minimum threshold is established for the basin as a whole, not for individual aquifers. Therefore, one minimum threshold is established for the entire Basin."* Comment: It doesn't seem very protective of the individual aquifers if the reduction in storage is applied to the basin as a whole without regard to the reduction in storage from each aquifer.		Comment noted. The text has been left as is.	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-45	8.6.2.6		20		5/16/19	Bob Jaques	3rd bulletpoint: correct spelling from AF to AFY: The current water use factor is assumed to be 0.39 AFY/dwelling unit.		Comment incorporated into Chapter 8	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-46	8.6.4.2		22		5/16/19	Bob Jaques	2nd bulletpoint under Expansion of de-minimis pumping, text reads, *"Pumping by de-minimis users is not regulated under this GSP. Adding domestic de-minimis pumpers in the Basin may result in excessive pumping and exceedance of the long-term sustainable yield, an undersirable result."* : Comment: This problem should be addressed as it could have a potential impact on the basin.		Comment Noted	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-47	8.7.2.1		23		5/16/19	Bob Jaques	Comment on 2nd paragraph of the following *"These maps are devloped through analysis and contouring of the values measured at dedicated monitoring wells near the coast, as shown on Figure 8-6 and Figure 8-7."* - Comment: These contours will likely change shape over time, sometimes receding and sometimes advancing further inland. This will complicate determing if this Minimum Threshold has been exceeded.	Comment noted	No change to Chapter 8	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-48	8.7.2.2		27		5/16/19	Bob Jaques	1st paragraph text reads, "The minimum threshold for seawater intrusion is a single value for the entire Subbasin. Therefore, no conflice exists between minimum thresholds measured at various locations within the Subbasin." Comment: There should be a separate Minimum Threshold for each aquifer.		Text revised	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-49	8.8.2		31		5/16/19	Bob Jaques	See Item 2. *"They must have previously been found in the Subbasin at levels above the level of concern"* : Why should this be one of the two criteria?		This criterion shows that the constituenets are effectively a potential problem in the basin	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-50	8.8.2		32		5/16/19	Bob Jaques	Comment on Coliform bacteria COC list elimination: My understanding is that coliform is commonly monitored in water supply wells		These results are not commonly reported.	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-51	8.8.2		32		5/16/19	Bob Jaques	Comment on Strontium COC list elimination: Since this is listed as a constituent of concern, it seems like it should start being sampled for.		The GSA is not sampling for water quality independently; we are using data from other specific WQ programs; if they don't monitor certain parameters, we will not report them either	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-52	8.8.2.7		41		5/16/19	Bob Jaques	3rd paragraph under Domestic land uses and users, text reads, *"The degradation of groundwater quality minimum thresholds generally provides positive benefits to the Basin's domestic water users."* Comment: If existing exceedances are basically ignored and allowed to continue, this doesn't provide "positive benefits" to them.		Existing exceedances are not due to GSA actions or GSP implementation, therefore they do not fall under GSA's jurisdication. Other programs are in charge of water quality issues.	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-53	8.9.1		44		5/16/19	Bob Jaques	1st bulletpoint, text reads, *"Any land subsidence caused by lowering of groundwater levels occurring in the basin is significant and unreasonable."* Comment: Subsidence will not always cause a problem for example, if there is no infrastructure in an area where subsidence occurs, it will not cause any damage.		Comment noted. However, it will be difficult to *a-priori* identify areas where subsidence is acceptable and where it is not.	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-54	8.9.2.2		46		5/16/19	Bob Jaques	The wording of the following sentence doesn't make sense (see 1st bulletpoint under Chronic lowering), "*...therefore the subsidence minimium thresholds will not compel in a significant or unreasonable lowering of groundwater levels."*		Text revised	5-16-19 AC Meeting Packet with Comments from Bob Jaques

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-55					5/16/19	Steve McIntyre	Perhaps you could word the bullet point concerning the impacts of surface diversions/groundwater pumping on the environment to read: "ground water pumping is assumed not to be unreasonable for environmental flows but this assumption is subject to the process of establishing an HCP" (or something to this affect)		Comment incorporated into Chapter 8	
8-56					5/16/19	Dallas Tubbs	The text describes how the basin will be managed as a whole to prevent undesirable results. Given the criteria set forth in Chapter 8, it seems likely there will be an undesirable result in the 180/400-Foot aquifer. Accordingly, does this mean that there will be basin-wide groundwater pumping limits, and if so, how will those be apportioned?		Each subbasin will have a unique sustainable yield that will drive the pumping limit in the subbasin	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-57	8.5.2.2		7		5/16/19	Dallas Tubbs	The text states: "*Minimum thresholds for groundwatwer elevations are compared to the range of domestic well depths in the Subbasin. Conclusions from the comparison identifies modest impact to domestic wells in both the 180- and 400-foot aquifers.*" Question: Should there be a similar evaluation of the other well categories in the Subbasin to make the minimum thresholds impacts and trade-offs visible?		Only domestic wells were considered because they are commonly the most shallow wells in an area.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-58	8.5.2.3	8-1	6,7		5/16/19	Dallas Tubbs	See 1st bulletpoint Change in Groundwater Storage: The text states. *"The groundwater elevation minimum thresholds are set at or above existing groundwater elevations* ." We recommend that a "date" column be added to Table 8-1 on page 6, listing the baseline date for each well and measurement.		Because this table (Now Table 8-2) does not include any monitoring data, the date column is not included.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-59	8.5.2.3		7		5/16/19	Dallas Tubbs	Shouldn't the groundwater elevation minimum threshold be set when the GSP is adopted? Given the time gap between when these elevations were taken, groundwater elevations could be in an undesirable state before the GSP is submitted		We must include minimum thresholds in the GSP. The basin will not be out of compliance when we adopt the plan. The basin is only out of compliance if we exceed minimum thresholds 20 years after adoption.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-60	8.5.2.3		8		5/16/19	Dallas Tubbs	See 2nd bulletpoint Seawater Intrusion: In addition to text here, it would be helpful to incorporate the MCWRA maps here showing the current areal extent of seawater intrusin (or at least when citing the reference to other locations in the GSP). Please include a discussion of the groundwater gradient because this is the driving force for seawater intrusion		A discussion of seawater intrusion is included in Chapter 5.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-61	8.5.2.3		8		5/16/19	Dallas Tubbs	Question: If groundwater elevations are maintained at the minimum threshold (i.e. "at or above the existing groundwater elevations") does that mean there will be no further expansion of the areal extent of seawater intrusion?		No. Seawater intrusion will continue if groundwater elevations are simply maintained at current levels.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-62	8.5.4.1		15		5/16/19	Dallas Tubbs	Undesirable Results: One of the metrics to determine whether the basin is compliant is based on water level measurements. The proposed metric is 15% of wells below the groundwater elevation minimum threshold (or a cluster or wells) yields an undesirable result. One well in this - is already below the threshold, so three additional wells below the threshold would be considered an undesirable result (or less if the wells are in a cluster.) Also, with respect to seawater intrusin, it would seem that the location of the wells plays an important role. As worded, the requirement seems overly restrictive. Without supporting arguments, Chevon proposes the number of well be increased		Comment noted	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-63	8.5.4.1		15		5/16/19	Dallas Tubbs	Questions: (1) Have the 23 existing monitoring wells been deemed to be a statistically meaningful quantity? If not, what is the recommended number of monitoring wells needed in the basin to provide statistically meaningful data?; (2) Given the seemingly small sample size (23 wells), we question if 15% is likely to be too sensitive to be representative of the overall basin; (3) As a hypothetical question, if four wells with an undesirable result are all located at the northern end of the Subbasin, would that require the GSA to take action across the entire Basin, or just the effected Subbasin?		1) no assessment of statistical signficance has been developed. 2) Comment noted. 3) if four wells exceed minimum thresholds anywhere in the subbaisn, it will require the GSA to take action	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-64	8.6.2.6		20		5/16/19	Dallas Tubbs	Under Method for Quantitative Measurement of Minimum Threshold, third bulletpoint: Text states, *"The current water use factor is assumed to be 0.39 AF/dwelling unit."* Please cite the reference that supports the water use factor of 0.39 AF per dwelling unit.		Reference added	5-19-19_180-400_Ch8_Chevon_DallasTubbs

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-65	8.6.3.1		21		5/16/19	Dallas Tubbs	Paragraph under Method for Setting Measurable Objectives: This section is unclear (i.e., it reads like the "chicken and egg" conundrum). Please discuss the relationship between storage and pumping.		Although the SMC is called reduction in groundwater storage, the regulations require that the metric be total pumping. The GSP simply follows the regulations.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-66	8.8.1		30		5/16/19	Dallas Tubbs	Degraded Water Quality SMC, Under 1st bulletpoint: The terms "SMCL" and "MCL" need to be defined in the document.		Comment incorporated into Chapter 8	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-67	8.8.2	8-2	35		5/16/19	Dallas Tubbs	This section describes metrics around water quality. The metrics seem excessively restrictive. For example, *"Zero additional municipal production wells that are in the GSP monitoring program shall exceed the sulface SMCL of 250 mg/L."* The secondarly MCL for sulface (which has to do with taste/odor and not toxicity) should not be metric. Many of the constituents listed in this section are naturally occurring, and some may be just below the MCL or SMCL. If these concentrations increase for a reason besides groundwater withdrawal (including natural variability) it does not make sense to include these. Chevron has concern that the metric requiring "zero additioinal wells" is setting the basin up for failure. Analyticial variability, or bad sampling methods could yield an undesirable result. Interpreting analytical data is much more difficult than water level meaurement data.		This issue is addressed in the Degradation of Groundwater Quality undesirable result section. The undesirable result is based only on exceedences directly caused by the GSA's actions or projects	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-68	8.8.2		31		5/16/19	Dallas Tubbs	The text reads, *"Constituents of concern must meet two criteria: 1. They must have an established level of concern as an MCL or SMCL, or a level that reduces crop production, 2. They must have previously been found in the Subbasin at levels above the level of concern."* Why is the word "previously" inserted in the second bullet point?		The word previously has been deleted.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-69	8.8.2		32		5/16/19	Dallas Tubbs	The text reads, *"These constituents are monitored with the ILRP wells and are known to cause reductions in crop production when irrigation water includes them in high concentrations."* The term "high concentrations" is ambiguous. Should a specific value be stated for each constituent?		Comment incorporated and question answered	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-70	8.8.2		32		5/16/19	Dallas Tubbs	The text reads *"As noted in Section 5.6.3, based on available information there are no mapped groundwater contamination plumes in the Subbasin."* What is the documentation to support this statement? Also, is seawater intrusion not defined as a plume?		Seawater intrusion is a separete sustainability indicator	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-71	8.8.2.1		36		5/16/19	Dallas Tubbs	As previously mentioned, the zero exceedances expectation is setting up the GSP for failure. Analytical variability, or bad sampling methods could yield an undesirable result. Interpreting analytical data is much more difficult than monitoring water level measurement data. We recommend using historical data to develop a reasonable tolerance band for each parameter.		This issue is addressed in the Degradation of Groundwater Quality undesirable result section. The undesirable result is based only on exceedences directly caused by the GSA's actions or projects	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-72	8.8.2.1	8-3	37		5/16/19	Dallas Tubbs	We note that several of the constituents of concern listed appear to show incorrect MCLs (e.g. chloride, Radon-222, Sulface and TDS). What standard is being used for this information?		Calivornia drinking water standards are used, as specified in Table 8-4	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-73	8.8.4.1		43		5/16/19	Dallas Tubbs	Under *Criteria for Defining Undesirable Results:* To clarify, does this section mean that future projects or management actions SVBGSA might undertake will be executed in such a way that an undesirable result does not occur?		This section does mean that any project or management action undertken by the SBBGSA will not diretly lead to an undesirable result	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-74	8.8.4.2		43		5/16/19	Dallas Tubbs	2nd bulletpoint Groundwater Recharge, text reads, *"Active recharge of imported water or captured runoff could modify groundwater gradients and move one of the constituents of concern towards a supply well in concentrations that exceed relevant limits."* Does this statement mean that ground water recharge can't contain anything that has an MCL above the threshold?		That is correct	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-75	8.9.2.3		47		5/16/19	Dallas Tubbs	3rd paragraph states, *"Therefore, the minimum thresholds in the 180/400-Foot Aquifer Subbasin is zero subsidence."* Setting an absolute value for subsidence is unwise. The minimum threshold should be stated in terms of a subsidence metric measured over time. For example, is 1 cm of change over 40 years unacceptable? We advise waiting until historial InSAR data has been obtained and evaluated prior to setting the minimum threshold. Because ground elevations can change over time unrelated to water extraction, some subsidence may be reasonable depending on the <u>rate of change</u>		Historical InSAR data have now been obtained and are being incorported. We will continue to use the zero subsidence metric, but will incorporate measurement error into our definition of zero subsidence.	5-19-19_180-400_Ch8_Chevon_DallasTubbs

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-76	8.10.2		51		5/16/19	Dallas Tubbs	2nd paragraph, text reads, *"However, without good historical data or a numerical model, it is difficult to assess whether and where the stream is connected to underlying groundwater."* Perhaps it would be best to postpone setting a minimum threshold for depletion of interconnected surface water until more data can be captured or a numerical mode is made available.		We must include minimum thresholds in the GSP. This thrshold can be modified as additional data are collected.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-77					5/16/19	Gary Petersen	Stated that the Integrated Sustainability Plan is being tabled temporarily.	D Williams stated that the slides still include some of the sustainability indicators for all the Valley	Question answered	2019-05-16 AC Minutes
8-78					5/16/19	Robin Lee	Why aren't the groundwater elevation measurable objectives set to stop seawater intrusion?	D Williams stated the measurable objective is not the same as the groundwater elevation, because intrusion could be stopped by pumping water out as well as by raising water levels.	Question answered	2019-05-16 AC Minutes
8-79					5/16/19	Abby Taylor Silva	How many wells have exceeded the minimum threshold in 2015?	D Williams stated that he would have to report back on how many wells would have exceeded the minimum threshold in 2015	Data now in the Undesirable Results section	2019-05-16 AC Minutes
8-80					5/16/19	Norm Groot	What is the definition of the not to exceed 15% for Undesirable Results?	D Williams stated that the not to exceed 15% he proposes for Undesirable Result can be revisited at least every five years and even before the completion of this process to determine whether we can attain the objectives with the financing we have. A public process would be required	Question answered	2019-05-16 AC Minutes
8-81					5/16/19	Robert Burton	What is the criteria for the representative period selection.	D Williams stated that the representative period was selected to include reservoir operations and wet and dry period, but it could be expanded or contracted. D Williams does not believe the 1992 minimum threshold was an outlier year in Figure 8-1 as there were 3 years that reached this level	Question answered	2019-05-16 AC Minutes
8-82					5/16/19	Bob Jaques	Might be a good idea to not show the same wells that are below the minimum threshold each year	D Williams will note not to add the same wells below the minimum threshold every year so to avoid always penalizing the same people	Text revised	2019-05-16 AC Minutes
8-83					5/16/19	Dallas Tubbs	Is the 15% measurement for undesirable results too low as a representation of the entire basin?	D Williams will note that the 15% measure for undesirable results may be too low if the monitoring wells are not representative of the entire basin	Comment noted	2019-05-16 AC Minutes
8-84					5/16/19	Harold Wolgamott	Should add footage when addressing the 15% Undesirable Results	D Williams will consider Harold's comment "by X feet" to the 15% referenced in Undesirable Results, e.g. 2 feet or 5 feet	No change to text. It would be wiser to simply change the minimum thresholds	2019-05-16 AC Minutes
8-85					5/16/19	Tom Virsik	References his previous written comments. The concentration of exceedances seems to scream a need for a management area	Comment noted	No change to Chapter 8	2019-05-16 AC Minutes
8-86					5/16/19	Heather Lukacs	Stated there should be different management areas for drinking water protections, e.g. it is not acceptable for 15% to be the undesirable result measure.	D Williams stated we will note the question whether we should have management areas near public water supply wells to avoid exceedances around those wells	Comment Noted	2019-05-16 AC Minutes
8-87					5/16/19	?	?	Mr. Williams stated that significant policy question include whether we should expand the existing groundwater pumping reporting requirements and define pumping allowance.	Question answered	2019-05-16 AC Minutes
8-88	8.6.2.6				5/16/19	Abby Taylor Silva	Can we charge de minimis users and require metering? Regarding 8.6.2.6, "Method for Quantitative Measurement of Minimum Threshold" asked about a process for collecting data that is not currently reported.	D Williams stated that we can charge de minimis users but cannot require metering. In response to Taylor Silva's question about collecting data defined under 8.6.2.6, D Williams stated that this is a policy decision in the implementation plan and the reporting system can be expanded, perhaps through the WRA	Question answered	2019-05-16 AC Minutes
8-89					5/16/19	Bob Jaques	Stated the regulations' requirement to report for the basin as a whole is not a good idea and wondered if the GSA could have minimum objectives and thresholds for each aquifer	D Williams stated that setting specific pumping amounts for each aquifer would require more calculations; not doing so could result in other sustainability criteria being violated	Question answered	2019-05-16 AC Minutes
8-90	8.6.2.2				5/16/19	Robin Lee	Asked about Section 8.6.2.2, Depletion of Interconnected Surface Waters, and what if we do not like whiat is going on today.	D Williams asked her to hold the question	N/A	2019-05-16 AC Minutes
8-91					5/16/19	Tom Ward/Howard Franklin	In response to Tom Ward, Howard Franklin stated there are 47 or 48 deep aquifer wells, and they are collecting on most of those wells. They are not all in the pressure area		Question answered	2019-05-16 AC Minutes

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-92					5/16/19	Bob Jaques	Stated that the isocontour line could change, and it may be better to say the total area is the measure.	D Williams stated that the regulations say it is line we cannot cross. The map indicates there are not huge fluctuations annually. If we implement certain projects, it could affect the isocontour. We can expand the isocontour to allow some flexibility. But when implementing projects, it may harm other indicators.	Question answered	2019-05-16 AC Minutes
8-93					5/16/19	Howard Franklin	Stated that the 2018 data does not show the isocontour line going backwards and a larger buffer over that should be allowed	Comment noted	No change to Chapter 8	2019-05-16 AC Minutes
8-94					5/16/19	Harold Wolgamott	Suggested moving the isocontour line further inland, halfway between where it is and Highway 1		Comment noted. This is a policy decision to be discussed with Board	2019-05-16 AC Minutes
8-95					5/16/19	Abby Taylor Silva	Asked if the undesirable result could be established year one of projects without knowing what the data would be.	D Williams responded that the DWR is looking for definitive, quantifiable items. Suggests 2017 as a buffer. When we get to the five-year date of the Plan, it could be changed at that point	Question answered	2019-05-16 AC Minutes
8-96					5/16/19	Heather Lukacs	The 2017 year could be reviewed for change five years from now	D Williams stated that it is worth defining the minimum threshold that is currently further inland than 2017, so he would like more feedback. It will depend on the financing to implement a project to stop seawater intrusion	Question answered	2019-05-16 AC Minutes
8-97					5/16/19	Nancy Isakson	She agreed with Heather Lukacs that the 2017 year should be retained to ensure that something is done	Comment noted	No change to Chapter 8	2019-05-16 AC Minutes
8-98					5/16/19	Dallas Tubbs	Would like to think about chain of command and protocols on how to test wells so it is equivalent and replicated well to well	D Williams stated that we are not collecting samples but gathering data from others' samplings	Question answered	2019-05-16 AC Minutes
8-99					5/16/19	Harold Wolgamott	Noted we should only use reliable data	D Williams stated that we would come up with a new list of wells and new minimum thresholds and objectives with every five-year update. They would not use a well redrilled in the same spot	Question answered	2019-05-16 AC Minutes
8-100					5/16/19	Nancy Isakson	Why are nitrates not included as constituents of concern in ag wells	D Williams stated that nitrates were not included because they are pushed into an ag well and do not negatively impact crop production, so the grower would not have to abandon the well	Question answered	2019-05-16 AC Minutes
8-101					5/16/19	Bob Jaques	Stated that we should be sampling for constituents of concern	D Williams responded that under SGMA, we are not sampling but are looking at whether we are causing any harm. The Regional Board is responsible for cleaning up the basin	Question answered	2019-05-16 AC Minutes
8-102					5/16/19	Norm Groot	?	D Williams stated they are setting additional nitrates exceedances at zero unless the DWR does not accept their proposal for undesirable results to be defined as "On average during any one year, no groundwater quality minimum threshold shall be exceeded as a direct result of projects or management actions taken as part of GSP implementation."	Question answered	2019-05-16 AC Minutes
8-103					5/16/19	Horacio Amezquita	Asked when the GSA will address the problem of increasing nitrate concentration and well pollution.	D Williams responded that the GSA would not take this issue on if it is unrelated to SGMA. We are looking at projects that would have an impact on water quality	Question answered	2019-05-16 AC Minutes
8-104					5/16/19	Heather Lukacs	Asked how are we rationalizing missing data because wells are not sampled regularly	D Williams responded that the mandate is to increase water supply without harming water quality using existing data	Question answered	2019-05-16 AC Minutes
8-105					5/16/19	Dallas Tubbs	Commented that absolute subsidence is as important as the rate of change, so the threshold would work in over time	D Williams stated that on May 6, 2019, DWR announced they will provide InSAR data that will show monthly change in ground surface. Stated that the minimum threshold for subsidence would be a very low rate of subsidence and not zero subsidence	Insar data now included in GSP. Decision was to retain zero subsidence with acknowledgment of measurement error	2019-05-16 AC Minutes
8-106					5/16/19	Harold Wolgamott	Agreed with Mr Tubbs and would like a better definition of the minimum threshold definition of no subsidence that impacts infrastructure		Comment noted	2019-05-16 AC Minutes
8-107					5/16/19	Emily Gardner	Asked about the reference to infrastructure	D Williams stated the legislation is written in that way, and there is a decrease in storage in clay where there is no pumping	Question answered	2019-05-16 AC Minutes
8-108					5/16/19			D Williams stated the surface water depletion section includes many policy questions	Commment noted	2019-05-16 AC Minutes
8-109					5/16/19	Robin Lee	Asked whether we agree that the impact on our river flows is significant but not unreasonable	D Williams answered that whether we are having an impact on ecosystems that are groundwater dependent is a different policy question	Question answered	2019-05-16 AC Minutes

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-110					5/16/19	Howard Franklin	Stated that the WRA will be redefining how to provide environmental flows, so how do we say the MCWRA is successfully achieving environmental flows in the Salinas River	D Williams responded that the Plan is based on the best data currently available and will be revisited in three to five years	Question answered	2019-05-16 AC Minutes
8-111					5/16/19	Howard Franklin	Objects to the language that they are successfully achieving environmental flows	D Williams considered modifying the language to reflect that the WRA is operating under the NOAA previous biological opinion. It is difficult to say we will not meet those environmental flows if we do not know what they are, but this is a policy issue	Question answered	2019-05-16 AC Minutes
8-112					5/16/19	Nancy Isakson	Questions whether we can say that stream depletion is not unreasonable. In response to D Williams response, she said that is not what she is saying and will provide D Williams with some quoted language	D Williams stated that the statement is open for discussion. Since the structures operate in a way that implicitly understands depletion rates, we have already addressed reservoir depletion rates so it is not unreasonable. However, we could say release less water in Nacimiento and get the same amount of flow if we had less depletion	Question answered	2019-05-16 AC Minutes
8-113					5/16/19	Donna Myers	Stated that “successfully achieving” should be changed to “providing water flows”		Comment incorporated into Chapter 8	2019-05-16 AC Minutes
8-114					5/16/19	Charles McKee	Suggested “successfully provided environmental flows as long as requirements were in place.”		Comment incorporated into Chapter 8	2019-05-16 AC Minutes
8-115					5/16/19	Donna Myers	Asked if the lakes are considered in the statement "Limited recreational opportunities on the Salinas River, therefore groundwater pumping is not unreasonable for recreational flows," and whether this is an accurate statement	DW said lakes are not considered at this point because the pumping is not depleting lakes. However, lakes are a secondary consideration we could address	Question answered	2019-05-16 AC Minutes
8-116					5/16/19	Robin Lee	Asked where the environmental community's concern about habitats is addressed. She is concerned about wells on smaller tributaries that may be depleting ecosystems	D Williams stated that we have mapped potentially dependent ecosystem but not known groundwater dependent ecosystems. This is a policy decision. He has not identified which we want to protect. Implementation could include a project to hire a biologist to visit sites identified by aerial photos to assess whether they are groundwater dependent or not. Then the group could make policy recommendations on importance and establishing policies, but it will take some time. He requested further feedback as to whether we are having an unreasonable impact and how we address groundwater dependent ecosystems or should we address, better understand, and protect them. D Williams invited Committee members to provide additional input as soon as possible for inclusion for the Board's consideration.	Question answered	2019-05-16 AC Minutes
8-117					5/16/19	Harold Wolgamott	Stated that the GSA does not include surface water, e.g., pumping in Chualar would not have environmental factors directly affected	D Williams stated that this raises the question of do we think pumping is significant and unreasonable. If you are pumping from the 400 foot aquifer, it would be hard to say cut back to improve stream flows.	Question answered	2019-05-16 AC Minutes
8-118					5/16/19	Robin Lee	Would like a written description of what Mr. Williams needs to develop good decisions on the ecology.	D Williams stated he is understanding that some people would like to see ecosystems and that we may have overstated the case about no significant and unreasonable impacts. But on the other hand, there is uncertainty whether we can say that it is unreasonable. He’s looking for feedback. He can help guide the Committee, but policy ideas are tough because there is not much data that we can rely upon	Question answered	2019-05-16 AC Minutes
8-119					5/16/19	Robin Lee	Added that we could propose that we get the ecosystem data	D Williams stated we could map them or look at shallow groundwater levels that are within 15 feet to 20 feet, and then we can say we know it is a Groundwater Dependent Ecosystem. Then it becomes a policy decision whether to maintain it as a viable system and whether to implement projects and plans to protect them. D Williams summarized the comment as what is the policy as to whether we are having a significant and unreasonable impact.	Question answered	2019-05-16 AC Minutes

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-120					5/16/19	Heather Lukacs	Asked whether the Agency or a standard of law would determine "significant and unreasonable."	D Williams stated that the law says the Agency decides, but there will be disagreement regardless of what is decided	Question answered	2019-05-16 AC Minutes
8-121					5/16/19	Tom Virsik	Stated that the direction should be to make it simpler and less complex	D Williams summarized to focus the discussion on pumping impacts on the 180/400 foot aquifer and not on the entire river.	Question answered	2019-05-16 AC Minutes
8-122	8.2		6 and 7		6/18/19	TNC	In a future draft of the document, please provide more details on how the needs of environmental beneficial users (GDE and ISW ecosystems) will be balanced with other water users in the basin. The sustainability goal should describe how projects and actions will balance environmental water needs and avoid adverse impacts to GDEs and ISWs, how the basin will be operated to maintain or improve these aquatic ecosystems, and an explanation of how the sustainability goal will be achieved within 20 years of implementation of the GSP. For more case studies on how to incorporate environmental benefits into groundwater projects, please visit our website: https://groundwaterresourcehub.org/case-studies/recharge-case-studies/		The minimum thresholds, measurable objectives, and undesirable results for surface water depletions are based on local input and a balance of local concerns. Discussions of impacts on GDEs were held during Advisory Committee meetings and Board of Directors meetings. These criteria may be modified in future versions of the GSP.	TNC_180-400ftAquifer_Chapter7+8
8-123	8.3		7		6/18/19	TNC	This section broadly lists how the chapter was developed, but "publicly available information" and specific stakeholders are not clearly defined or cross referenced to other sections. Please provide or cross-reference this information, including reference to publicly available information regarding GDEs that was researched and how environmental stakeholders were engaged.		Stakeholder engagement is discussed in Chapter 11	TNC_180-400ftAquifer_Chapter7+8
8-124	8.10		59		6/18/19	TNC	Please integrate the following information into this section of the GSP to appropriately establish SMC for ISWs in a way that balances the needs of environmental beneficial users and achieves the basin's sustainability goal to balance all beneficial users of the basin: o The shallow aquifer is indeed a principal aquifer that needs SMC established to prevent adverse impacts to surface water beneficial users. SGMA defines principal aquifers as "aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems" [23 CCR § 351 (aa)]. In addition, more nested/clustered wells are needed in the 180-400 Foot Aquifer area to determine vertical groundwater gradients and whether pumping in the deeper aquifers are causing groundwater levels to lower in the shallow aquifer and deplete surface water.		The shallow aquifer is not considered a principal aquifer. However, the SVBGSA will install shallow wells in the shallow sediments to assess groundwater/river interactions.	TNC_180-400ftAquifer_Chapter7+8
8-125	8.10		59		6/18/19	TNC	As previously mentioned in our April 11 letter regarding Chapter 5 of the Draft GSP, the shallow aquifer in the 180/400 Foot Aquifer and Monterey Subbasins are likely to be supporting GDEs and interconnecting with the Salinas River. Thus, pumping in deeper aquifers can still cause adverse impacts to environmental beneficial users reliant on shallow groundwater. Even if pumping is not occurring in shallow groundwater aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, especially those that support springs, surface water and GDEs for current and future uses.		The proposed shallow wells discussed in Chapter 7 are intended to verify and help manage the groundwater/surface water interactions.	TNC_180-400ftAquifer_Chapter7+8
8-126	8.10		59		6/18/19	TNC	Several published references indicate that the 180-Foot aquifer is in direct hydraulic communication with the overlying Dune Sand Aquifer or Shallow Alluvial Aquifer where the Salinas Valley Aquitard is thin or absent.3 These same references indicate aquitards within the 180-/400-Foot aquifer system are known to be locally discontinuous. In addition, the fact that the Salinas is a losing stream and that of 67,000 acre feet are recharged from the stream to the groundwater basin in an average year strongly suggests that the shallow aquifer is hydraulically connected to the underlying pumped aquifer systems.		coment noted. The HCM in chapter 4 specifically notes that the aquitards are thin and discontinuous in places.	TNC_180-400ftAquifer_Chapter7+8
8-127	8.10		59		6/18/19	TNC	The GDE Pulse web application developed by The Nature Conservancy provides easy access to 35 years of satellite data to view trends of vegetation metrics, groundwater depth (where available), and precipitation data. This satellite imagery can be used to observe trends for NC dataset polygons within the 180-400 Foot Aquifer area (Figure 1). Over the past 10 years (2009-2018), NC dataset vegetation polygons have experienced adverse impacts to vegetation growth and moisture which are correlated to declines in groundwater levels (e.g., as indicated by wells GZWA21202, CHEA21208).		Comment noted	TNC_180-400ftAquifer_Chapter7+8

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-128	8.10.1 - 8.10.2.1		59-61		6/18/19	TNC	These sections explain that the definition of Significant and Unreasonable Conditions, and establishment of Minimum Thresholds and Measurable Objectives is based on considerations related to flows in the Salinas River and specifically the maintenance of minimum flows for the protection of aquatic species and water rights. Steelhead are not the only environmental user that need consideration. A list of freshwater aquatic species identified in the 180-/400-Foot Aquifer Subbasin is included for your reference as Attachment C. There appear GDEs have been omitted, as they are not mentioned or considered. We believe this to be a deficiency, as the Department of Water Resource's NC Dataset Viewer indicates a variety of potential GDE habitats are located in the subbasin along the Salinas River and its tributaries, and not just within the stream. Furthermore, TNC's GDE Pulse Tool (Attachment E) shows declining ecosystem conditions along the Salinas River between 2014 and 2018, including the period after the recent drought (and after the baseline period specified in SGMA). NDVI (which represents vegetation growth) and NDMI (which represents vegetation moisture) coincide with a decline in groundwater levels for NC dataset polygons along the Salinas River west of Salinas (Figure 1). Please include a discussion of how baseline conditions, current trends and potential adverse impacts to GDEs were considered in the definition of significant and unreasonable conditions and establishment of Minimum Thresholds and Measurable Objectives. (see letter for rest of comment)		Additional information on environmental users was added to Chapter 11. The GSA decided not to include the list of freshwater species provided because it was not accurate.	TNC_180-400ftAquifer_Chapter7+8
8-129	8.10.2.4		66-67		6/18/19	TNC	The listing of beneficial uses of interconnected surface water is limited to instream resources of the Salinas River alone. Please expand the listing of beneficial uses and users to address GDEs and ecosystems that are located adjacent to the river and its tributaries. A list of fresh water aquatic species identified in the 180-/400-Foot Aquifer Subbasin is included for your reference as Attachment C. The relationships between GDEs and ecosystems adjacent to the river and its tributaries, and their dependence on interactions with ISW and groundwater, are key to understanding the appropriateness of the subbasin-wide Minimum Threshold for interconnected surface water depletion being proposed for all ISWs, and the extent to which GDEs adjacent to the river should also be considered when establishing the SMC for Chronic Lowering of Groundwater levels. Adjacent or nearby GDEs could be significantly affected by small depletions depending on the depletion rate, their location and the existing surface and groundwater hydraulic gradients. However, even if they are not, these GDEs could still be affected by relatively modest groundwater level declines and likely still need to be considered separately according to groundwater levels under the Chronic Lowering of Groundwater SMC. The discussion of ecological land uses and users should include GDEs and ecosystems adjacent to the river and its tributaries, and their dependence on interactions with ISW and groundwater.		The GSP addresses GDEs as required by regulation. The Board of Directors was informed during open session that they have the abilityto expand the definition of significant and unreasonalbe groundwater elevations to address GDEs	TNC_180-400ftAquifer_Chapter7+8

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-130	8.10.2.5		67		6/18/19	TNC	We recommend the streamflow requirements set by the NMFS should be explicitly stated or referenced in the GSP. In addition, any other state, federal or local standards, requirements and guidelines pertaining to the GDE habitats and species identified in the NC dataset or the list of species included in Attachment C should also be discussed or referenced.		As discussed in Section 8.11.1, The U.S. Army Corps of Engineers has re-initiated consultation with the National Marine Fisheries Service on the Biological Opinion. No flow requirements are presently in place, even though MCWRA continues to operate in accordance witht he 2007 biological opinion as a safe harbor practice. The GSP is not required to meet flow requirements, it is only required to assess whether depletions due to pumping are significant and unreasonable. Therefore, there is no need to list flow requirements in this document. The Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River (MCWRA, 2005) will be included in the list of references uploaded to DWR during GSP submission.	TNC_180-400ftAquifer_Chapter7+8
8-131	8.10.2.6		67		6/18/19	TNC	Modeling/calculation of surface water depletion is the only proposed means to measure the minimum threshold for depletion of ISWs. Ecosystems sensitive to declines in groundwater levels and depletion of interconnected surface waters can experience significant declines in a short period of time depending on their hydraulic function, structure and the species involved. Use of a single calculated value in lieu of measured field data and linkages to other measured hydrogeologic data (such as groundwater levels) leaves a significant data gap that must be filled to assure protection of these resources. Model estimates should be monitored more closely than every five years in order to detect potentially significant effects in a time frame that allows for rapid response and alleviation of ecosystem decline. As discussed, the TNC's GDE Pulse Tool (Attachment E) already shows declining ecosystem conditions along the Salinas River between 2014 and 2018, including the period after the recent drought (and after the baseline period specified in the SGMA). Please discuss how the minimum threshold will be measured in a way that assures protection of GDEs and instream environmental beneficial users.		The GSP does not protect species; it asssesses whehter the depletion of surface water due to pumping is significant or unreasonable. The modeling approach to assessing depletions due to pumping is the approach proposed in the DWR BMP for monitoring.	TNC_180-400ftAquifer_Chapter7+8
8-132	8.5.2.1		8-16		6/18/19	TNC	This section describes the methodology used to establish Minimum Thresholds and Measurable Objectives for Chronic Groundwater Level Decline. Subbasin-wide groundwater levels experienced in 2015 are defined as the Minimum Threshold, and the Measurable Objective was established the subbasin-wide groundwater levels experienced in 1992, which were approximately 1 foot higher. Table 8-1 (PDF pg. 16 of 70) lists "Representative Monitoring Sites" or wells where groundwater levels will be measured and compared to the Measurable Objectives to assess compliance with the plan. It is noteworthy that the table does not include a single well completed in the Shallow Alluvial or Dune Sand Aquifer. Please identify the lack of shallow aquifer monitoring wells as a data gap, and cross reference your plans discussed in Chapter 7 to install a sufficient number of shallow monitoring wells to assess potential undesirable results to GDEs.		The shallow aquifer is not considered a principal aquifer. However, the SVBGSA will install shallow wells in the shallow sediments to assess groundwater/river interactions.	TNC_180-400ftAquifer_Chapter7+8

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-133	.5.2.3 and 8.6.2.2		17-19 and 27-28		6/18/19	TNC	When groundwater levels are used as an objective, their relationship to other Sustainability Indicators must be discussed. These sections describe the relationship of chronic groundwater level declines and change in groundwater storage, which are measured using groundwater levels, to depletion of interconnected surface waters. The discussion is limited to the potential effect of groundwater levels on stream flows, and the potential effect of groundwater level declines on GDEs is not mentioned. The statement that "minimum thresholds for reduction in groundwater storage is a single value for the entire Basin. Therefore, the concept of potential conflict between minimum thresholds is not applicable" does not recognize the potential presence of ecosystems and GDEs that could be sensitive to relatively minor or localized declines in groundwater levels. The potential effect of groundwater level declines on GDEs depends on the type of vegetation present and its ability to adapt to changing groundwater levels, the local interaction between surface and groundwater, and the nature of regional and local pumping stresses. Specification of a single groundwater level is likely insufficient to assure protection of GDEs in the absence of a monitoring program that encompasses both groundwater levels and related surface conditions.... Revise these sections to include a discussion regarding the effects of potential gw level declines on GDEs and limitations of gw level monitoring alone to assess potential undesirable results to GDEs.		Change in groundwater storage is not measured using groundwater levles. In accordance with the GSP Regulations, the metric for change in groundwater storage is an amount of water that can be extracted. The Board of Directors was informed during open session that they have the abilityto expand the definition of significant and unreasonalbe groundwater elevations to address GDEs. The relationship between change in storage minimum thresholds and sufrace water depletions is discuessed in Sectin 8.7.2.2. The GSP does not protect species; it asssesses whehter the depletion of surface water due to pumping is significant or unreasonable.	TNC_180-400ftAquifer_Chapter7+8
8-134	.5.2.5 and 8.6.2.4		19-20 and 29-30		6/18/19	TNC	The discussion on ecological land uses and users does not include a discussion on GDEs, ISWs, or other uses that benefit aquatic and terrestrial wildlife, ecosystem processes or recreation. A list of fresh water aquatic species identified in the 180-400-Foot Aquifer Subbasin is included for your reference as Attachment C. These sections imply that ecological land uses may benefit secondarily from the potential curtailment of agricultural and domestic land uses, but does no clearly state how these specialized aquatic ecosystems and related beneficial groundwater users would benefit or be protected from further decline or future damage. Please include a discussion explaining how GDEs, ISW-related ecosystems and recreational uses may benefit or be protected by implementation of the proposed Minimum Thresholds and Measurable Objectives. A list of freshwater aquatic species identified in the 180-/400-Foot Aquifer Subbasin is included for your reference as Attachment C.		The GSP does not protect species; it asssesses whether the depletion of surface water due to pumping is significant or unreasonable.	TNC_180-400ftAquifer_Chapter7+8
8-135	8.5.4.3		26		6/18/19	TNC	This section discusses the effects on beneficial users and land uses of criteria used to define undesirable results related to chronic groundwater level decline. Fifteen percent of exceedances is considered reasonable if the wells are widespread through the subbasin. The section acknowledges that significant unreasonable effects could occur in a smaller clustered area due to localized pumping, but does not describe specifically how the proposed regional compliance strategy will identify or address a more localized occurrence. TNC's GDE Pulse Tool (Attachment E) shows declining ecosystem conditions along the Salinas River west of Salinas between 2014 and 2018. This section should be revised to use these data as a basis for addressing how the proposed compliance strategy will address significant and undesirable decline of GDEs at the spatial scale already observed in the GDEPulse data.		Comment noted	TNC_180-400ftAquifer_Chapter7+8
8-136	8.9.2.2		55 (47 in doc due to formatting error)		6/18/19	TNC	This section discusses the relationship between Minimum Thresholds for subsidence and other Sustainability Indicators, including depletion of interconnected surface waters. The GSP states that "thresholds will not change the amount or location of pumping and will not result in a significant or unreasonable depletion of interconnected surface waters". Please expand this section to include a discussion regarding the potential effects of the minimum thresholds for subsidence, which are based on infrastructure, on the hydraulic function of wetlands and other GDEs.		As stated in the text, the threshold of zero subsidence has no negative impact on the minimum threshold for sufrace water depletion	TNC_180-400ftAquifer_Chapter7+8

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8-137					7/2/2019	Landwatch	**1. Seawater Intrusion** We recommend that the minimum threshold be revised to reflect 2018 data when they are available. As noted in public hearing testimony, seawater intrusion has probably exceeded the 2017 lines identified by the Monterey County Water Resource Agency (MCWRA).		This option was discussed at the Advisory Committee and Board of Directors. The decision by the Board was to stick with 2017 data as the minimum threshold.	LandwatchComments_GSPChapter 8
8-138					7/2/2019	Landwatch	**2. Reduction in Groundwater Storage** We support setting the minimum threshold for depletion based on a scientifically sound sustained yield. The 112,000-acre feet per year (AFY) sustained yield estimate must be revisited as soon as the USGS historical model is available to calibrate the operational model on which this yield is based. In addition, concerns regarding double counting of surface and groundwater raised by other commenters must be resolved because, if accurate, it may significantly reduce the sustained yield. Uncertainty in the historical and current water budgets reflects the differing levels of certainty associated with each component of the water budgets. Although the water budgets may be sufficiently constrained to provide a basis for developing the Groundwater Sustainability Plan (GSP), an important element of the plan is the monitoring program (Chapter 7) that will provide valuable data for improving the water budget during plan implementation. Therefore, the individual components of the historical and current water budgets as well as the overall water budgets should be viewed only as the best current estimates, subject to revision as more information becomes available.		Comment noted; no change currently to Chapter 8.	LandwatchComments_GSPChapter 8
8-139	8			8-2, 8-3	7/2/2019	Landwatch	**3. Reduction in Groundwater Storage and Seawater Intrusion** The groundwater minimum thresholds should be set at the levels that have been determined to be sufficient to prevent seawater intrusion. These levels must clearly be higher than sea level. These levels should be determined based on the most current modeling or groundwater levels that are sufficient to prevent seawater intrusion. If currently modeling is not available, then the 2013 modeling prepared by Geoscience for MCWRA should be used. Chapter 8 sets minimum thresholds and measurable objectives for chronic lowering of groundwater levels. Section 8.6.2 sets a minimum threshold for groundwater elevations at one foot above the 2015 groundwater levels. This proposed level is equal to the 1991-1992 groundwater level, which was the lowest historical level that occurred in the 1967-1998 climatic cycle. (See Chapter 8, Figure 8-2). Figures 8-2 and 8-3 show that the proposed minimum groundwater levels would be well below sea levels in the northern end of the Salinas Valley. This is consistent with the MCWRA groundwater contour maps for 2015, which show that 2015 elevations were in fact well below sea level in the northern Salinas Valley. (Maps available at https://www.co.monterey.ca.us/home/showdocument?id=31284 and https://www.co.monterey.ca.us/home/showdocument?id=31286.)		The minimum thresholds are set independently for each sustianability indicator. All six undesirable results must be avoided simultaneously, therefore there is no need to predicate the groundwater elevation undesireable result on the seawater intrusion undesirable result. Futhremore, groundwater elevations will be different if seawater intrusion is manager thorugh an extraction barrier, or if it is managed through significant managed recharge.	LandwatchComments_GSPChapter 8
8-140	8.6.3			8-4, 8-5	7/2/2019	Landwatch	Section 8.6.3 sets a measurable objective for chronic lowering of groundwater levels that "represent groundwater elevations that are higher than the minimum thresholds" in order to "provide operational flexibility to ensure that the Subbasin can be managed sustainably." This level was set at the 2003 groundwater levels, representing "an average groundwater level from the relatively recent past." Figures 8-4 and 8-5 show that the proposed measurable objective for groundwater levels would be well below sea levels in the northern end of the Salinas Valley. Again, this is consistent with the MCWRA groundwater contour maps for 2003, which show that 2003 elevations were well below sea level in the northern Salinas Valley. (Maps available at https://www.co.monterey.ca.us/home/showdocument?id=19538 and https://www.co.monterey.ca.us/home/showdocument?id=19554.		Comment noted.	LandwatchComments_GSPChapter 8

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8-141	8		17-18		7/2/2019	Landwatch	The Chapter 8 discussion at pages 17-18 appears to justify the minimum thresholds and measurable objectives based on the percentage of wells that would still have 25 feet of water. However, setting minimum thresholds and measurable objectives for groundwater levels at this level would permit continued seawater intrusion because that level is demonstrably insufficient to prevent seawater intrusion. Seawater intrusion occurred throughout the 1967-1998 climatic cycle and has continued to date. It is caused by groundwater levels that are too low to hold back seawater. In its 2013 study for MCWRA, Protective Elevations to Control Seawater Intrusion in the Salinas Valley, Geoscience reported the historic rate of seawater intrusion in various time intervals. (Report available at https://www.co.monterey.ca.us/home/showdocument?id=19642.) Intrusion accelerated over the period 1965 to 1999. (Protective Elevations, p. 5, Table 2.) It has recently accelerated again.		The minimum thresholds are set independently for each sustianability indicator. All six undesirable results must be avoided simultaneously, therefore there is no need to predicate the groundwater elevation undesireable result on the seawater intrusion undesirable result. Futhremore, groundwater elevations will be different if seawater intrusion is manager thorugh an extraction barrier, or if it is managed through significant managed recharge.	LandwatchComments_GSPChapter 8
8-142	8		18		7/2/2019	Landwatch	Geoscience explained that "historical pumping has lowered ground water levels in both the 180-Foot and 400-Foot aquifer systems such that there is a landward hydraulic gradient which has caused extensive sea water intrusion." (Id., p. 4.) The report explains that control of sea water intrusion requires achieving and maintaining "protective elevations," which are defined as "those groundwater elevations which will keep the fresh/salt water interface from migrating inland. ***In the northern portion of the Salinas Valley these elevations need to be above sea level*** and the flow of ground water toward the coast." (Id., p. 6, emphasis added.) The report explains that Geoscience quantified the protective elevations necessary to halt seawater intrusion using the SVIGSM model. Geoscience's report sets out these necessary protective elevations in Figures 9 and 10 for the 180-Foot and 400-Foot Aquifers. ***These protective elevations necessary to prevent seawater intrusion are from 10 to 30 feet above sea level in the northern Salinas Valley.*** As Chapter 8 explains at page 18, "the GSP must describe the relationship between the selected minimum threshold and minimum thresholds for other sustainability indicators (e.g., describe how a water level minimum threshold would not trigger an undesirable result for land subsidence)." In short, the GSP must set minimum thresholds that ensure that all undesirable results are addressed.		The minimum thresholds are set independently for each sustianability indicator. All six undesirable results must be avoided simultaneously, therefore there is no need to predicate the groundwater elevation undesireable result on the seawater intrusion undesirable result. Futhremore, groundwater elevations will be different if seawater intrusion is manager thorugh an extraction barrier, or if it is managed through significant managed recharge.	LandwatchComments_GSPChapter 8
8-143	8		19		7/2/2019	Landwatch	Chapter 8 discusses the relation of seawater intrusion and the minimum threshold for groundwater levels at page 19 as follows: Seawater intrusion. A significant and unreasonable condition for seawater intrusion is seawater intrusion in excess of the extent delineated by MCWRA in 2017. Lower groundwater elevations, particularly in the 180-and 400-Foot Aquifers, could cause seawater to advance inland. The groundwater elevation minimum thresholds are set at or above existing groundwater elevations. Therefore, the groundwater elevation minimum thresholds will not exacerbate, and may help control, seawater intrusion. The discussion is not accurate. The proposed groundwater minimum thresholds and measurable objectives would cause seawater to advance, would exacerbate existing conditions, and would not help control seawater intrusion. The fact that the minimum thresholds are proposed to be higher than existing groundwater elevations or that the measurable objectives are based on average conditions is insufficient. Because historic groundwater levels have caused seawater intrusion, the minimum thresholds and measurable objectives cannot simply be based on historic minimums or averages.		The minimum thresholds are set independently for each sustianability indicator. All six undesirable results must be avoided simultaneously, therefore there is no need to predicate the groundwater elevation undesireable result on the seawater intrusion undesirable result. Futhremore, groundwater elevations will be different if seawater intrusion is manager thorugh an extraction barrier, or if it is managed through significant managed recharge.	LandwatchComments_GSPChapter 8

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8-144	8				7/2/2019	Landwatch	**4. Groundwater Dependent Ecosystems** We recommend that minimum thresholds be established for groundwater dependent ecosystems when the GSP is next updated. As the Nature Conservancy notes in its February 7, 2019 letter to the SVBGSA: California's freshwater biodiversity is highly imperiled. We have lost more than 90 percent of our native wetland and river habitats, leading to precipitous declines in native plants and the populations of animals that call these places home. These natural resources are intricately connected to California's economy providing direct benefits through industries such as fisheries, timber and hunting, as well as indirect benefits such as clean water supplies. Given the inextricable connection between the Salinas River and the Salinas Valley's groundwater supply, SGMA must be successful for a sustainable future for the Salinas Valley in which people and nature thrive.		Comment noted.	LandwatchComments_GSPChapter 8
8-145	8				7/16/2019	CC Regional Board	**Minimum Thresholds Related to Supply Wells.** We recommend that on-farm domestic wells be added to the types of wells included in the Minimum Thresholds (MT) criteria.		There is not enough information currently about on-farm domestic wells to add them to the montoring well networks for water levels.	CC Regional Board comments Salinas Valley 180 400 Ch 8.pdf
8-146	8				7/16/2019	CC Regional Board	**Changes to the ILRP's Groundwater Monitoring Program.** We want to make it explicitly clear that the ILRP's monitoring requirements will change when the new agricultural order (Ag Order 4.0) is adopted; at this time, however, staff are still in the process of determining the monitoring requirements. As such, we recommend the GSP incorporate flexibility to accommodate changes in ILRP requirements that will occur with Ag Order 4.0, particularly regarding domestic well water quality.		Comment noted; additional flexibility on the Ag. Order 4.0 monitoring wells network was included in Chapter 8.	CC Regional Board comments Salinas Valley 180 400 Ch 8.pdf
8-147	8				7/16/2019	CC Regional Board	Another change that may occur under Ag Order 4.0 is the number of irrigation and on-farm domestic wells that are sampled. Currently, the draft chapter establishes the MT and Measurable Objectives (MO) based on the number of wells that are currently included in the ILRP monitoring program, and the baseline for an exceedance is determined by the current number of wells that exceed the water quality threshold. If the number of wells included in the ILRP monitoring program changes under Ag Order 4.0, the number of wells used to determine an exceedance will also need to change. To accommodate changes in the number of wells monitored, we recommend the draft chapter base the MT for an exceedance on a percentage of wells that currently exceed the relevant water quality standard, rather than static numbers.		Comment noted; Chapter 8 includes language that states that the Ag. Order 4.0 will change the ILRP monitoring network and current thresholds are only included for initial estimates as examples on procedure to set up thresholds for the future updated ILRP network.	CC Regional Board comments Salinas Valley 180 400 Ch 8.pdf
8-148	8.5.2.3				7/26/2019	NMFS	**re: depletion of interconnected surface waters** - statement assumes current groundwater elevations do not deplete interconnected surface waters to a level that harms threatened steelhead. The GSP should justify this statement by showing existing conditions avoid surface water depletion that has significant and unreasonable adverse impacts on beneficial uses of the surface water. As suggested by CDFW, GSAs should analyze temporal water needs, spatial water needs, hydrologic variability, water availability, and water quality.		The GSP relies on established flow requirements to determine whether pumping and groundwater elevations are significant and unreasonable, and flow requirements are being met.	NOAA National Marine Fisheries Service Comments on Draft Chapter 8
8-149	8.6.2.2				7/26/2019	NMFS	**re: depletion of interconnected surface waters** - GSP does not document the basis of its findings that the "change in storage minimum threshold will not induce additional depletion of interconnected surface waters and will not result in a significant or unreasonable depletion..." The GSA should explain its findings by showing that existing conditions maintain interconnected surface waters to the extend that they preserve beneficial uses. GSAs should develop conservative thresholds and measurable objectives that err on the side of caution when protecting salmon or steelhead.		The reduction in storage minimum threshold is a Subbasin-wide value established to prevent further reduction in storage, and therefore prevent lowering of groundwater levels. Therefore, the change in storage minimum threshold will not lower groundwater levels and induce additional depletion of interconnected surface waters; and will not result in a significant or unreasonable depletion of interconnected surface waters.	NOAA National Marine Fisheries Service Comments on Draft Chapter 8

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
8-150	8.10.1				7/26/2019	NMFS	**re: statement beginning "MCWRA currently manages flows in the Salinas River to meet the requirements** of NMFS…" and ending with "…surface water depletion rates are not unreasonable with regards to maintaining flow required in the biological opinion." Statement is inaccurate. We withdrew the biological opinion by letter to the U.S. Army Corps of Engineers and MCWRA on 2/20/19. Relying on MCWRA's reservoir releases to mitigate groundwater use impacts will result in excessive groundwater pumping. We strongly urge the SVBGSA to quantify the impacts of water diversions along the river (including permitted and any unpermitted wells), including assessing shallow alluvial extraction in and around the river, and develop a plan that independently mitigates these impacts. Additionally, the GSP should explain if and how measured streamflows between 1995 and 2005 still "reflect current surface water depletion rates." NMFS questions the GSA's assumption that the 1995-2005 surface water depletion rates accurately reflect current rates, and we strongly urge the GSA to provide additional analysis to support this statement.		The biological opinion (BO) was formally withdrawn, but MCWRA still operates the reservoir releases according to the previous BO flow requirements established. The GSP also identifies a data gap from lack of monitoring wells in the shallow sediments near the river and proposes installation of monitoring wells in the shallow sediments to help better determine if/to what extent there is surface water interconnection.	NOAA National Marine Fisheries Service Comments on Draft Chapter 8
8-151	8				10/10/2019	Landwatch	LandWatch provided a letter in which it states that in general, LandWatch Monterey County supports the sustainable management criteria in Chapter 8. The letter details its opinions on policy options and how they guide the sustainable management criteria.		We have read your letter and these SMCs have been agreed to by the Board of Directors. Which year's data to use was a discussion that was brought up int eh Advisory Committee, who agreed to use the 2017 data. SMCs will be reevaluated after receipt and application of the SVIHM, and changes will be incorporated into a 2-year Interim GSP Update and comment period.	LandwatchComments_GSPChapter 8
8-152	8				11/4/2019	Rural Well Owner P Scholz	Add language that commits that by 2021 the GSA (or MCWRA) will do the studies that SHOULD HAVE BEEN DONE before the "sustainability" criteria was developed. There is absolutely no monitoring well data from the hill areas in the northern part of the 180/400 ft. aquifer. The monitoring wells are located on the flatland areas only. SVBGSA has NO IDEA what the condition of wells are in the hill areas where thousands of rural residents live. They do not know how many wells are already at risk in terms of groundwater level and how the proposed projects and continued high pumping rates could exacerbate those low levels.		The GSP was develope with best available data and tools. The GSP identifies data gaps for the 180-Foot and 400-Foot Aquifers in the northern hill areas of the 180/400-Foot Aquifer Subbasin. Those data gaps will be addressed during the implementation phase of the GSP, and the SVBGSA can adjust the SMCs according to additional data collected.	MOCOWS comment letter 11-3-19
8-153	8.6.2.2				11/4/2019	Rural Well Owner P Scholz	Revise 8.6.2.2 to say: Well depth and groundwater level information for domestic wells over a long-term period has not been provided by the Monterey County Water Resource Agency or other agency. The impact that the proposed groundwater level minimum threshold is likely to have on domestic wells located in the 180/400 ft. sub-basin is not known. Therefore, the reasonableness of the minimum threshold can not be determined.		Minimum thresholds for groundwater elevations are compared to the range of domestic well depths in the Subbasin using DWR's Online System for Well Completion Reports (OSWCR) database. This check was done to assure that the minimum thresholds maintain operability in a reasonable percentage of domestic wells. The proposed minimum thresholds for groundwater elevation do not necessarily protect all domestic wells because it is impractical to manage a groundwater basin in a manner that fully protects the shallowest wells. The average computed depth of domestic wells in the Subbasin is 316.6 feet for the domestic wells in the OSWCR database.	MOCOWS comment letter 11-3-19
8-154	8				11/4/2019	Rural Well Owner P Scholz	There needs to be a commitment that by 2022 private well owners and small water system managers will be notified if their well is located in an area where sea water encroachment is intruding based on increases in chloride and total dissolved solids occurring between 1995 through current time, whether the encroachment exceeds state standards or not		Comment noted. This is not a requirement under SGMA. MCWRA is the agency responsible for monitoring seawater intrusion.	MOCOWS comment letter 11-3-19

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8-155	8				11/4/2019	Rural Well Owner P Scholz	There needs to be a commitment that by 2022 private well owners and small water system managers will be notified if their well is located in an area where ground levels have dropped below the minimum threshold or similar criteria that indicates potential risk of sanding or failing.		Comment noted. This is not a requirement under SGMA.	MOCOWS comment letter 11-3-19
8-156	8				11/4/2019	Rural Well Owner P Scholz	In the chapter regarding implementation, there needs to be a commitment that by 2022 private well owners and small water system managers will receive either in conjunction with #2 and #3 above, or independent of it, notification of funding and/or programs available for water testing, water impurity removal systems and funding for improvements to wells that are in jeopardy of well failure.		Comment noted.	MOCOWS comment letter 11-3-19
8-157	8				11/4/2019	Rural Well Owner P Scholz	In Chapter 8, Table 8.1, is unrealistic in the minimum threshold criteria for chronic lowering of groundwater levels. The level needs to be raised to the groundwater average level for the year 2007. This change is needed because the 2015 level is too close to the lowest gw level in 74 years of history records. Is it not reasonable to "Freeze" the minimum to the bottom that occurred during drought periods where well failures were know to occur. It is clear that severe over-drafting has been occurring for decades as evidenced by massive sea water intrusion. 2015 level is not a reasonable "floor" to prevent continued over-draft / sea water intrusion. The need for a higher minimum threshold is especially true considering the stated intent from GSA officials that measurable objectives do not need to met. They are just "goals".		Comment noted.	MOCOWS comment letter 11-3-19
8-158	8				11/4/2019	Rural Well Owner P Scholz	7). The proposed undesirable result for chronic lowering of groundwater levels in Table 8.1 of 15% exceedance for 2 consecutive years IS MUCH TOO GREAT OF AN EXCEEDANCE. This is especially true because the positive impacts of projects may not be known for decades.		Comment noted.	MOCOWS comment letter 11-3-19
8-159	8				11/4/2019	Rural Well Owner P Scholz	8). Reduction in Storage a). The sustainable yield figure of 112,000 AF/yr shown in Table 8.1 is absolutely not a realistic figure and needs to be drastically reduced. This figure is based on SVBGSA projections from an erroneous future model with unrealistic assumptions and inaccurately executed calculations. Until a realistic model is developed , the sustainable yield in Table 8.1 should be lowered from 112,000 AF/yr to 95,700 Af/yr which is historical sustainability as shown in Table 6-20 as 95,700 AF/yr. Attachment A shows some of the several errors in the Future model used by SVBGSA in calculating future sustainability to arrive at a figure of 112,000 AF/yr. The fact that the model was approved by the Department of Water Resources as a temporary model doesn't mean that is was executed properly or that GSA was required to use it b). The current measurable objective for pumping SHOULD BE SET TO THE HISTORICAL SUSTAINABLE YIELD of 95,700 AF/yr UNTIL IT IS DEMONSTRATED THAT PROGRESS IS BEING MADE TOWARDS ACHIEVING ALL 6 OF THE SUSTAINABILITY GOALS.		The GSP acknowledges uncertainties in the historical water budget. The historical water budget is based on best available data and tools. A more accurate historical water budget will be developed when the SVIHM is made available.	MOCOWS comment letter 11-3-19
8-160	8				11/4/2019	Rural Well Owner P Scholz	9). Sea Water Intrusion- Exceedances There should be NO EXCEEDANCES ALLOWED beyond the 2017 500 mg//L chloride boundary. NOT ON AVERAGE!!. Immediate pumping reductions need to occur immediately upon any intrusion beyond the 2017 line. The plan needs to clearly state that there will not be a "buffer" that allows further intrusion until projects are put into place. Future projects should be devoted to pushing the intrusion back to the measurable objective line.		Comment noted.	MOCOWS comment letter 11-3-19
8-161	8	8.1			11/4/2019	Rural Well Owner P Scholz	Revise Table 8.1 as shown in comment letter #3		Comment noted; SMCs are a decision of the SVBGSA Board.	MOCOWS comment letter 11-3-19

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8-162	8				11/4/2019	Rural Well Owner P Scholz	11). Language needs to be added to the Chapter for Stakeholder Engagement and Public Outreach that more specifically identifies strategies that will be used to inform and engage the public. The existing language is very vague. In addition, not all of the outreach described in the Consensus Building document was carried out. The chapter needs to identify specific data bases that will be used to contact the public, such as the Environmental Health Bureau's small water system list, Monterey County Water Resource Agency's well owner list, and Monterey Resource Agency home owner association lists. The chapter needs to list identified social media that are known by local community organizations such as Prunedale Preservation Alliance, Monterey County Water Systems, Next Door, Prunedale Community Neighborhood Watch, and several others		Thank you for the suggestions for social media and organizations to include in the outreach plan. The CBI study was not a commitment on the part of the SVBGSA, but rather CBI's findings. The SVBGSA is working to improve outreach. Any individuals or organizations can sign up for updates on the listserve on its website.	MOCOWS comment letter 11-3-19
8-163	8.9.2.1		8-48		10/31/2019	Virsik	error in style/formatting		Corrected.	GSPComment(errata) 10-31-19
8-164					11/14/2019	Robin Lee	It is my opinion that the ground water level of sustainable yield has been set at an unsustainable level. The level for sustainable yield should be set at the average depth of domestic wells. This would assure a majority of residential water users would be assured of access to ground water. Ground water depths set near the end of the worst drought in California will not give ground water access to the majority of residential systems. Also, the lower level would put tremendous strains on ground water connected ecosystems.		Comment noted.	Lee_comments on draft GSP 11 14 19
8-165	8	8-1			7/10/2019	Marla Anderson	Why is the minimum threshold in chapter 8 for long-term sustainability of groundwater storage based on the model's over-inflated 2070 precipitation projection instead of the more realistic historical sustainability projection of 95,700 af/yr? 112,000 af/yr is 17% higher than the historical sustainability yield of 95,7500 af/yr identified in Chapter 6, table 6-20. 112 af/yr based should not be considered the sustainable yield in chapter 8. Chapter 8 matrix needs to be changed to the yield to 95,700 af/yr.		The long-term sustainable yields are the sustainable yields after the basin has been brought into sustainability. It was derived from the SVIHM model, which takes into account climate change, among other factors.	Chapter 6. MOCOW Comments.pdf
8-166	8				6/4/2019	Virsik	Chapter 8 revealed that the future sustainable yield of the entire Valley is estimated at 494,000 AFY. Chapter 8 19/196 (at Planning Committee). What is the current sustainable yield for the 180/400? That specific query does not appear addressed in draft Chapter 6. At 8.6.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. 22/41. The text equates that to a 10% reduction in pumping from the historical average. The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. Those values come from the chart for the historical groundwater budget. 19/382. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values in the parallel summary chart (20/39), the current sustainable yield appears to be 52,000 AFY for the 180/400. I.e., delta between inflows and outflows at Tables 6-18, 6-19, and 6-20 (109,300 - 57,300 = 52,000). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is near 50%. While sustainable yield is not "sustainability" itself, the omission of the current sustainable yield is troubling, pointing to a failure to meet a core regulatory requirement. Reg. 354.18(b)(5).		The current sustainable yield for the 180/400-Foot Aquifer subbasin is 98,000 acre-fee per year. This has been added to Chapter 6.	Public Comments, Tom Virsik, Chapter 6 cc'd Derrik Williams

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8-167	8				6/11/2019	Virsik	Given the GSA has access to the MCWRA records, it can and must do the same comparison for the limited number of 180/400 eWRIMS statements. Chapter 8 draft Table 8-9. It's simple, yet necessary to meet the "best available" standard. And it leads to a better and more reliable real-world outcome based on accurate water use / yield numbers. No part of the comparison involves determining any "water right" or claim thereto.		The GSP acknowledges the potential double counting of extractions, and identifies this as an uncertainty in the water budget. Because of the many uncertainties in the historical water budget, it was determined that attempting to identify all double counting was not cost effective. The cost effective approach is to refine the water budget with the SVIHM when it becomes available. The SVIHM does not double count surface water diversions and groundwater pumping. This is the approach specifically identified in the GSP.	Public Comments, Tom Virsik, Chapter 6 cc'd Derrik Williams

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9-1	9			7/10/19	Isakson	asked if slides will be posted on website	not at this time but once finished	Question answered
9-2	9			7/10/19	Isakson	all cost must be combined in one financing system? Or depending on the project how will the funding system will be done.	setting up a financing structure, the mechanism hasn't been set. G. Petersen added there will be a couple of mechanism. D. Williams also added that there is several tier's and one tier cost are regulatory fees other cost will be based on area of benefit.	Question answered
9-3	9			7/10/19	Secondo	fee collection, if it will be collected on the property tax or separate group?	Mr. Girard replied it depends on what you allow to be charged on the property tax along with the special assessments on property tax. D. Williams emphasized there are several options.	Question answered
9-4	9			7/10/19	Brennan	Water Charges Framework is based on pumping is it subject to the 218?	Mr. Girard replied no it's not since it's not a special benefit, it's the activity of pumping water, what it's been charged for.	Question answered
9-5	9			7/10/19	Brennan	asked how is the funds going to be collected?	D. Williams clarified the mechanism for collecting the Water Charges Framework the mechanism is yet to be decided. G. Petersen added there will be some projects that need a 218 vote.	Question answered
9-6	9			7/10/19	Secondo	Advised on the need to coordinate on the invasive species eradication since there has been issues taking out invasive species	D. Williams agreed	Question answered
9-7	9			7/10/19	Secondo	who will handle the funding for the CSIP Project?	G. Petersen indicated it will be researched first before its set after the modeling is done and negotiations.	Question answered
9-8	9			7/10/19	Brennan	suggested for the CSIP Projects to be organized as four projects under a major heading as CSIP Projects. And define SRDF (Salinas River Diversion Facility) D. Williams indicated all acronyms will be defined on the final report.		Text modified
9-9	9			7/10/19	Isakson	asked for the Expanded CSIP Area, what is the water source for the Expanded CSIP Area; water right would be needed	D. Williams indicated the water source for the Expanded CSIP Area is the Monterey 1 Water to some degree and river water. Trying to get away from the supplements water wells; agreed and advised that would be a legal matter	Question answered
9-10	9			7/10/19	Girard	clarified on the water rights associated with the water project. The Salinas Valley Water Project didn't grant to the agency any additional water rights, it changed the point of diversion to the SRDF. The original water rights were when the reservoirs and dams were constructed		Comment noted
9-11	9			7/10/19	Franklin	asked for clarification regarding pumping on the CSIP Area is covered in zone 2b ordinance . For CSIP to be successful you need the supplement wells during the dry periods when needed.	D. Williams indicated there is a zone that has limitations and there are growers that have the right to pump wells to supplement from CSIP.	Text clarifies that circumnstance for implementation is that a year round supply of water is avaialble to CSIP.

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9-12	9			7/10/19	Brennan	asked for clarification the CSIP Projects need to go forward before the Management Actions.	D. Williams clarified it does indicate under Management Actions this will be implemented after the CSIP project and will clarify on the report. G. Petersen added there is number of Management Actions that will happen simultaneously with project development. Clarify that there are some Projects and Management Actions that are related to the point that one needs to happen before the other. D. Williams advised there will be an Implementation Schedule on Chapter 10.	Question answered
9-13	9			7/10/19	Lukacs	how was the cost benefit analysis done for all projects; asked for visual of the cost per project	D. Williams indicated it's a rough draft per acre foot, based on the capitol cost will be, annual will be and a 25-year annexation. Looking into each project since some are expensive and others less expensive; will be added in a future chapter.	Question answered
9-14	9	22		7/10/19	Lukacs	how the projects were selected, process and presented to the stakeholders	It was decided after speaking with various Ag Groups and stakeholders.	Question answered
9-15	9			7/10/19	McIntyre	asked on the cost per acre foot, is it per acre feet of all the water in the basin; requested for a clearer description of the cost per acre foot	D. Williams indicated it's the cost per acre foot of delivered water to that project to the area of its benefit; description will be provided in the funding mechanism	Question answered
9-16	9			7/10/19	Isakson	will be helpful to have a better understating of the cost and be presented in a future the presentation	It will be added and presented in the funding structure; Girard added general operations can't be funded with the benefit assessment. Benefit assessment are defined special benefits and determined by an engineer. D. Williams indicated this is the reason we need the mechanism of these projects.	Question answered
9-17	9			7/10/19	Isakson	commented on the Seawater Extraction there is several reports on this and can be used for this project to expedite things	D. Williams agreed it was a good suggestion and will look into.	Comment noted
9-18	9			7/10/19	McIntyre	asked if this was presented to the 180/400 Group and what was the reaction	D. Williams indicated they were satisfied and received good feedback. D. Williams continued with 11043 Water Right is a wet water right with two existing diversion points one in Chualar and Soledad. It mainly benefits	Question answered
9-19	9			7/10/19	Brennan	asked if this conflicts with phase 2 of the Salinas Valley Water project and is the water right in relocation proceedings	L. Girard informed it's still active and it's at the State Water Board for renewal. D. Williams advised he doesn't believe it conflicts with phase 2	Question answered
9-20	9			7/10/19	Lukacs	asked what authority GSA has on the plans with the water rights and the Water Resource Agency.	L. Girard indicated it has the ability to come up with a plan with GSA Agency. Clarification on how to get access on the 11043 Water Right	Question answered
9-21	9			7/10/19	Brennan	commented water from the Carmel River doesn't look like a valuable project if this is a decision from CalAm Water, is the water right to the district.	D. Williams indicated they made an agreement with CalAm to run the water through their pumps. One vote against that	Project removed from Chapter 9

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9-22	9			7/10/19	Secondo	asked if any word on the Jarrett Dam	D. Williams indicated he doesn't have much information on the Jarrett Dam. Potential on the Jared Dam.	Not included in Chapter 9
9-23	9			7/10/19	McIntyre	asked on Alternative Projects the Recharge winter Salinas River flow	It needs to be looked into since it has a diversion point	Question answered
9-24	9			7/10/19	Isakson	on two votes on Recharge winter water right from Carmel River and find out more on the water rights and permits		Project removed from Chapter 9
9-25	9			7/10/19	Franklin	commented on the 11043-water right caution during the wintertime the southern Gonzalez there is an environmental component and to please consider	D. Williams agreed; Isakson added the diversion season isn't winter it was the irrigation time	Comment noted
9-26	9			7/10/19	McIntyre	suggested to propose a two-year period ordinance and consider making a permanent ordinance		Section 9.3.6 modified to reflect extension of two-year oridnance.
9-27	9			7/10/19	Brennan	what's the status of the deep aquifer study	A. Franklin replied this agency funding, it's not a priority unless the funding structure changes; D. Williams indicated this will be a funding questions for the future and will make a recommendation if needed	Question answered
9-28	9			7/10/19	Brennan	added on the propose for landowners to retire their land or pumping allowances	D. Williams indicated it will be said a restriction will be placed for irrigated land. Director Brennan requested to rephrase Change convert land to be consistent with the general plan	Section 9.3.2 modified so that it is consistent with the County General Plan
9-29	9			7/10/19	McHatten	added on retirement land between Soledad and Gonzalez there is purposed annexation that is going forward with LAFCO that can be replaced urban residential that can affect the General Plan with the County	D. Williams indicated they will only be taking Ag sellers that are willing to give up their land but can live on the land.	Question answered
9-30	9			7/10/19	Brennan	asked for the language to be changed on the rural development plan of the Monterey County General Plan	D. Williams indicted will be done	Section 9.3.2 modified so that it is consistent with the County General Plan
9-31	9			7/10/19	McIntyre	pointed out a typing error on section 9.3.3.8 $50,0000 a year for two years should be $100,000	D. Williams indicated it will be corrected	Text modified (Section 9.3.5.8)
9-32	9			7/10/19	Brennan	in terms to comments on registered wells how will it be enforced? Can you transfer between sub-basins? Will it require flow meters? Are you directly pumping to the MWRA or GSA is it a duplication of reporting? What kind of comments are you expecting?	D. Williams said these are details that must be worked out	Question answered
9-33	9			7/10/19	McIntyre	pointed out with the recharge credits does it have return flow	D. Williams indicated no it doesn't have because of the allowances. Recharge credits have return flow.	Question answered
9-34	9			7/10/19	Secondo	do you encourage high water use	If you have a water right it can be done but it's not encouraged	Question answered
9-35	9			7/10/19	Secondo	regarding the ground been farmed before 2017, is that the cutoff date?	It's legal with a cutoff date saying you only have up to a certain date.	Question answered
9-36	9			7/10/19	Isakson	on developing GSA approval for credits or transferring should be added to the list and will there be a limitation on how much any one can pump? Based on the base allowance if you go over then a fee needs to be paid. Isn't the goal of GSA sustainability?	A water right isn't established. The idea of paying an additional fee if your pumping over the allowed amount those funds will be used for projects. The purpose of the higher cost tier so you can achieve sustainability	Question answered

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9-37	9			7/10/19	Virsik	based on an adjudication. The proposal is heading that route. There is a huge emphasize on disclosure and how this look on GSA when setting allowance and have history or not and have been or not it can be irrelevant to your allowance's and have been publicly reporting and then after the fact you might have legal actions. Making it public might get the process faster it could be all the pumping in the sub basin numbers correct. Should pumping data be made public to move forward in the project. And on regulatory requirement on the 180-400 get rid of the overdraft and on the leap of faith on the client's perspective what this might look at this time, some kind of assurance that might cause less worry. Mr. Virsik will provide further information at a later time	D. Williams asked for him to provide and will consider	Question answered
9-38	9			7/17/19	Virsik/Orradres & Scheid	DRAFTS LACK MANDATORY REGULATORY CONTENT; the GSP for the 180/400 fails to quantify the overdraft to be mitigated to achieve sustainability (does not refer to Reg 354.44(b)(2) or 354.18; The word "overdraft" is used in text a single time in Chapter 6 but no number/figure/quantity in any table is so labeled. The 180/400 basin is designated by the DWR as in a critical condition of overdraft, of course.		Text added to section 9.6
9-39	9			7/17/19	Virsik/Orradres & Scheid	The current iteration of Chapter 9 also recites "overdraft" a handful of times -- section 9.7 is prominently labeled as a list of projects and actions for the "mitigation of overdraft" but one cannot find the quantity of overdraft to be mitigated, which renders of questionable value any projection of how much water is provided or mitigated by a given action or project. The current draft GSP for a basin in critical overdraft does not disclose the current quantity of overdraft. That lacuna will make the Plan non-compliant, no matter its other merits.		Text added to section 9.6. Section 9.7 deleted.
9-40	9			7/17/19	Virsik/Orradres & Scheid	Chapter 9 (including the oral presentations at the Planning Committee) is explicit that the priority projects may be insufficient to meet sustainability and one or more alternative projects are needed. The total amount of water just CSIP Projects 2, 3, 4, and 5 may develop appears to be 40,300 AF. By force of logic, one can guess the current overdraft in the 180/400 exceeds that 40,300 AFY figure. But the public should not need to guess or rely on back of cocktail napkin calculations. The total amount of overdraft to be mitigated to achieve sustainability must be explicitly identified for the GSP to meet minimum requirements.		Text added to section 9.6
9-41	9			7/17/19	Virsik/Orradres & Scheid	ACCEPTING THE "FRAMEWORK" IS NOT APPROVAL OF THE LATER DETAILS; partial or full acquiescence to the proposed "framework" may be perceived or taken as a willingness to accept the later "details." Well before any GSP chapter was drafted, they reminded the GSA that in 2003/04 they and certain others from the southern parts of the Valley obtained judgments based on hard-fought settlements in multiple validation actions. Those validation judgments limit the fiscal contribution of certain lands to efforts addressing the northern coastal overdraft and seawater intrusion issues. That the GSA was created after the date of the judgments does not immunize it from honoring the judgment terms. To put in somewhat practical terms, while the proposed slate of CSIP projects/actions in Chapter 9 may have certain merit, their fiscal aspects remain subject to		Sentence added to Section 9.2 that, "The fee structures in each subbasin will be developed in accordance with all existing laws, judgements, and established water rights."
9-42	9			7/18/19	Gardner	would like to include information on backup projects that were not included in the GSP and why		The complete list of projects are in Appendix 9B. The list was reduced to what the SVBGSA believed are the most cost efficient and likely successful projects. If there is a public desire, we can add any projects in this Appendix to our list of preferred projects.
9-43	9			7/18/19	McCullough	would like to highlight management actions that will have Valley-wide benefit		Sentence added to Section 9.3.1

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9-44	9			7/18/19	Lee	would like projects rated according to cost effectiveness	D. Williams responded that the cost per acre foot is estimated and there will be a map for each project that will show the water level rise	Question answered
9-45	9			7/18/19	Adcock	wondered why all winter flows are not being treated and stored	D. Williams stated the nondiurnal water would require enormous storage, and advance water purification is expensive. It is an alternative project for winter flows.	Question answered
9-46	9			7/18/19	Lee	would like information on how much more beneficial one project is over another	Does not have an answer currently, because it depends on how much water we can get at a lesser cost	Question answered
9-47	9			7/18/19	Lee	asked if it is less costly to run the treatment plant than injecting fresh water into aquifers.	stated he would look into the cost of a scalping plant where Salinas is expanding	Costs will be evaluated during plan implementation as project details are defined.
9-48	9			7/18/19	Frus	wondered about an investment risk analysis and which projects would show resilience in the face of extreme climate change; presented the possibility of analyzing feasibility considering a range when predicting climate change	D. Williamsesponded the analysis includes predictable climate change but not an excessive drought of proportions not yet seen	Question answered
9-49	9			7/18/19	Franklin	expressed concern that the cost of the extraction barrier is high for capital costs could make the problem worse.	D. Williams stated the cost of the extraction barrier is high for capital costs, roughly tens of millions of dollars; D. Williams included it because it is definitive, but there is some flexibility based on the success of other projects.	Question answered
9-50	9			7/18/19	Isakson	stated more information is needed about the implications of requesting changes to Permit 11043 or its possible revocation.		Comment noted
9-51	9			7/18/19	Lee	the scalping alternative would be drought proof and keep the hydrological cycle intact.		Comment noted
9-52	9			7/18/19	Adcock		In response to Tom Adcock, D. Williams stated that they need to review the water rights for the Alisal and Gabilan Creeks to determine if they are fully allocated.	A review of the water rights will be completed during the implementation phase of the GSP.
9-53	9			7/18/19	Lee	stated that the Gabilan range should be looked at for climate and ecological system changes because of the large potential to impact groundwater ecosystems	D. Williams stated that the diversion rights would be difficult to get so this would be put from a primary to alternative project	Question answered
9-54	9			7/18/19	Gardner	suggested looking at using tile drain water more effectively		Tile drain water will be evaluated during plan implementation as project details are defined.
9-55	9			7/18/19	Isakson	stated that some people would rather pay per acre instead of per acre foot	D. Williams stated that the cost is per acre foot because charging per acre would not result in controlling extraction	Comment noted
9-56	9			7/18/19	Tubbs		In response to Dallas Tubbs, D. Williams stated that a water marketplace is not the focus on the water charges framework but would be an outcome that would take a long time and require an impact	Question answered
9-57	9			7/18/19	Breen	asked for the nexus between the different fees. G. Petersen responded that the administration fee, pumping charge and Proposition 218 projects can be thought of in terms of tiers. Mr. Breen stated the GSP assumes there will be projects which means all users will have tier 2 or 3 charges or fees.	D. Williams stated that would only be accurate for sea water intrusion projects. All other projects balance inputs and outputs. D. Williams stated this is an innovative viable framework that will require negotiations and studies	Question answered

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9-58	9			7/18/19	Isakson	stated that there have been comments from the Upper and Forebay Subbasins that they do not prefer fees based on extraction, and it is not clear that Chapter 9 is not cast in stone. G. Petersen stated that the GSP is adaptive for each sub-basin.		Comment noted
9-59	9			7/18/19	McCullough		In response to Mike McCullough, G. Petersen stated that the Board can reconsider how to fund administration fees if necessary. D. Williams stated that the water charges chapter is not discussing specifics yet but outlines a structure.	Question answered
9-60	9			7/18/19	McCullough	suggested including some clarifiers, e.g. this would be the fee if utilizing four out of five best management practices. If they are using efficiency as the driver, they should not be punished if being really efficient	D. Williams stated they would only be paying large fees if they are pumping outside of what we think is sustainable, and we have to decide what is sustainable. And these questions need to be answered for every sub-basin.	Question answered
9-61	9			7/18/19	Jacques		In response to Bob Jaques, D. Williams stated that the financial structure is to establish bonding capacity for projects	Question answered
9-62	9			7/18/19	Tubbs		In response to Dallas Tubbs, D. Williams stated that municipalities may be treated differently than outliers when setting base allowances, but that will be discussed in another forum.	Question answered
9-63				7/18/19	SVWC	How do we "re-operate"	D. Williams state that the reoperation plan had to come out of the HCP. D. Williams said the reservoirs should recharge the basin every year – the WRA didn't want every –D. Williams said he is committed to making it clear that releases every year is the objective	Question answered
9-64				7/18/19	SVWC	AS to the Arundo removal program – will landowners/growers be charged twice? D. Williams said landowners/growers will be charged only if program is expanded beyond what is being done today	D. Williams said landowners/growers will be charged only if program is expanded beyond what is being done today	Question answered
9-65				7/18/19	SVWC	MCWRA owns the assets for some of the projects, how will this be addressed?	G. Petersen stated that there are many such issues that he is currently negotiating with MCWRA	Question answered
9-66				7/18/19	SVWC	Coordination between agencies will be important to ensure there is no duplication of cost	D. Williams said fees will be structured to capture what is being paid for already	Question answered
9-67				7/18/19	SVWC	Doesn't it matter where reduced pumping occurs and who is responsible?	D. Williams said he wasn't going to address who is responsible, but reducing pumping will not solve seawater intrusion along – the problem of seawater intrusion must be actively addressed.	Question answered
9-68				7/18/19	SVWC	Are seawater intrusion barriers being considered and are they injection or pumping based?	Our primary choice is a pumping-based seawater intrusion barrier. Injection requires water we don't have.	Question answered
9-69				7/18/19	SVWC	Permit 11043's point of diversion is above the confluence of the Arroyo Seco – [it was stated that there is only one point of diversion and not a second one at chualar – this needs to be confirmed]	We will investigate the points of diversion	Question answered
9-70				7/18/19	SVWC	Why aren't the existing reservoirs on the project list?	D. Williams stated that only projects that directly benefit grounwater are on the list. We avoided projects that simply increase the available water supplies	Question answered

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9-71				7/18/19	SVWC	What about a retro fit at Naci to increase the outflow capacity below 755 elev?	D. Williams admitted this was a good idea	Evaluation of a retrofit to Nacimiento will be completed during the implementation phase of the GSP.
9-72				7/18/19	SVWC	Are water charges based on gross pumping?	Generally yes, but there will be opportunities to refine water charges based on local conditions	Question answered
9-73				7/18/19	SVWC	Will CSIP be subsidized by everyone?	The overall sustainability program will be paid for by everybody, but individual projects will not be singled out.	Question answered
9-74				7/18/19	SVWC	Benefits are not the same in all sub-basins?	D. Williams stated that different areas will pay different amounts	Question answered
9-75				7/18/19	SVWC	How do the charges affect water rights? Are fees/taxes on water extractions a limiting factor on one's water rights?	The fees do not affect water rights	Question answered
9-76				7/18/19	SVWC	Are those operating costs or project costs?	Both! The idea is to eventually replace the administrative fee with a baseline tiered fee, with projects and O&M built on top of those.	Question answered
9-77				7/18/19	SVWC	Who will be 'watching' out for landowners/growers?		Comment noted
9-78				7/18/19	SVWC	Will structure fee be implemented with the 180/400 plan	No, this will be a multi-year negotiation.	Question answered
9-79				7/18/19	SVWC	Not everyone is in favor of an extraction fee basis	Baseline rates will be different in different areas. If there is no extraction fee, then there will be no limits on pumping. If there is a per acre fee, then there will have to be other caps on how much one can pump.	Question answered
9-80				7/18/19	SVWC	Will there be more influence on the MCWRA to fix the dams?	G. Petersen stated that the MCWRA is working on funding these projects now.	Question answered
9-81				7/18/19	SVWC	How do you factor recharge of extracted water in to the fee?	It could be factored in to the 1st tier charge, based on sub basin.	Question answered
9-82				7/18/19	SVWC	Who established baseline for pumping?	It is based on our assumed sustainable yield	Question answered
9-83				7/18/19	SVWC	Water Budget – how much is based on assumed reservoir releases/operation?	D. Williams pointed out this is an excellent quesiton that he cannot answer at this time. We will address it while we develop the Upper Valley and Forebay GSPs over the next two years	Question answered
9-84				7/18/19	SVWC	Extraction fees are they reasonable or unreasonable?	D. Williams believes they will be reasonable	Question answered
9-85				7/18/19	SVWC	Cost incurred by FB/UV landowners for maintaining their own wells, energy, etc., is different than CSIP where they get delivered water		Comment noted
9-86				7/18/19	SVWC	Need to consider contribution to basin from recharge		Comment noted
9-87				7/18/19	SVWC	Should pumping allowances account for different soil-climate conditions?	D. Williams said this was certainly possible	Question answered
9-88				7/18/19	SVWC	Basin/sub-basin limitations?	D. Williams said every subbasin will need a limit on how much can be pumped. But some subbasins may not have reached that limit yet.	Question answered
9-89	9				Christopher Bunn	1. De minimis users should be required to pay some sort of fee. While I realize they can't be charged according to usage, they shouldn't get a free pass as they are benefiting from the basin and all of our hard work and capital.		Comment noted

Number	Chapter	Page	Figure	Date	Commenter	Comment	DW response	Response
9-90	9				Christopher Bunn	2. The fallow land program should allow for a landowner to lease the land for fallowing, as opposed to simply put it in permanent deed restriction. The fallow lease could either be held by the GSA/county or secured by another landowner in order for that landowner to gain a certain portion of the fallowed land's water credits. This open-ended approach to fallowing would allow such land to come back into production if the basin achieved balance and/or surplus.		Comment noted
9-91	9				Christopher Bunn	3. Reservoir re-operation (and increasing winter flows, etc) would have an adverse effect on river vegetation. This would have to be mitigated (see # 5).		The effect on river vegetation will be a factor incorporated into the design of this management action.
9-92	9				Christopher Bunn	4. Before completely restricting drilling and pumping in the deep aquifer, the GSA will first have to create a viable alternative (CSIP expansion does not seem to be a viable alternative yet, if it is merely to benefit the book-end months), as the county's current regs prohibit new wells in the 400 west of Davis Road.		The extent to which alternatives are viable will be considered in the implementation phase of the GSP.
9-93	9				Christopher Bunn	5. The invasive species eradication project as it is written, limited to arundo, tamarisk and other negligible non-natives is too limited. Chapter 9 should amplify that eradication to species overgrowth in general in the river, as willows and several other species are what create the larger problem in the river in terms of sucking up water and blocking flow. The Salinas River Maintenance Program has permits in place that allow for that kind of maintenance, in addition to eradicating the arundo. A change from invasive to species overgrowth in general will more effectively reduce the amount of water taken by plants, in addition to allowing better flow in the river from the dams to the SRDF, radial collectors, and recharge points in between. The permits allow willows less than the 6 inches diameter at chest height to be taken without mitigation. Furthermore, if larger willows are taken (which is rarely necessary), the 2-1 replanting mitigation can be done along riverbanks and up on the levees, which many landowners are happy to do. This project, as currently written, is missing a tremendous opportunity for creating water and enabling better control of river flows, in addition to being a critical action that virtually all landowners, farmers and valley cities would be happy to see. Furthermore, if one of the projects is going to be reservoir re-operation for increased winter flows, the river will become even more choked; amplifying species eradication would mitigate this problem caused by the GSP.		Comment noted. Whether to include other species in invasive species eradication will be examined in the implementation phase.
9-94	9				Christopher Bunn	6. Chapter 9 should contain a blanket statement that all viable sewage should be pursued for capture and reclamation. Spreckels should be given priority in this regard. Also, a comfortable majority of the residents in the Toro area would be in favor of their sewage going to M1. This would not shut down CUS completely, as they would still need to capture the sewage and pipe it. The dollars involved here would be only focused on diverting it from their plant to the M1 plant, shutting down CUS' spray fields (which are a food safety problem in themselves, let alone issue of being along the river and contaminating the water). Furthermore, as the Davis Rd bridge project is on the books, this is the time to influence that project and get a suitable pipe slung under the new bridge.		All potentially viable diversions from existing water reclamation plants will be considered in further planning efforts as part of GSP implementation.

Number	Chapter	Page	Figure	Date	Commenter	Comment	DW response	Response
9-95	9				Christopher Bunn	7. All old, unused wells in the CSIP area and then over to the city and Davis Road need to be destroyed. This needs to be down at landowner cost, rather than expecting MCWRA to pay for it. Set a date when it needs to be done. Sooner than later.		This was not evaluated in the development of the GSP, but will be considered in further planning efforts and assessments.
9-96	9				Christopher Bunn	8. GSA needs to determine any and all pumping in the basin that is being exported out of the basin. If this is not done and policed, then the fee structures will not be honest and reflective of reality. Water export needs to stop.		The Monterey County Water Resources Agency Act, § 52.21 prohibits the export of groundwater from any part of the Salinas Valley Groundwater Basin, including the 180/400-Foot Aquifer Subbasin.
9-97	9				Christopher Bunn	9. The Salinas River Maintenance Program also includes a permit for sediment removal. This should be included in the project list as it would allow more efficient water movement in the river, either to get it to the SRDF, planned radial collectors, or to percolation points.		This will be discussed with MCWRA during the implementation phase of the GSP, as they manage surface water flows.
9-98	9				Christopher Bunn	10. Lastly, the Jerrett Reservoir should be included on the list. Increasing water storage will allow us to move increased amounts of water more efficiently down the river to percolation points, radial collectors and the SRDF. I haven't spoken with a single farmer/landowner who disagrees with this. If we're going to include Nacimento/San Antonio re-operation on the project list, a new reservoir would be governed by the same logic: controlling storage means controlling flow means controlling perc/extraction points.		This will be discussed with MCWRA during the implementation phase of the GSP, as they manage surface water flows.

Number	Chapter	Page	Figure	Date	Commenter	Comment	DW response	Response
9-99	9			8/7/19	Thomas Virsik	Draft Chapter 10 (implementation) was discussed during the Planning Committee meeting on 1 August 2019. Based on language in that draft, I asked how the water charges framework would be applied in the 180/400 where the overall goal of the current GSP direction is to stop pumping and instead provide water from various projects or sources. The current CSIP area, for example, relies on, and is charged various levies by the MCWRA for water that is delivered via pipes. My query contributed to a discussion of the water charges framework by those present, including comments by GSA counsel Les Girard on the complications and intricacies of regulatory fees, SGMA statutory authority, Proposition 218, and other aspects of applying the proposed framework. The thrust of the discussion was that while a framework based on water extraction charges has certain merit, as a practical and legal matter, it may not be the only or most appropriate basis to finance projects under all circumstances. D. Williams suggested he would rewrite “that section” of presumably draft Chapter 10. The difficult decisions about financing and management will eventually come before the Board, but are not part of today’s agenda. Nevertheless, Chapter 9, which introduces and explains the water charges framework, states that it is the “fundamental structure for managing groundwater pumping and funding projects” and will be implemented in “all Salinas Valley subbasins in Monterey County.” § 9.2. The current draft fails to identify how the framework is geared to the 180/400, the focus of the GSP. The current Chapter 9 language may not be consistent with what one may expect in Chapter 10 about flexibility, the continuation of the current regulatory fee within or apart from the water charges framework, and how to charge extraction fees in areas (like the CSIP) that will not pump. It may be best to hold Chapter 9 until the language in Chapter 10 is finalized so that the two do not clash.		Clarification was added in 9.1 stating that this GSP is developed as part of an integrated sustainability plan between all six subbasins in the SVBGSA's jurisdiction. It also notes that the "specific design for implementing the water charges framework, management actions, and projects will provide individual landowners and public entities flexibility in how they manage water..."
9-100	9			8/1/19	Keith Van Der Maaten	Pumping Allowance (9.2.2) document implies that municipalities may not receive a sustainable pumping allowance and will need to pay more than agricultural users to pump their base amount. GSP needs to provide that MCWD's MCWRA groundwater allocations are the sustainable pumping allowances for Fort Ord Lands and Marina Area Lands pursuant to the annexation agreements (1993 Fort Ords Lands Annexation Agreement; MCWRA Backstop; 1996 Marina Area Lands Annexation Agreement; MCWRA's Obligation to Protect the Deep Aquifer for MCWD's Use.		Sustainable pumping allowances will be negotiated in the implementation period of the GSP.
9-101	9			8/1/19	Keith Van Der Maaten	Water Charges Framework - the sustainable pumping allowances cannot be tied to sustainable yield of the subbasin after all projects have been implemented because some projects will have more localized benefits and/or losses to certain subbasins versus others. We recommend SVBGSA consider using some estimate of the "natural safe yield" within each subbasin to determine the sustainable pumping allowance for each basin.		Sustainable pumping allowances will be negotiated in the implementation period of the GSP and stakeholders can discuss the structure and design of the framework at that point.
9-102	9			8/1/19	Keith Van Der Maaten	Management Actions, Projects, and Alternative Projects; Replenishment Water - it is recommended that the primary objectives of the actions/projects should be 1) provide replenishment water to North County in substitution for groundwater; 2) Repeal seawater intrusion - a mission that the MCWRA has had since the 1940s.		Comment noted

Number	Chapter	Page	Figure	Date	Commenter	Comment	DW response	Response
9-103	9			8/1/19	Keith Van Der Maaten	Following are first cut, suggested combinations of actions/projects for consideration: District Replenishment Water - Actions/Projects 1: MA2 - Reservoir Reoperation; PP1 - Invasive Species Eradication; PP2 - Optimize CSIP Operations; PP3 - Improve SRDF Diversion including installing Radial Collectors to increase ability to divert more water when water is available; PP5 - Expand Area Served by CSIP; PP6 - 11043 Diversion Facilities; PP5 - Expand Area Served by CSIP		Comment noted
9-104	9			8/1/19	Keith Van Der Maaten	Section 9.4.4.7 Preferred Project 6: 11043 Diversion Facilities incorrectly states that diversions under this permit can only occur at the two diversion locations identified in the original July 1949 Water Rights Application. The reservoir reoperation management action already stated the goal of operating the two reservoirs to allow both natural and surplus flows to better reach the SRDF diversion. Adding the SRDF as an additional point of diversion under permit 11043 would conform that the permit with the authorized points of redivision in MCWRA's other water rights licenses and permit comply with the biological opinion. The MCWRA has submitted a petition for an extension of time to put the water under the permit to beneficial use. A petition to add a new point of diversion could be added to that petition.		Comment noted
9-105	9			8/1/19	Keith Van Der Maaten	Indirect Replenishment Water - Actions/Projects 2: PP3 - Improve SRDF Diversion; PP6 - 11043 Diversion Facilities; PP5 - Expand Area Served by CSIP; AP2 - Winter Potable Reuse Water Injection; AP3 - Extract Winter Flows Using Radial Collector(s) and Inject into 180- and 400-Foot aquifers; AP5 - Use the Upper Portion of the 180/400-Foot Aquifer Subbasin for Seasonal Storage. These are complimentary projects; the synergy of these actions/projects is to use winter water for groundwater recharge and later extract that water for delivery in the summer. Any water to be injected must be treated. MCWD has performed a feasibility study on constructing a water treatment plant; that study will be made available to the SVBGSA.		Thank you, that will be helpful to have that information as projects and management actions are refined and considered..
9-106	9			8/1/19	Keith Van Der Maaten	Seawater Intrusion/Replenishment Water - Actions/Projects 3: PP8 - Sewater Intrusion Pumping Barrier; AP1 - Desalinate water from the Seawater Barrier Extraction Wells		Comment noted.
9-107	9			8/1/19	Keith Van Der Maaten	Regulatory - Actions/Projects 4: MA1 - Agricultural Land and Pumping Allowance Retirement; MA3 - Restrict Pumping in CSIP area; MA3 - Restrict pumping in CSIP area; MA4 - Support and strengthen MCWRA restrictions on additional wells in the deep aquifer. During the 25% driest water years, some agricultural pumping may be necessary. Formation of pump improvement districts or private community pumps for designated areas within CSIP could be considered for use during the driest water years.		Comment noted

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9-108	9			8/1/19	Keith Van Der Maaten	Combined Seawater Intrusion Pumping Barrier (PP8) with Desalinate Water from the Seawater Barrier Extraction Wells (with or without reinjection) AAP1) Project: The extracted water or a portion thereof could be conveyed to a new or existing desalination faciltiy where it can be treated for potable and/or agricultural use. The water extracted from these wells will be brackish due to historical seawater intrusion, therefore, the extraction will serve to remove the brackish water and allow replacement for fresh water from other sources, most likely a combination of desalinated water, excess surface water from the Salinas River, and/or the purified recycled water. The project will stop and reverse sewater intrusion, helping to remediate and restore the 180/400-foot aquifer subbasin. The project would treat water extracted from the seawater intrusion barrier an allow for its reinjection in the 180-ft aquifer and 400-ft aquifer		Comment noted
9-109	9			8/1/19	Keith Van Der Maaten	Injection barriers are the most common method employed to halt seawater intrusion. Injection barriers have been used in Southern California basins to control saltwater intrusion for over 30 years. They are the most common, technically demonstrated method employed to stop seawater intrusion around the world. But they add another layer of costs and infrastructure. A pure extraction barrier project with no reinjection of treated water, with similar groundwater hydrology to North County, may not exist. Alameda County Water District's Newark Desalination Facility could be studied to determine if it can possibly be used as a model for the Pumping Barrier. ACWD's Desalination Facility is part of ACWD's Aquifer Reclamation Program which began in 1974 with the goal of reclaiming those portions of the Niles Cone Groundwater Basin affected by saltwater intrusion from San Francisco Bay in the early 20th century. The District pumps brackish water from the groundwater basin so that freshwater from other parts of the basin can move in to take its place. A key component of this project has been the addition of replenishment water to the basin, which brought mean water levels above sea level prior to the initiation of extraction. Since 2003, brackish water which was once allowed to flow back into San Francisco Bay is now diverted to the Desalination Facility so that it can be put to beneficial use in the Tri-City area.		Comment noted

Number	Chapter	Page	Figure	Date	Commenter	Comment	DW response	Response
9-110	9			8/1/19	Keith Van Der Maaten	There is a lot of uncertainty relating to costs, who pays, where are the optimum locations for the extraction wells, and whether an injection barrier would also be needed as envisioned in AP1. It is suggested that the combined project be broken up into possibly 4 phases with each phase consisting of 4 to 6 extraction wells and a modular brackish water desalination plant with the 1st Phase starting at the northern end of the 180/400-Foot Aquifer Subbasin. A study would be performed during 2020 and 2021 to determine the specific depths, locations, spacing and rates of extraction of the brackish water extraction wells to make the project most effective, and to assess, among other things, (1) the effectiveness of these wells to halt salt-water intrusion, (2) evaluate other potential subbasin impacts, and (3) the best location for the brackish water desalination plant. A majority of the project area has been the subject of intense hydrogeological study within the last decade and most recently the focus of a high-quality Airborne Electromagnetic (AEM) survey (data-collection effort) that has generated valuable information about subsurface conditions over a significant section of the coastline and inland areas and is available for use in project design and implementation. MCWD conducted its first AEM overflight in May 2017 (AEM 1.0) and its second in April 2019 (AEM 2.0). Both AEM studies covered the North County area and should be used to focus well locations and well design that would target the main pathways of seawater intrusion into and within the multi-aquifer system of the 180/400 Foot Aquifer Subbasin. The use of this technology has grown to be an effective tool in California as shown by other AEM studies that have been conducted in Tulare County, Eastern Kern County, and Butte and Glenn Counties. (see letter for remainder of comment)		Comment noted
9-111	9			8/1/19	Keith Van Der Maaten	Potential Project Benefits: The potential project benefits could be considerable, including: (1) stop and reverse seawater intrusion within the 180/400 Foot Aquifer Subbasin and Monterey Subbasin; (2) provide supplemental drinking water to Castroville; (3) provide supplemental drinking water to the City of Salinas to decrease the known pumping depressions within the Eastside Subbasin and to help restore seaward gradients and groundwater flow within the 180 Foot Aquifer and 400 Foot Aquifer; (4) provide supplemental drinking water to Marina, Fort Ord and the Monterey Peninsula, and potentially groundwater recharge within the Seaside Subbasin; (5) provide desalinated water for an injection barrier located landward of the extraction barrier and inland of the seawater intrusion front to increase the benefit of the extraction barrier and halt the further inland movement of seawater; and (6) avoid pumping and building new infrastructure within Environmentally Sensitive Habitat Areas (ESHA).		Comment noted
9-112	9			8/1/19	Keith Van Der Maaten	Project Elements: Location of Brackish Water Extraction Wells: PP8 proposes a Pumping Barrier of approximately 8.5 miles in length between Castroville and Marina. Assuming that the project will be phased, it is recommended that the Phase 1 extraction wells be located west of Castroville for the protection of the area that suffers both seawater intrusion and the counter flow of groundwater east to the East Side pumping depressions.		Comment noted. Location of extraction wells will be considered in the project design during the implementation phase of the GSP.

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9-113	9			8/1/19	Keith Van Der Maaten	Location of Brackish Water Desalination Plant: The location of the desalination plant will need to be determined by an optimization study using various factors, including identified Project Benefits and their prioritization. For example, a plant located north of the Salinas River would be located (1) nearer to Castroville, (2) nearer to the City of Salinas and the East Side pumping depressions, and (3) within the North County agricultural area. However, it would be further away from the Monterey Peninsula. In contrast, a plant located south of the Salinas River would be located nearer to the Monterey Peninsula but further away from, Castroville, City of Salinas, and the North County agricultural area. AP1 lists the following possible desalination plants: Monterey Peninsula Water Supply Project (MPWSP) (6.4 mgd/7,100 AFY); Deep Water Desalination Plant (22 mgd/ 25,000 AFY); and People Water Supply Project (12 mgd/ 13,400 AFY).		Comment noted. Location of desalination plant will be considered in the project design during the implementation phase of the GSP.
9-114	9			8/1/19	Keith Van Der Maaten	Desalination Capacity of Brackish Water Plant: The desalination capacity of the brackish water plant will initially depend upon the pumping capacity of the extraction wells and how the plant's product water will be allocated among Project Benefits c(2) through (5) or any other uses. It is common for these types of facilities to be constructed for future expansion in a modular design that will allow for incremental growth as additional feedwater is made available. The design capacities of the pipelines bringing brackish water in and of the pipelines carrying product water out will need to take into consideration future expansion for the ultimate project buildout.		Comment noted
9-115	9			8/1/19	Keith Van Der Maaten	Groundwater Rights Issues: Because the 180/400-Foot Aquifer Subbasin has been designated as a Critically Overdrafted Subbasin, the necessary groundwater rights that would support the project will need to be assessed. Returning water to the Salinas Valley Groundwater Basin to comply with the Monterey County Water Resources Agency Act's export prohibition does not confer a groundwater right, only compliance with the Agency Act.		Comment noted. Project will take into account water rights and MCWRA's export prohibition.
9-116	9			8/1/19	Keith Van Der Maaten	Restriction on Additional Wells in the Deep Aquifer (Priority Management Action 4) MCWD supports implementation of Priority Management Action 4: Support and Strengthen MCWRA Restrictions on Additional Wells in the Deep Aquifer. As presented in our comments for Chapter 8, groundwater elevations in the Deep Aquifer are below sea level and declining, suggesting that extraction from this aquifer exceeds the sustainable yield of this aquifer zone. This issue is very important to MCWD because in the 1996 Annexation Agreement, MCWRA agreed to protect the Deep Aquifer for MCWD's use, but MCWRA did not take any protective action until the recent adoption of Ordinance 5302. Section 5.3, Management of 900-foot aquifer, of the 1996 Annexation Agreement provides, "The Parties agree that the '900-foot' aquifer should be managed to provide safe, sustained use of the water resource, and to preserve to MCWD the continued availability of water from the '900-foot' aquifer." Section 5.9 further stated that the annexation fees paid by MCWD "shall also be used for management protection of the '900-foot aquifer.'" MCWD will work with MCWRA pursuant to the 1996 Annexation Agreement on MCWRA's Deep Aquifer study.		Comment noted

Number	Chapter	Page	Figure	Date	Commenter	Comment	DW response	Response
9-117	9			8/1/19	Keith Van Der Maaten	Winter Potable Reuse Water Injection (Alternative Project 2) For Alternative Project 2: Winter Potable Reuse Water Injection, the document should include an option (or separate alternative) for year-round potable reuse water injection by MCWD, as described in its Grant Application, provided to SVBGSA on 20 June 2019. MCWD has rights to recycled water on a year-round basis. Per discussions during the meeting on 11 July 2019, MCWD provided the following language for inclusion in the GSP: "MCWD is currently conducting a feasibility study on injection of purified recycled water into the Monterey Subbasin. The project proposes to use purified recycled water available to MCWD from the AWPF, some of which is available year-round per the district's agreement with M1W, for indirect potable reuse and prevention of further seawater intrusion. This project is consistent with and can readily be implemented in conjunction with the winter potable reuse project identified herein."		Injection of purified recycled water into the Monterey Subbasin will be considered when the Subbasin GSP for the Monterey Subbasin is completed, working together with MCWD.
9-118	9			8/1/19	Keith Van Der Maaten	Extract Winter Flows using Radial Collectors and Inject into 180- and 400-Foot Aquifers (Alternative Project 3) Alternative Project 3 is the winter extension of Preferred Project 3, Improve SRDF Diversion. While under Alternative Project 3, the new radial collector system would only operate from November through March, the system would be operated from April through October under Preferred Project 3. There may be even steelhead benefits to also operating the system during April through October in conjunction with the SRDF. Section 9.4.5.3 correctly observes that a significant volume of water may be available for diversion or extraction from the Salinas River during the winter. However, securing and clarifying water rights is not a constraint on this proposed project. As discussed above, MCWRA's Amended Water Rights License 7543, Amended License 12624, and Amended Permit 21089 already designate the SRDF Diversion as an authorized point of rediversion. Those licenses and permits were amended to comply with the NMFS' Biological Opinion. Therefore, water stored and released under those water rights is already authorized to be diverted at the SRDF. The Reservoir Reoperation Management Action already has the stated goal of operating the two reservoirs so as to "Allow both natural and surplus flows to better reach the SRDF diversion." Adding the SRDF as an additional point of diversion under Permit 11043 pursuant to a change petition under Water Code Sections 1701.2, et		Suggested language added.

Number	Chapter	Page	Figure	Date	Commenter	Comment	DW response	Response
9-119	9			8/8/19	Virsik	As asked in the planning committee meeting on 8/1: how will the water charges framework be applied in the 180/400 where the overall goal of the current GSP direction is to stop pumping and instead provide water from various projects or sources. The current CSIP area, for example, relies on, and is charged various levies by the MCWRA for water that is delivered via pipes. My query contributed to a discussion of the water charges framework by those present, including comments by GSA counsel Les Girard on the complications and intricacies of regulatory fees, SGMA statutory authority, Proposition 218, and other aspects of applying the proposed framework. The thrust of the discussion was that while a framework based on water extraction charges has certain merit, as a practical and legal matter, it may not be the only or most appropriate basis to finance projects under all circumstances. D. Williams suggested he would rewrite "that section" of presumably draft Chapter 10. The difficult decisions about financing and management will eventually come before the Board, but are not part of today's agenda. Nevertheless, Chapter 9, which introduces and explains the water charges framework, states that it is the "fundamental structure for managing groundwater pumping and funding projects" and will be implemented in "all Salinas Valley subbasins in Monterey County." § 9.2. The current draft fails to identify how the framework is geared to the 180/400, the focus of the GSP. The current Chapter 9 language may not be consistent with what one may expect in Chapter 10 about flexibility, the continuation of the current regulatory fee within or apart from the water charges framework, and how to charge extraction fees in areas (like the CSIP) that will not pump. It may be best to hold Chapter 9 until the language in Chapter 10 is finalized so that the two do not clash.		Comment noted. The details of the Water Charges Framework for each subbasin will be developed during the implementation period of the 180/400-Foot Aquifer Subbasin GSP.
9-120	9.2.2	4		8/2/19	Woodrow	re: "pro-rata share of their subbasin's sustainable yield" - Would a share be determined for landowners in CSIP? They would still receive benefit from future projects but are not directly pumping groundwater.		Text clarified to note that landowners in CSIP will receive separate allowances, as projects are intended to reduce their pumping.
9-121	9.3.5	16		8/2/19	Woodrow	This management action has the potential to duplicate or conflict with parts of Agency Ordinance No. 3790, which regulates wells within Zone 2B. Any ordinance that the SVBGSA enacts in this area should include an exemption for pumping of CSIP supplemental wells, otherwise, one of the three water sources for CSIP could be compromised. There is language in the Agency's 2017 Recommendations report that addresses such an exemption (section 1.4.2). Consider optimizing and expanding CSIP rather than restricting pumping in that area.		Comment noted. Implementation details will be developed in coordination with MCWRA so that there is not duplication nor conflict with MCWRA ordinances. This instance could be handled by making CSIP supplementary wells exempt from this ordinance restriction.
9-122	9.3.6	18		8/2/19	Woodrow	Ordinance 5302 is a County ordinance, not MCWRA ordinance. Ordinance 5302 applies to the entirety of the Deep Aquifers, not just the Deep Aquifers within the Area of Impact. From the ordinance: "The Deep Aquifers new well prohibition applies in the portions of the 180/400-Foot Aquifer Subbasin and the Monterey Subbasin within the Area of Impact; in the portions of those Subbasins outside the Area of Impact, it is the intent and purpose of this ordinance to require testing to ensure no extraction of water from the Deep Aquifers."		Text revised accordingly.

Number	Chapter	Page	Figure	Date	Commenter	Comment	DW response	Response
9-123	9.3.6	18		8/2/19	Woodrow	re: "This study is anticipated to be completed by MCWRA over the next three years" - MCWRA proposed this study in the 2017 Recommendations report and made a presentation to the Board of Supervisors/Board of Directors, but no funding has been identified to support a study of the Deep Aquifers.		Comment noted.
9-124	9.3.6.3	19		8/2/19	Woodrow	re: "study of Deep Aquifer" -Such a study is not underway and funds have not been identified to support this study.		Text revised to note that it will be completed when funding becomes
9-125	9.4.4.3	32		8/2/19	Franklin	Supplemental wells are responsible for most pumping in CSIP zone for the reason specified here. Private wells in the CSIP area standby wells and are allowed to be pumped for specified circumstances.		Comment noted.
9-126	9.4.4.3	34		8/2/19	Franklin	Additional storage will also reduce the need to drill additional CSIP supplemental wells. Existing wells will be stressed less and last longer. Storage could also be used when SRDF or SVRP is unavailable, reducing the number of wells needed to meet demand on an emergency basis or peak demand period.		Comment noted.
9-127	9.4.4.3	34		8/2/19	Franklin	There are no wells classified as "Non-CSIP Supplemental" wells. What you are refering to are "standby" wells. As noted previously, " standby wells are private wells in the CSIP area that are allowed to be pupmped for specific reasons. Eliminating the use of of standby wells within CSIP would reduce pumping in zone 2b. Theis current demend which is being met by standby wells could be met thouugh optimizing effecencies in CSIP operation to better utilize diverted and/or treated water.		These have been changed to 'standy wells'.
9-128	9.4.4.4	41		8/2/19	Franklin	Some components of the existing SVRP must be shut down during low-demand wet weather months for annual maintenance. Any plan to operate SVRP during this period must consider the impact to opertions of winter maintance.		Comment noted.
9-129	9.4.4.8	57		8/2/19	Franklin	re: 3,000 hp: This is a very (very - huge) large pump moter. Is this a correct number?		This number has been updated to 350 hp.
9-130	9.4.4.10	66		8/2/19	Franklin	It is incorect that 27,900 acre-feet is a maximum annual SRDF diversion under Permit 21089. 27,900 acre-feet is the additional volume of storage found after the orinianl volume approved in License 7543 uas updated in the early 1990's with more accurate topographic data; an increase from 350,000 acre-feet to 377,900 acre-feet at Nacimiento Reservoir. Permit 21089 is a change in place of use of waters released from Nacimiento Reservoir, the maximum amount releassed annually not to exceed 180,000 acre-feet		Comment noted.
9-131	9			9/10/19	Salinas Valley Water Coalition	This GSP should not set forth any basin-wide commitments since the other subbasins within the Salinas Valley Groundwater Basin ("SVGB") have not benefited from any thorough analysis. Additional details are found in the letter.		This GSP does not set forth any basin-wide commitments. Rather, this GSP includes a list of potential management actions, projects, and charges framework that will be negotiated, taking into consideration the effects on all subbasins.
9-132	9			9/10/19	Salinas Valley Water Coalition	Water charges framework should require voter approval for funding of projects consistent with Proposition 218. Additional details are found in the letter.		If Proposition 218 funding is used, you are correct in stating that it would require voter approval; however, other financing strategies will also be considered.
9-133	9			9/10/19	Salinas Valley Water Coalition	All of the Priority Management Actions in Chapter 9 can be supported by the Coalition for further consideration and analysis to address seawater intrusion and overdraft in the 180/400 Subbasin. That said, these Priority Management Actions should be evaluated for their appropriateness for the other Subbasins of the SVGB only at the time the respective GSPs are prepared for these Subbasins. Additional details are found in the letter.		All management actions and projects that potentially affect other subbasins will be evaluated with respect to subbasin impacts in the subbasin GSPs.

Number	Chapter	Page	Figure	Date	Commenter	Comment	DW response	Response
9-134	9			9/10/19	Salinas Valley Water Coalition	The Coalition strongly supports further consideration and analysis of Priority Management Action 3, Reservoir Reoperation. This Management Action should be evaluated not only for valley-wide benefits but also for environmental (fishery flow) benefits. Additional details are found in the letter.		Assessment for environmental benefits was added explicitly.
9-135	9			9/10/19	Salinas Valley Water Coalition	The Coalition supports further evaluation and analysis of the following Priority Projects in Chapter 9 in order to address seawater intrusion and overdraft in the 180/400 Subbasin: invasive species eradication; optimize Castroville Seawater Intrusion Project ("CSIP") operations; maximize existing Salinas River Diversion Facility ("SRDF") diversion; modify Monterey One Water recycled water plant; and expand area served by CSIP. Additional details are found in the letter.		Comment noted.
9-136	9			9/10/19	Salinas Valley Water Coalition	The Coalition supports further evaluation and analysis of the following Priority and Alternative Projects in Chapter 9 for consideration and potential implementation to address sustainability issues, if any, in the Subbasins other than the 180/400 Subbasin: winter releases (coupled with reservoir infrastructure upgrade) and 11043 Diversion Facilities Phase 1 and Phase II. Additional details are found in the letter.		Comment noted. Further evaluation and analysis of these projects on other subbasins during the development of their subbasin GSPs.
9-137	9			9/10/19	Salinas Valley Water Coalition	Any "new water" the Salinas Valley Water Project ("SVWP") generates as part of any related projects such as "optimize CSIP operations" and "maximize existing SRDF diversion" must be shown to be over that amount already produced by the previously approved SVWP and must not be double counted. The SVWP is currently funded by special assessments which must be taken into consideration when determining a Prop 218 vote for its expansion or optimization. Additional details are found in the letter.		Comment noted.
9-138	9			9/10/19	Salinas Valley Water Coalition	Nitrate issues are already addressed through other governmental processes, and those processes should be referenced to avoid duplicative efforts. Additional details are found in the letter.		Nitrate issues are no longer discussed in Ch
9-139	9			9/9/2019	LandWatch	The SVGBSA cannot rely on voluntary reductions to ensure sustainability because it does not have the information needed to set water prices that would limit water demand to the available supply. The SVGBGSA should initially limit pumping to sustainable yield plus transitional allowance until new water supplies are firmly in place. When new water supplies are produced, the SVGBGSA should then limit pumping to sustainable yield plus those new water supplies. Additional explanatory text is included in the letter.		Comment noted. This will be taken into consideration when developing and negotiating the details of the water charges framework.
9-140	9			9/9/2019	LandWatch	Transitional Allowances should be ramped down as quickly as feasible because there is no substantial evidence that a longer period is consistent with attaining sustainability by 2040. Additional explanatory text is included in the letter.		Comment noted.
9-141	9			9/9/2019	LandWatch	The Transitional pumping surcharge should be based on the best estimate of future supplemental fees. Supplementary allowances and supplementary fees should not be implemented until new water is developed, priced, and allocated. Additional explanatory text is included in the letter.		Comment noted.
9-142	9			9/9/2019	LandWatch	The Plan should not assume the Monterey County Water Resources Agency (MCWRA) will complete a Deep Aquifer study; MCWRA has no funding or authorization. Instead, SVGBGSA should fund and undertake the study because development of this information is part of SVGBGSA's mandate under SGMA.		Comment noted.

Number	Chapter	Page	Figure	Date	Commenter	Comment	DW response	Response
9-143	9			9/9/2019	LandWatch	Chapter 9 fails to provide the mandatory quantification of the mitigation of overdraft: it fails to quantify the benefits of Management Actions, assigns all of the Basin-wide Project benefits to the 180/400- Foot Aquifer Subbasin, double counts some benefits, and contains an arithmetic error. Additional explanatory text is included in the letter.		Chapter 9 provides figures that estimate the location and amount of overdraft mitigation. In addition, Section 9.6 discusses mitigation of overdraft by projects and management actions.
9-144	9			9/9/2019	LandWatch	De minimis wells on fallowed land should be limited to those needed to support the residential use that is currently permitted by right in order not to interfere with general plan land use designations. Additional explanatory text is included in the letter.		Comment noted.
9-145	9			9/9/2019	LandWatch	Agricultural Best Management Practices (BMP) provisions are redundant. Additional explanatory text is included in the letter.		This has been deleted to avoid redundancy
9-146	9.2			9/16/2019	MCWD	RE: "The fee structures in each subbasin will be developed in accordance with all existing laws, judgements, and established water rights." We understand that SVBGSA will further revise this sentence to include existing water management agreements as part of the basis for developing fee structure and pumping allowances (discussion during the 7/10/19 meeting and MCWD's comment letter for Chapter 9 dated 8/1/19). We understand that SVBGSA has received the comment letter but have yet to incorporate those comments into Chapter 9. Additionally, it appears that this sentence and the associated paragraph discuss the fee structure as well as the sustainable pumping allowance. Therefore, the sentence should be revised to begin with "The fee structures and pumping allowance in each subbasin..."		Water management agreements' and 'pumping allowances' was added to this sentence.
9-147	App 9-C			9/16/2019	MCWD	Appendix 9-C mentions that the estimated pumping rates of the barrier project is calculated based on an analytical solution published by Javandel and Tsang (1987). This analytical solution assumes a constant background gradient. However, it is highly unlikely that a constant background gradient will be maintained over the project lifetime, because once sea water intrusion is stopped water levels inland of the barrier will begin to decline as seawater stops recharging the basin. As recognized in the GSP, numerical modeling is needed to assess rates of groundwater extraction that will be required to halt saltwater intrusion. The SVIHM will likely not have the resolution or adequate calibration in proposed project area and cannot be used to model density driven flow. Therefore, the GSP should acknowledge that alternative models will likely be required to evaluate the proposed pumping barrier project.		Comment noted.
9-148	App 9-C			9/16/2019	MCWD	Appendix 9-C estimates that the pumping barrier will have a total extraction volume of 30,000 AFY; 22,500 AFY of which would be extracted from the 180/400 Foot Aquifer Subbasin. Per discussion, it is understood that the remaining 7,500 AFY would be extracted from the Monterey Subbasin.		Comment noted.
9-149	9.6			9/16/2019	MCWD	As stated in Chapter 6, "[t]he priority projects include more than ample supplies to mitigate existing overdraft, as presented in Table 9-5." As agreed during the meeting, SVBGSA should add a discussion that Section 9.6 is included per requirements of GSP Regulations (and cite relevant sections) and that mitigating the overdraft as estimated does not meet all of the basin's sustainable management criteria. Specifically, without a hydraulic barrier, seawater intrusion will continue to occur if groundwater extraction within the basin occurs at the identified sustainable yield. As SVBGSA stated in Chapter 6, "simply reducing pumping to within the sustainable yield is not proof of sustainably, which must be demonstrated via Sustainable Management Criteria (SMC)."		Comment noted.

Number	Chapter	Page	Figure	Date	Commenter	Comment	DW response	Response
9-150	9.6			9/16/2019	MCWD	Given the technical uncertainties of the proposed seawater intrusion pumping barrier project and the potential project cost that may not be approved by groundwater basin users, the GSP should provide an estimate of the sustainable yield of the 180/400 Foot Aquifer Subbasin (or the larger Salinas Valley Basin) without the pumping barrier project. This estimate is required under SGMA, which defines "Sustainable Yield" as "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result." We understand that due to modeling limitations and data gaps, SVBGSA is reluctant to provide an estimate the "sustainable yield" of the basin when sustainable management criteria for seawater intrusion are considered. However, analytical methods, similar to those used to estimate extraction rate of the pumping barrier project, could be utilized to provide a preliminary estimate of the Sustainable Yield of the basin if the extraction barrier is not installed. For example, previous studies conducted on this topic by Geoscience (2013), Protective Elevations to Control Sea Water Intrusion in the Salinas Valley, estimated that approximately 60,000 AFY would be needed for the Salinas Valley Water Project to recharge the Salinas Valley Basin sufficiently to stop seawater intrusion. Alternatively, the GSP could compare and discuss the volume of water needed for an injection barrier, as presented in Appendix 9-C.		Comment noted.

Number	Chapter	Date	Commenter	Comment	DW response	Response	Commenter doc name
10-1	10	8/1/19	Adcock	asked if the State Water Resource Control Board has an understanding there will be basins where there is GSA's and a separate water resource agency, and will it be accepted	indicated its relatively unique as having two agencies with overlapping authorities and understand that if there are activities in a basin, yes it will be accepted to reach sustainability.	Question answered	8-1-2019 Planning Committee Comments
10-2	10	8/1/19	Brennan	asked how is the Deep Aquifer study going be done financially	indicated as of today there is no agreement for GSA to take it over and is not committing the GSA to work on this	Question answered	8-1-2019 Planning Committee Comments
10-3	10	8/1/19	Public Comment	Howard Franklin added the agency is not currently funded to complete the deep aquifer study, and asked Mr. Williams if he has a monitoring program in the deep aquifer and planning to expand it.	All the data currently being collected from the Deep Aquifer will be used in future asssessment of the Deep Aquifer conditions. There is no plan to expand the monitoring program until we assess what data are already availalbe.	Question answered	8-1-2019 Planning Committee Comments
10-4	10	8/1/19	McIntyre	Chair McIntyre asked if there is a proposal. Mr. Franklin indicated not until the funding is identified. Once finalized then a proposal will be developed.	Mr. Williams pointed out the tools are in place and have an approachable plan. All GSPs will end up with a flexible plan knowing they are difficult to implement but need to be negotiated.	Question answered	8-1-2019 Planning Committee Comments
10-5	10	8/1/19	McIntyre	asked in terms of implementing groundwater monitoring system what is the timeline	indicated his guess will be in two or three year	Question answered	8-1-2019 Planning Committee Comments
10-6	10	8/1/19	Brennan	indicated a number of issues have been identified that need to be addressed one is USGS Historical Model that doesn't fall under a data gap definition. The big issue is the double counting issue and it isn't addressed as a data gap.	Clarified the issue of double counting by pointing out that historical pumping was estimated from the Water Resource Agency records of what is self-reported. The amount of diversions of the river were based on the State records. There are growers that report the same amount of water use to both groups. In our historical budget there is some amount of water that is therefore double counted as both groundwater pumping and river diversion. This double counting does not show up in the future water budget which is derived from the groundwater model. When the historical groundwater model is made available, it will avoid the double counting problem	Question answered	8-1-2019 Planning Committee Comments
10-7	10	8/1/19	Brennan	asked what's the implication of having the historical model	clarified the Historical Model and the USGS Model will not have the double counting. Based on the best data and tools	Question answered	8-1-2019 Planning Committee Comments
10-8	10	8/1/19	McIntyre	added for clarification regarding the data that was used from the county and state needs to be stated in Chapter 6; Need edits in chapter 6 that clarifies the source of double counting and it will be irrelavent once the Historical Model is in place.		Text added to Chapter 6	8-1-2019 Planning Committee Comments
10-9	10	8/1/19	Public Comment	Heather Lukacs agreed that the double counting does need to be more clarified on Chapter 6. With basic links or refences that were used for that data.		Comment noted	8-1-2019 Planning Committee Comments
10-10	10	8/1/19	Public Comment	Howard Franklin: two questions one on the model and one on the cost. It should be noted some stakeholders are already paying a portion of the cost to the agency. Moving forward integrating this data collection program, monitoring program with the agency programs will be key that the stakeholders are not paying twice for the same thing. The model, currently the agency has provided the USGS data to update has provided the USGS will be the historical model of spring 2020, the agency has made a commitment that the USGS will be updated yearly.		Comment noted	8-1-2019 Planning Committee Comments
10-11	10	8/1/19	Brennan	asked the fee collected in water charges framework will also be used in the projects	indicated yes, details need to be worked with the Board and Legal counsel. His preference, first tier is money that is used in operational charges the projects are funded by higher tiers. Higher charges raise more money per acre foot. Pumping that is outside the sustainable yield that goes to the projects	Question answered	8-1-2019 Planning Committee Comments
10-12	10	8/1/19	Brennan	in terms of the cost that will be refined, to address the duplicated counting data. Clarify that cost will not be duplicated.		Sentences added to Section 10.8 clarifying that no duplicate fees will be assessed	8-1-2019 Planning Committee Comments
10-13	10	8/1/19	Adcock/Peterson	Adcock asked is January 31, 2022 the deadline for the refining projects and agreeing on funding details; asked if the State will be holding the date. Mr. Petersen added once the plan is updated the date might change until 2025.	indicated it should be January 2023; indicated if more time would be needed the State will likely allow as long as the SVBGSA is showing substantial progress.	Question answered	8-1-2019 Planning Committee Comments
10-14	10	8/1/19	Virsik	Chapter 10 of the 180-400 CSIP modification projects, shouldn't there be more specific of those projects, those cost for implementation. Chapter 6 says this is what needs to be done. Potentially money numbers more specific the amount of water changes how will it affect. For that subset it should be more define. For the State to see how the process will work. On the water charges framework is the first tier, how does the first-tier work for CSIP?	Indicated that the first tier costs will need to account for fees already paid into CSIP	Question answered	8-1-2019 Planning Committee Comments
10-15	10	8/1/19	Girard	commented CSIP is an agency project. A decision will be made if GSA will take ownership of any expansion of CSIP. Or if it's going to be a project of the agency to expand CSIP. If they keep ownership of that expansion project how they finance will be CSIP issue not GSA's. CSIP may choose to finance it based on benefit assessment. GSA doesn't own the means of production. He added there is several options of financing.		Comment noted	8-1-2019 Planning Committee Comments

Number	Chapter	Date	Commenter	Comment	DW response	Response	Commenter doc name
10-16	10	8/1/19	McIntyre	added facilitated process will accomplish funding	indicated that is correct the facilitated process will show how all is incorporated, with a timeframe of three-years.	Question answered	8-1-2019 Planning Committee Comments
10-17	10	8/1/19	Brennan	asked Mr. Girard if the water charges framework will require protest votes and if other funding mechanisms will be needed.	Mr. Girard indicated that is correct due to regulatory fees.	Question answered	8-1-2019 Planning Committee Comments
10-18	10	8/1/19	McIntyre	added this needs to be as flexible as possible due to all the pro and cons. Mr. Girard added who pays for an expansion of CSIP is to be determined in the future.	agreed with Chair McIntyre indicated we do have options and look for funding mechanisms and emphasize funding options	Comment noted	8-1-2019 Planning Committee Comments
10-19	10	8/1/19	Brennan	added water charges framework is a big selling point of the funding	indicated it is appealing with the practical aspect, however flexibility is needed for funding purposes	Question answered	8-1-2019 Planning Committee Comments
10-20	10	8/1/19	Brennan	asked the water charges framework can be funded with an extraction fee or some other kind of fee. Is that where the option is	Yes, the option is to fund with an extraction fee, a flat fee, a land-based fee, or some other type of fee	Question answered	8-1-2019 Planning Committee Comments
10-21	10	8/1/19	Peterson	answered water charges framework isn't been excluded. The water charges framework remains an option along with other more traditional funding options, including protest votes or 218's. It might not work in all sub-basins it is important to understand that Chapter 9 will have the projects. The biggest cost and funding needed is on the 180-400.		Comment noted	8-1-2019 Planning Committee Comments
10-22	10	8/1/19	Brennan	indicated the discussion needs to be expanded to clarify, because at this point this is the only option	Offerend to look at test and recognize other options for funding open	Text revised	8-1-2019 Planning Committee Comments
10-23	10	8/1/19	Girard	added GSA has the ability to require pumpers to pay for a measuring device on the well. GSA doesn't have to pay for it the owners will. Using water charges gives you data. In his opinion, two things do you do that for the purpose of data or to raise revenue Greenfield or combination of both. Recognizing the revenue you raise has to be committed to the program for funding. There is a number of limitations and GSA Board needs to understand there is a variety of ways to make revenue before making a plan to raise revenue. Menu of options for raising revenue.		Comment noted	8-1-2019 Planning Committee Comments
10-24	10	8/1/19	McHatten/Girard/ Adcock	McHatten requested clarification on the 218 process what does it look like and what does the process include. Will it include Gonzales, Soledad and King City, since there isn't enough people or benefit assessment district? Is it 66% of people? the Board of Directors need to know all the options in implementing a fees, assessments or tax.	Mr. Girard indicated a 218 is majority protest for a vote for a property related fee, the 2/3 has to do with a tax fee. Director Adcock added in a plan once decided the State would understand. Mr. Girard said yes,	Question answered	8-1-2019 Planning Committee Comments
10-25	10	8/1/19	Public Comment	Heather Lukacs commented, the biggest issue for her because projects are so uncertain. A measure of allowable pumping for or sustainable yield that doesn't assume new projects that is needed to know for the whole Valley. Chair McIntyre indicted that would be different for each sub-basin. She indicated then for each sub-basin for the public to see the numbers and avoid political issues. Her concern is seawater intrusion. Chair McIntyre indicated that was provided already.	indicated the only thing he doesn't have is if pumping would be cut off completely on the 180-400 would it reverse the seawater intrusion, will it push it back and what will it look like. He also added, seawater intrusion you end up with two time periods getting to sustainability and maintain it. Getting there is difficult you need to raise water levels, sustaining it isn't so difficult since you just need to maintain it there.	Question answered	8-1-2019 Planning Committee Comments
10-26	10	8/1/19	Brennan	asked the 7% percent reduction on the 180-400 that doesn't include sweater intrusion	indicated no, The 7% cut only balances the water budget. He added he will ask DWR to clarify what is the definition of the sustainable yield number. There is a strict reading of the regulations saying the sustainable yield doesn't get any sweater intrusion.	Waiting for response from DWR	8-1-2019 Planning Committee Comments
10-27	10	8/1/19	Brennan	Are we looking into interim to sustainability or maintain sustainability? It becomes a complicated problem due to no guidance from DWR.	indicated to Heather Lukacs point there is a question of what sorts of cutbacks might be necessary if there weren't no projects, what might our future in 20 years would look like.	Question answered	8-1-2019 Planning Committee Comments
10-28	10	8/1/19	Lukacs/Peterson	Heather Lukacs also added in terms to interim GSA is committed to holding the seawater intrusion line and will not include it through pumping but through projects. The projects won't be implemented in several years and it's a disconnect. Mr. Petersen added it's important to remember we have 20 years to get to sustainability because it acknowledges how much effort it will require to get there		Comment noted	8-1-2019 Planning Committee Comments
10-29	10	8/1/19	Public Comment	Walter commented doesn't see in the plan the development of Deep Aquifer study. Aseked if SVBGSA plans to take over or develop it. What will happen to the 180-400 in the interim period?	indicated GSA is supporting the extension of the emergency ordinance until there is a better understating of the deeper aquifer. At the same time, it's understood the farmers can't be cut off of a water source	Question answered	8-1-2019 Planning Committee Comments
10-30	10	8/1/19	Public Comment	Walter added there is no 180 foot wells in the area and no replacement opportunities. Walter asked how it is going to be handled in the interim period.	D. Williams recognized the interim period is a problem	Comment noted	8-1-2019 Planning Committee Comments
10-31	10	8/1/19	Peterson	added it's needed categorize the sub-basin as soon as possible to have the data to make a good decision		Comment noted	8-1-2019 Planning Committee Comments
10-32	10	8/1/19	Public Comment	Patrick asked will you be categorizing a replace well not a deeper well	G. Petersen indicated the only deep well allowed is if you have a well that is in the 400 and it goes bad and decide to replace it there is an agreement that if you take it out of commission and replace it in accordance with the requirement. Drinking portable water is acceptable as well. Franklin indicated the agency will use the best data available to determine if the well will be in the deep aquifer and verify based on the logs	Question answered	8-1-2019 Planning Committee Comments

Number	Chapter	Date	Commenter	Comment	DW response	Response	Commenter doc name
10-33	10	8/1/19	Peterson	Petersen commented the $1,200,000 a year is for the entire Valley. And this GSP is for the 180-400? Is it needed to say this much comes from this fee and this from this fee? Mr. Girard replied yes, if portion of the fee that only benefits the 180-400. Providing it can be identified for other benefits the sub-basins, forebay or upper valley	D. Williams indicated to look at the table and see if this is supporting the 180-400 or is it a valley wide implementation	Tables modified to differentiate between Valley-Wide and Subbasin costs	8-1-2019 Planning Committee Comments
10-34	10	8/1/19	Brennan	asked this implementation fee does not include developing the other GSP yet the $1,200,000 million a year is collected to the GSA.	D. Williams clarified yes it goes to GSA not to develop the GSP. G. Petersen indicated because of matching funds our grants require 50% matching funds. All cost that goes to operating the GSA are used as the matching funds on the grant to cover our 50%. DW encouraged the Committee and public to look over the list and provide suggestions. He stated this is the implementation cost not the project cost.	Cost tables now divided into Subbasin and Valley-Wide costs	8-1-2019 Planning Committee Comments
10-35	10	8/1/19	Public Comment	Tom Virsik on the cost fees as Director Brennan pointed out the regulatory fee of $1,200,000. His impression was for regulatory fee for those who are not in 180-400 and will get you to the others end in the GSP's. If the message is, we need more money to finish the GSP's you will have fight. Regarding the Chapter and presentation policy issues. There are two one is weather the Board should be focused on the minimum of what DWR wants under any circumstances or should it be focused on something other than that. In particular in the interim period one of the best management practices, documents from DWR that explains the regulatory content and shows examples on a metric this is a way the plans can be implemented. The Board policy decision is if they will go with it and that's with seawater intrusion particular.		The cost tables do not include the costs of developing additional GSPs	8-1-2019 Planning Committee Comments
10-36	10	8/1/19	Public Comment	the agency will move forward with revising GEMS ordinance with data collection addressing the boundaries under the GSA	D. Williams asked Mr. Franklin to write /email him directly with details of this information to make the appropriate changes	Question answered	8-1-2019 Planning Committee Comments
10-37	10	8/1/19	Public Comment	Mr. Franklin continued with the groundwater level seen it was based under CASGEM is a small subset of the agency in the monitoring program. To participate in the CASGEM you need full disclosure and redacted information.	D. Williams indicated he wasn't sure if that was needed for SGMA but would look into it.	Requirements for SGMA are similar to CASGEM requirements	8-1-2019 Planning Committee Comments
10-38	10	8/1/19	Public Comment	Heather Lukacs asked for clarification under communication and outreach related to the monitoring in a well how is the GSA tracking the groundwater levels or how the public can obtain that information	D. Williams indicted with transparency of the data that is been used and obtained it will be released in the next Board meeting next week	Data portal is now active	8-1-2019 Planning Committee Comments
10-39	10	8/1/19	Peterson	added this is a continued effort to obtain as much as information as legally as possible to provide to the public		Comment noted	8-1-2019 Planning Committee Comments
10-40	10	8/15/19	Groot / Ward	expressed concerns about meeting the three-year water charges framework.		Comment noted	08-15-19 AC minutes
10-41	10	8/15/19	Girard	Girard responded that generally, absent an allegation of illegality, the Agency would not be prohibited from going forward with the Plan unless the plaintiff received a preliminary injunction	D. Williams believes the legislation includes a tolling provision in the event of litigation.	Question answered	08-15-19 AC minutes
10-42	10	8/15/19	Girard	Girard stated that the DWR's ability to declare our Basin probationary would be tolled by litigation preventing filing of the Plan.		Comment noted	08-15-19 AC minutes
10-43	10	8/15/19	Johnson	stated that Chevon would like an outline for an appropriate well test for the upper Valley so that they may provide the Agency with the information they need. He referenced Section 10.4.4, Water Quality Monitoring Network and asked whether the GSA would expand the scope of water systems in the fee structure.	D. Williams stated the negotiations would begin with seeking financial contributions for all non de minimis systems and could include non-community water systems.	Outline has been provided to Chevron	08-15-19 AC minutes
10-44	10	8/15/19	Wolgamott	expressed surprise at the increase in the fee from $1.2 million to $2.1 million	D. WIlliams stated that a fee structure for operational costs is needed going forward, including new commitments that were not contemplated in the $1.2 million such as the USGS model and expanding monitoring systems and gets the projects going. There will be costs on top of that.	Question answered	08-15-19 AC minutes
10-45	10	8/15/19	Peterson	stated that some of these costs may be covered by grants. The cost framework is being approved as required, not the fees	D. Williams stated the Plan estimates what it would cost to implement the Plan, and we did not know what the costs were until the Plan was developed. By approving the Plan, we are saying we are committed to finding the funding	Question answered	08-15-19 AC minutes
10-46	10	8/15/19	Adcock		In response to Tom Adcock, D. Williams stated that the additional costs may not be spread throughout the Basin; valley-wide project costs would be spread throughout the Basin	Question answered	08-15-19 AC minutes
10-47	10	8/15/19	Virsik	Tom Virsik stated that flexibility would not be found in the water charges framework. Mr. Williams' comments are good but not written into the Plan. He questioned how the charges framework concept can work in the most critical area where pumping needs to stop. His memory is the $1.2 million administrative fee was to include preparation for other parts of the Basin. It lays the foundation for litigation by people who believe they would pay twice.		People will not pay twice. Either pumpers pay for the water they pump, or they pay for the water they import.	08-15-19 AC minutes
10-48	10	8/15/19	Franklin	stated it is apparent that more education is needed on how water is used in the 180/400 sub-basin and options for water demands and developing fees		Comment noted	08-15-19 AC minutes
10-49	10	8/15/19	Lukacs	asked how the Agency could work with environmental health and agencies that collect water quality data on obtaining information when new data is available to inform groundwater decisions	SVBGSA decision was to set the number of groundwater quality monitoring wells and only change the monitoring network every 5 years	Question answered	08-15-19 AC minutes

Number	Chapter	Date	Commenter	Comment	DW response	Response	Commenter doc name
10-50	10	8/15/19	Tynan		In response to Eric Tynan, D. Williams stated that seawater intrusion will be impacted by our approach to the deep aquifer and the approach taken to promote the interim ordinance that allows replacement wells in the deep aquifer until we understand how much pumping it can support. G. Petersen confirmed that he is having discussions with other GSAs. Mr. Johnson agreed it would be valuable to compare critical data gaps.	Question answered	08-15-19 AC minutes
10-51	10	8/15/19	Amezquita	Horacio Amezquita asked what the GSA will do if systems' nitrates continue going up due to overdraft.	D. Williams responded that the GSA will look at overdrafting, but is not taking on the role of providing drinking quality water to everyone in the Valley. Quality has a sustainability aspect, but there are other programs to address this issue.	Question answered	08-15-19 AC minutes
10-52	10	9/11/19	Virsik	First, the cost estimate of implementation over the next five years rose over $500,000 between the two drafts, with some $300,000 of the increase in the "refine water charges framework. Additional explanatory information for the comment is included in the letter.		Comment noted.	Chapter 10 and 11, Virsik.pdf
10-53	10	9/11/19	Virsik	A cursory review of Chapter 9's recommendations show that, by design, numerous of the management actions and projects benefit the 180/400, thus the cost of "refining" those actions and projects should also be allocated to that sub basin, rather than shared (in a yet unknown ratio) among all. Additional explanatory information for the comment is included in the letter.		Comment noted.	Chapter 10 and 11, Virsik.pdf
10-54	10.3	9/16/19	EKI Environment & Water	The following additional data gaps and analyses should be identified Chapter 10: <u>Seawater intrusion cross-sections (Chapter 5 comments dated 18 April 2019)</u> - Per GSP Regulations Section 354.16 (c), a GSP should provide "seawater intrusion conditions in the basin, including maps and cross sections of the seawater intrusion front for each principal aquifer". The GSP should commit to development of such cross-sections, once data gaps have been filled. These data are needed to inform placement of seawater intrusion barrier wells. <u>Groundwater extraction within individual aquifers (Chapter 6 comments dated 2 July 2019)</u> - We suggest that SVBGSA collect information needed to identify groundwater extraction from each principal aquifer, to allow the development of a water budget for each aquifer. As discussed and agreed upon during the 7/2/19 meeting, this data gap may be extremely difficult to fill and water level data/gradients in each aquifer may serve as a proxy for evaluating the effectiveness of projects and management actions to address saltwater intrusion within each of these zones. However, given the uncertainties associated with groundwater recharge and groundwater levels within the Deep Aquifer (consistent with data gaps identified in Section 10.3), quantification of all groundwater extraction from the Deep Aquifer, should be clearly identified as a Data Gap that will be filled as under the GSP.		The seawater intrusion cross-section is included as Figure 5-25. Some of the data gaps in the Deep Aquifers will likely be filled in response to Monterey County Urgency Ordinance 5302. The SVBGSA will support MCWRA's efforts to fill the Deep Aquifer data gaps.	MCWD letter to SVBGSA Chapter 9-10 comments 2019-09-16
10-55	10.3	9/16/19	EKI Environment & Water	We further recommend that the GSP identify actions that will be implemented to allow: Development of Sustainable Management Criteria for the deep aquifer; and Development of Sustainable Management Criteria that consider project implementation. For example, alternative groundwater elevation Sustainable Management Criteria will be required near the coast if a pumping barrier is constructed.		SMC were developed for all principal aquifers that have sufficient data. Where insufficient data exists, SMCs will be developed when data gaps are filled, such as for the Deep Aquifers. The SMCs are developed based on current conditions and the projects and management actions are intended to address them. DWR does not require SMCs for after project implementation, but those could be considered during GSP updates.	MCWD letter to SVBGSA Chapter 9-10 comments 2019-09-16
10-56	10.6-10.7	9/16/19	EKI Environment & Water	The GSP should acknowledge that alternative models will likely be required to evaluate certain projects, such as the pumping barrier or injection wells, because the SVIHM does not have the resolution or adequate calibration in proposed project areas and cannot model density driven flow. Further, The GSP states that SVIHM model will be available for use within one year. Per discussion during the meeting, we understand that within one year, the SVIHM model will be released for public use by USGS. Additionally, we understand that the model will be made publicly available consistent with GSP Regulations Section 352.4 (f)(3), "[g]roundwater and surface water models developed in support of a Plan after the effective date of these regulations shall consist of public domain open-source software."		A note that alternative models may be used to complement the SVIHM was added.	MCWD letter to SVBGSA Chapter 9-10 comments 2019-09-16
10-57		9/16/19	EKI Environment & Water	MCWD is considering applying for Proposition 68 Grant (SGM Grant Round 3) for Monterey Subbasin. We understand that SVBGSA is also planning to apply for this grant for other basins under its jurisdiction. As agreed, both parties will coordinate and support each other in grant funding processes.		Comment noted.	MCWD letter to SVBGSA Chapter 9-10 comments 2019-09-16

Number	Chapter	Date	Commenter	Comment	DW response	Response	Commenter doc name
10-58	10	10/7/19	LandWatch	1. The proposed implementation fails to recognize the urgency required for action to address the critically overdrafted 180/400 Foot Aquifer Subbasin. (The issue is further discussed in the letter.)		Refinement of the projects and actions will occur simultaneously with refinement of the funding mechanism that supports the projects and actions. This will take time to complete and will be undertaken immediately following submission of the GSP. For the projects and management actions that are dependent on not only the 180/400, but other subbasins, refinement will occur as the other GSPs are being developed and implementation will begin as soon as possible. Individual SMCs will be met simultaneously.	LandWatchComments_GSPChapter 10.pdf
22190	10	10/7/19	LandWatch	The SVGBGSA should impose pumping restrictions pending start-up of new water projects in order to restore and maintain the protective groundwater elevations needed to attain the adopted minimum threshold for seawater intrusion.		Comment noted.	LandWatchComments_GSPChapter 10.pdf
10-60	10	10/7/19	LandWatch	2. Chapter 10 does not disclose realistic project start-up projections. (The issue is further discussed in the letter.)		Thank you for your comment noting that implementation should not begin before all subbasin plans are complete. This is why Chapter 10 notes that project refinement and negotiation will occur from 2020-2023 and project implementation will begin in 2023.	LandWatchComments_GSPChapter 10.pdf
10-61	10	10/7/19	LandWatch	3. Unlike projects, pumping restrictions are feasible in the very near term. (The issue is further discussed in the letter.)		The SVBGSA will evaluate pumping restrictions once the Salinas Valley Integrated Hydrologic Model becomes available. It is duplicative of efforts and not cost-effective to do so before it is available.	LandWatchComments_GSPChapter 10.pdf
10-62	10	10/7/19	LandWatch	4. Unlike projects, pumping restrictions do not require extensive additional data acquisition. (The issue is further discussed in the letter.)		Having access to the SVIHM will enable comparison between pumping restrictions and other projects and management actions, and therefore will be evaluated when the SVIHM is available.	LandWatchComments_GSPChapter 10.pdf

Number	Chapter	Date	Commenter	Comment	DW response	Response	Commenter doc name
11-1	10	9/11/19	Virsik	The head/footers of Appendix 11E identifying it as a no-longer accurate early draft that should be understood as a legacy staff document, not authorized by Board action. Additional explanatory information for the comment is included in the letter.		Appendix 11E has been updated.	Chapter 10 and 11, Virsik.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-1	All				10/31/2019	Virsik	Grammatical edits - see letter		Relevant edits were added.	Virsik_GSPComment31Oct2019
W-2	All				11/14/19	Virsik	Clarify subbasins under SVBGSA (see letter for specific details)		This has been double checked and any consistencies corrected.	Virsik_GSPComment14Nov2019
W-3	All				11/14/19	Virsik	The Basin or Sub-basin Counts are Misleading and Confusing (see letter for specific details)		Thank you for the specific examples. The relevant ones have been fixed.	Virsik_GSPComment14Nov2019
W-4	All				11/14/19	Virsik	The GSP is Premised on a Demonstrably False Binary Distinction Between the 180/400 and "Valley-wide" (see letter for specific details)		This GSP covers the 180/400-Foot Aquifer Subbasin, which is a subbasin of the Salinas Valley Basin. In accordance with the approach approved by the SVBGSA Board of Directors, all subbasins in the Salinas Valley will be managed in an integrated fashion. Therefore, it is important to include actions that primarily benefit the 180/400 and those that are part of a Valley-wide sustainability effort. SGMA does not require full details for projects outside of the GSP subbasin, but it is important to highlight other projects in the Valley and those that require a Valley-wide effort.	Virsik_GSPComment14Nov2019
W-5	All				11/14/19	Virsik	Certain Important Tables are Facially Confusing/Impenetrable		The arithmetic has been double checked and does add up.	Virsik_GSPComment14Nov2019
W-6	All				11/14/19	Virsik	The Water Budgets Tacitly Admit They Do Not Comply with SGMA Standards		The water budgets are based on best available data and tools, and therefore comply with SGMA standards. As noted throughout the GSP process, the GSP acknowledges the water budgets have some uncertainty which will be reduced as additional data and tools become available.	Virsik_GSPComment14Nov2019
W-7	All				11/14/19	Virsik	The Water Budgets Analyses Have Inexplicably Changed From the Prior Iteration		The changes were made in response to the chapter's public review process. Discussing the numbers and calculations used is part of the iterative process and shows that the GSP preparation is responsive.	Virsik_GSPComment14Nov2019
W-8	All				11/14/19	Virsik	GSP Ignores the Tool of a Management Area; letter highlights that CSIP could be a management area		You are correct - the GSA is not obligated to create a management area for CSIP and thus far they have not decided to designate it as such; however, the option remains if they so choose.	Virsik_GSPComment14Nov2019

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-9	9.3.5.8				10/8/2019	Adin Holdings	The "mandatory pumping reduction program" should be explained and the activities covered by the mentioned budget should be listed.		As explained in Section 9.3.5, mandatory pumping reductions in the CSIP area are implemented only after a group of projects that provide alternative sources of water to the CSIP area are completed. The budget item in Section 9.3.5.8 will be used to conduct a study and deliberations on how to design and implement the program.	AH commentary on Ch 9 10.8.2019.pdf
W-10	9.4				10/8/2019	Adin Holdings	The time-line of projects currently being pursued by other agencies and their integration with the preferred projects should be clearly explained in this GSP.		The existing efforts by other agencies are explained under each specific project.	AH commentary on Ch 9 10.8.2019.pdf
W-11	9.4.1				10/8/2019	Adin Holdings	What about water conservation: Is looking for substituting types of plants/products that evapotranspirate at high rate or consume much water with more effective ones totally out of question? A close issue to this is water savings by controlling "exporting water" so called also "virtual water" through export of agricultural products that contain large percentage of water.		The GSA cannot instruct private entities what types of plants to grow. Rather, private entities may choose to switch crops based on the availability or cost of water supplies.	AH commentary on Ch 9 10.8.2019.pdf
W-12	9.4.1.1				10/8/2019	Adin Holdings	The offset depends on the water source. Reclaimed wastewater and desalinated seawater (remineralized) could be used to offset use of groundwater. Using river water and rainwater harvesting to offset use of groundwater requires careful water balance calculations considering potential natural recharge by these waters.		Agreed. Careful water balance calculations will be conducted prior to implementation.	AH commentary on Ch 9 10.8.2019.pdf
W-13	9.4.1.2				10/8/2019	Adin Holdings	In view of the continuously increasing demand for food, land availability and cost is expected to increase.		Costs will be taken into consideration and programs will be adjusted over time, taking into account factors such as the change in price of land.	AH commentary on Ch 9 10.8.2019.pdf
W-14	9.4.1.2				10/8/2019	Adin Holdings	Dual-purpose wells should also be considered for underground storage or for aquifers where the water table rises enough seasonally or due to unpredictable climate changes. "Dual-purpose well" is a well intended both for injection and recovery.		Construction of existing wells will be examined prior to construction of new injection wells to see whether existing wells could be turned into dual-purpose wells.	AH commentary on Ch 9 10.8.2019.pdf
W-15	9.4.1.3				10/8/2019	Adin Holdings	A highly effective method for reducing water loss by evaporation, already widely implemented in Salinas Valley, is transformation of traditionally used irrigation methods such as flood or furrow irrigation to irrigation with low-rate applicators, e.g. sprinkler or drip irrigation systems. Other BMPs in agriculture should be explored.		Agricultural BMPs are included in 9.3.3	AH commentary on Ch 9 10.8.2019.pdf
W-16	9.4.1.4				10/8/2019	Adin Holdings	Dual-purpose wells may also be worth consideration here (see comment above). Energy demand and cost are particularly critical in this kind of project, and should be presented. Injection - The possible water resources should be listed. Extraction - Seawater might have no use other than discharge to the sea.		Energy demand and cost will be taken into consideration. The water resources depend on the exact location of the wells, which will be assessed in the project design phase.	AH commentary on Ch 9 10.8.2019.pdf
W-17	9.4.2.2				10/8/2019	Adin Holdings	It is not enough to present only the merits. The shortcomings of each proposed project should be equally presented. A detailed comparison of the alternatives should be presented.		The consideration and comparison of projects and alternatives will include both benefits and shortcomings.	AH commentary on Ch 9 10.8.2019.pdf
W-18	9.4.3				10/8/2019	Adin Holdings	A true holistic approach demands presenting the integrated GSP at basin level.		Agreed. That is why the SVBGSA will continue to revise and add to the Integrated Sustainability Plan as the GSPs for other subbasins are developed.	AH commentary on Ch 9 10.8.2019.pdf

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W-19	9.4.3				10/8/2019	Adin Holdings	The methodology of assessment should be presented in detail.		The complete list of projects are in Appendix 9B. The list was reduced to what the SVBGSA believed are the most cost efficient and likely successful projects. If there is a public desire, we can add any projects in this Appendix to our list of preferred projects.	AH commentary on Ch 9 10.8.2019.pdf
W-20	9.4.4.1				10/8/2019	Adin Holdings	The full list of projects and the list of preferred projects should be revisited occasionally as more information is gathered. Reassessment with new information may change projects' preferences.		The projects will be revisited as more information is gathered, more detailed assessments done, and the other subbasin plans completed.	AH commentary on Ch 9 10.8.2019.pdf
W-21	9.4.4.2				10/8/2019	Adin Holdings	Which chemical treatment? How will it affect groundwater and runoff to Salinas river? Using chemicals for invasive species eradication is not a sustainable solution and should be reconsidered or minimized, requiring careful environmental impact assessment. This may take a while. What will be done in the cleared areas? Could cleared areas be used as recharge basins or storage reservoirs? Could agriculture be a future use?		EPA- and RWQCB-approved aquatic formulations for use near open water is used for herbicide spraying (glyphosphate or imazapyr). There are no effects from this approved method - application is done when no surface water is present in/near treatment areas. Using chemicals should require careful environmental impact assessment. In cleared areas, natural recruitment of native forbs and shrubs are allowed to come back into treatment areas. Cleared areas can be used for recharge, but they are primarily in the active flood channel and not on agricultural areas or out of the active channel so storage would be limited. Cleared areas provide benefit primarily by reducing roughness in the channel. Agriculture cannot be a future use because arundo populations are limited to the active flood channel and farm levee banks and typcially would not be allowed to be converted to agricultural use according to laws.	AH commentary on Ch 9 10.8.2019.pdf
W-22	9.4.4.2				10/8/2019	Adin Holdings	For Invasive Species Eradication, a direct measure of success could be river flow before and after cleared areas and groundwater elevation measurements in the large cleared areas.		Comment noted.	AH commentary on Ch 9 10.8.2019.pdf
W-23	9.4.4.3				10/8/2019	Adin Holdings	For Optimize CSIP Operations, leakage is not mentioned. Leak detection and repair should be included and priced. Increasing pressure will increase leakage and require more leakage detection and repair. Requirements for the ongoing monitoring of the system should include leak detection. Advanced technologies for this are readily available.		Comment noted. We will consider CSIP maintnance when looking at CSIP optimization and improvements.	AH commentary on Ch 9 10.8.2019.pdf
W-24	9.4.4.4				10/8/2019	Adin Holdings	Is there a plan for using these effluents for injection to the aquifer in the hydraulic barrier project?		If injection is chosen as the preferred the hydraulic barrier, the least expensive source of water wil be chosen. Effluent will be considered as one source of injection water.	AH commentary on Ch 9 10.8.2019.pdf
W-25	9.4.4.4				10/8/2019	Adin Holdings	An effort should be made to treat and reuse all wastewater during all seasons.		Comment noted	AH commentary on Ch 9 10.8.2019.pdf

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W-26	9.4.4.4				10/8/2019	Adin Holdings	1. The final title 22 Engineering Report April 2019 (Revised) of Pure Water Monterey states (p.28) that the recycled water supply for agriculture here "is subject to (1) Water Recycling Requirements issued to MRWPCA (Order 94-82) and (2) Recycled Water Used Requirements (Order No. 95-52) issued to MCWRA by the Central Coast Regional Water Quality Control Board." What is the status of meeting those requirements? 2. The recycled water is purified to the standard of drinking water quality with technologies that altogether produce excellent water for that purpose. Irrigation for most products would not need such a high level of purification, which might end up with higher costs of water for the farmers than necessary. If not done already, other alternatives for that portion of the recycled water intended for irrigation can be considered. (see letter for remainder of comment)		If recycled water is used for any project, the level of treatment will be appropriate for the intended use.	AH commentary on Ch 9 10.8.2019.pdf
W-27	9.4.4.4 - 9.4.4.6				10/8/2019	Adin Holdings	These projects are highly interdependent and should be planned and managed as one project.		Agreed. The plan is to develop all projects and actions as a single program.	AH commentary on Ch 9 10.8.2019.pdf
W-28	9.4.4.7				10/8/2019	Adin Holdings	This option of using extracted water seems promising and sustainable, yet depends on the sustainability of the barrier project as a whole.		Comment noted	AH commentary on Ch 9 10.8.2019.pdf
W-29	9.4.4.7				10/8/2019	Adin Holdings	Could there be a situation where a good rainy season will drive the seawater intrusion front back enough that pumping of sweet water could be of interest? If and where such a case exists, dualpurpose wells could perhaps be of value.		To date, we have not seent high rainfall years reverse seawater intrusion	AH commentary on Ch 9 10.8.2019.pdf
W-30	9.4.4.7				10/8/2019	Adin Holdings	By that time several other projects are planned to be completed. What will be the need then? A consolidated planning on a timeline of the water balance is missing.		Projects will only be initiated as needed. SVBGSA will adopt an adaptive management approach to see how each project is working, and to assess whether additional projects are necessary.	AH commentary on Ch 9 10.8.2019.pdf
W-31	9.4.4.7				10/8/2019	Adin Holdings	Missing: Impact on groundwater - Either extraction or injection will affect groundwater. This project is the only one with no Estimated Groundwater Level Benefit graphs.		These graphs will be developed when appropriate tools are developed.	AH commentary on Ch 9 10.8.2019.pdf
W-32	9.4.4.8				10/8/2019	Adin Holdings	Could dual-pumping serve here (Preferred Project 7)?		This is a river diversion project, and dual-purpose wells are likely not appropriate.	AH commentary on Ch 9 10.8.2019.pdf
W-33	9.4.4.9				10/8/2019	Adin Holdings	This option seems promising and sustainable.		Comment noted.	AH commentary on Ch 9 10.8.2019.pdf
W-34	9.4.5.1				10/8/2019	Adin Holdings	The desal plants (Alternative Project 1) are close to the coast so there should be no specific problem of disposing the brine.		Comment noted.	AH commentary on Ch 9 10.8.2019.pdf
W-35	9.5				10/8/2019	Adin Holdings	Why are these not part of the GSP? The benefit of these projects could be similar to and higher than the programs included in the GSP. Is there more than one GSP?		The benefits from these activities are difficult to rely on or quantify. The SVBGSA supports these activities, but cannot rely on them to achieve sustainability.	AH commentary on Ch 9 10.8.2019.pdf
W-36	9.5.1				10/8/2019	Adin Holdings	Important: Why not plan and calculate the benefit of agricultural BMPs and compare them to the projects above mentioned, perhaps they will be found more economic and more sustainable than some of them? Inputs from agro-technology experts may be needed for assessing the potential.		Comment noted	AH commentary on Ch 9 10.8.2019.pdf
W-37	App 9C				10/8/2019	Adin Holdings	The GSP should present complete information on the process of assessing the projects and on the process of selecting the preferred and alternative projects.		The complete list of projects are in Appendix 9B. The list was reduced to what the SVBGSA believed are the most cost efficient and likely successful projects. If there is a public desire, we can add any projects in this Appendix to our list of preferred projects.	AH commentary on Ch 9 10.8.2019.pdf
W-38	App 9C				10/8/2019	Adin Holdings	The GSP should include an estimation of energy demand and cost for extraction and for injection. Destination and cost of extracted water should be presented, particularly alternatives of using the extracted water. In case of injection, alternative water resources should be presented with their costs and compared.		Energy demand and cost will be taken into consideration. The water resources depend on the exact location of the wells, which will be assessed in the project design phase.	AH commentary on Ch 9 10.8.2019.pdf

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W-39	App 9C				10/8/2019	Adin Holdings	Not clear: "in the absence of any of the other future projects included in the GSP." What does this mean?		Injection or recharge projects may reduce or eliminate the need for the seawater intrusion barrier	AH commentary on Ch 9 10.8.2019.pdf
W-40					11/13/2019	LandWatch	The GSP fails to adopt a conservative estimate of sustainable yield until resolution of data gaps and calibration of the groundwater model. 1. The groundwater model is not calibrated. 2. The minimum threshold for reduction in storage is improperly based on uncalibrated model projection of 2070 sustainable yield and improperly uses the least conservative estimate of sustainable yield.		The GSP is based on best available data at the time of development. It will be updated when the SVIHM is released, at which point the future water budget will be calibrated with the historical water budget.	LandWatchCommentsEntireGSP_FINAL.pdf
W-41					11/13/2019	LandWatch	The minimum thresholds for groundwater levels and storage reduction are inconsistent with SGMA regulations because they fail to avoid the undesirable results for the seawater intrusion sustainability indicator. The minimum threshold for groundwater levels, set at one foot above lowest historical groundwater levels, will not support the minimum threshold for seawater intrusion, set at existing line of seawater intrusion advance, because those groundwater levels will not halt seawater intrusion. The minimum threshold for reduction in storage, set at the future long-term sustainable yield, will not support the minimum threshold for seawater intrusion, because halting seawater intrusion requires replacement of depleted groundwater storage by temporarily reducing extractions to below the sustainable yield.		The sustainability indicators will be met simultaneously, but they are independent, such that the minimum thresholds for groundwater levels and storage reduction are not responsible for avoiding seawater intrusion. Further, the long-term sustainable yield is the sustainable yield AFTER all undesirable results have been addressed, including seawater intrusion.	LandWatchCommentsEntireGSP_FINAL.pdf
W-42					11/13/2019	LandWatch	The GSP proposes inconsistent programs and management actions to attain the minimum threshold for seawater intrusion, and these remedies would not be timely.		SGMA specifies that GSAs have 20 years to come to sustainability. The projects and management actions are realistic within that timeframe.	LandWatchCommentsEntireGSP_FINAL.pdf
W-43					11/13/2019	LandWatch	The Plan fails to include immediate pumping reductions, which are required in order to attain the identified minimum threshold for seawater intrusion.		Immediate pumping reductions are not required by SGMA, but rather are only one possible management option. The GSP includes other projects and management actions to meet the minimum threshold for seawater intrusion, such as the seawater intrusion barrier and the water charges framework.	LandWatchCommentsEntireGSP_FINAL.pdf
W-44					11/13/2019	LandWatch	The Plan fails to mitigate overdraft: the water charges framework cannot reliably mitigate overdraft because pumping reductions remain voluntary and because price sensitivity and demand elasticity are unknown. SGMA requires that a GSP identify projects or management actions, including demand reduction or other methods, that would be sufficient to mitigate overdraft. Contrary to the Plan's claim, the water charges framework would not reduce demand or increase supply sufficiently to mitigate overdraft because it relies on voluntary pumping reductions and permits pumping in excess of sustainable pumping allocations. Mitigation of overdraft requires mandated pumping restrictions that limit total pumping to current sustainable yield plus newly produced water. The Plan fails to provide the mandatory quantification of the mitigation of overdraft: it fails to quantify the benefits of management actions, it assigns all of the Basin-wide Project benefits to the 180/400- Foot Aquifer Subbasin, it double counts some benefits, and it contains an arithmetic error.		SGMA does not specify HOW GSAs mitigate overdraft - they leave that decision to the GSAs. Using a voluntary, market-based approach must take into consideration price sensitivity and demand elasticity and often involve adjustments over time, but there are myriad examples of market mechanisms meeting and exceeding environmental targets (which is the sustainable yield in this case). This is the approach the Board has elected to take. The Board may change that at a future date, or they may combine it with mandatory pumping reductions if they so choose. The GSP outlines the plan to achieve sustainability, but allows for flexibility in implementation to adjust as needed to meet sustainability.	LandWatchCommentsEntireGSP_FINAL.pdf

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W-45					11/13/2019	LandWatch	The implementation plan improperly delays substantive action for two years in order to accommodate the implementation schedule for the GSP for the rest of the Basin, which is not critically overdrafted.		The implementation period set forth by DWR is 20 years. The Salians Valley subbasins are hydraulically connected, and it is important that the GSA take a coordinated approach to sustainability. Development details of the projects and management actions will occur simultaneously as the other subbasin GSPs are being developed.	LandWatchCommentsEntireGSP_FINAL.pdf
W-46					11/13/2019	LandWatch	The Plan fails to identify project startup dates		Notional timelines are proposed with the understanding that exact start-up dates depend on a number of factors such as project refinement, environmental permitting, etc.	LandWatchCommentsEntireGSP_FINAL.pdf
W-47					11/13/2019	LandWatch	The Plan fails to impose pumping restrictions pending startup of new water projects. Interim pumping restrictions are needed in order to restore and maintain the protective groundwater elevations to attain the minimum threshold for seawater intrusion.		The GSP proposes other ways to meet minimum thresholds that are more likely to be agreed upon by the Board.	LandWatchCommentsEntireGSP_FINAL.pdf
W-48					11/13/2019	LandWatch	The GSP's multiple, inconsistent, incomplete, and deferred approaches to meeting the seawater intrusion minimum threshold – eventual temporary pumping reductions, a long-delayed $100+ million pumping barrier, or some eventual "agreed approach" from the Working Group – renders the GSP uncertain and inadequate as a plan.		The GSP describes several projects and management actions. Implementation of all of them may not be necessary, but further analysis and discussion is needed for the Board to decide which to implement, which will occur in the implementation period.	LandWatchCommentsEntireGSP_FINAL.pdf
W-49					11/13/2019	LandWatch	Chpater 6: Assumptions regarding efficacy of future projects and management actions to address seawater intrusion in the projected future sustainable yield should be spelled out.		The impact of each project and management action on the seawater intrusion SMC will be refined as the projects are refined.	LandWatchCommentsEntireGSP_FINAL.pdf
W-50					11/13/2019	LandWatch	Double counting of water withdrawals should be resolved.		The GSP acknowledges the potential double counting of extractions, and identifies this as an uncertainty in the water budget. Because of the many uncertainties in the historical water budget, it was deterimined that attempting to identify all double counting was not cost effective. The cost effective approach is to refine the water budget with the SVIHM when it becomes availalbe. The SVIHM does not double count surface water diversions and groundwater pumpiong. This is the approach specifically identified in the GSP.	LandWatchCommentsEntireGSP_FINAL.pdf
W-51					11/13/2019	LandWatch	Sustainable yield determinations should incorporate climate change-caused variability in precipitation.		The future sustainable yield does incoroporate reasonable climate change, in accordance with the climate change factors provided by DWR.	LandWatchCommentsEntireGSP_FINAL.pdf
W-52					11/13/2019	LandWatch	Chapter 7 should require that pumping be monitored by flowmeters.		Section 10.1.5 states that, "The SVBGSA will work with MCWRA to expand the existing well metering system currently in place to collect additional groundwater pumping information."	LandWatchCommentsEntireGSP_FINAL.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-53	9				11/25/2019	Farm Bureau	We fully support the intent of Preferred Project #1 and desire this to be the highest priority project for the 180/ 400 sub-basin (as well as the Forebay and Upper Valley sub-basins). Eradicating the exotic Arundo donax vegetation from the Salinas River Channel has multiple benefits for both landowners, the environment, and the groundwater basin. Table 9-5 lists 6,000 acre-feet of savings due to Arundo donax removal, but there is a reference of 20,000 acre-feet also; is that amount of the entire water savings for the full basin for just theArundo donax vegetation type? While we fully respect and support the program that the Resource Conservation District of Monterey County and the success achieved in removing Arundo donax, there is more to be done than just replicating this as Preferred Project #1. We urge that the draft be modified to include other vegetative species that are in overgrowth mode. ..Reducing all vegetation in the river channel would improve water conveyance and lead to increased water flows for recharge as well other possible projects, such as the diversion points for the Permit #11043 that could supply water to the Eastside trough. (see letter for full comment).		A range of water savings is included due to the range of potential benefits from existing data sources. The existing Arundo Removal Program will be nearing a 4-year review in 2020 and will be required to submit a report to permitting agencies regarding the program status. This will include an assessment of exiting vegetation management areas and arundo and tamarisk removal in the river channel. This information can be used to update strategies related to vegetation management in the river.	GSP Comment Letter-MCFB 112519.pdf
	9.4.3.6				11/25/2019	Farm Bureau	The estimated yield for this project is 11,600 AF/yr; yet, “the yield for this project is the same yield that is identified in Priority Project #2 and a portion of the yield identified in Priority Project #3. Is this statement intending that the same water.		Clarifying text has been added.	GSP Comment Letter-MCFB 112519.pdf
W-55	9.4.3.7				11/25/2019	Farm Bureau	Much more needs to be known about this particular project before it can be considered more fully. Although seawater intrusion extraction wells may very well yield 30,000 acre-feet per year, this water is essentially useless until it can be desalinated. That seems to indicate that extracted water would need to be dispose of, possibly into the ocean? After determining if this project is environmentally (and politically) feasible, the cost-benefit analysis may not be justified. If the project yield is 30,000 acre-feet, why is there a statement in the notes below Table 9-5 that shows only 22,000 acre-feet? Shouldn't the projected cost benefits of this project then be based on the 11,000 acre-feet of net yield?		The cost and benefit of the seawater intrusion pumping barrier will be refined during GSP implementation. The yield/benefit of the project is now consistent throughout the document. The yield is included soley for cost comparison to other projects. The seawater instrusion barrier does not contribute to mitigation of overdraft, but rather provides benefits in other ways, so it was removed from Table 9-5.	GSP Comment Letter-MCFB 112519.pdf
W-56	9.4.3.10				11/25/2019	Farm Bureau	We question if winter flow injection makes sense in the context of possible land fallowed and available for dedicated recharge basins. The costs of removing the ground from active production could be offset by passive recharge that has little in ongoing operational and maintenance costs, and very little (comparatively) of capital investment costs. This may be an alternative opportunity for land use should there be voluntary fallowing of land in the sub-basin area.		Surface recharge in the northern end of the 180/400 foot aquifer will likely not percolate into the deeper, productive aquifers. However, if a location is found where surface recharge does percolate to deeper aquifers, this option will be considered.	GSP Comment Letter-MCFB 112519.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-57	9.2				11/25/2019	Farm Bureau	As described, the water charges framework is a proposal and will still need approval from the SVBGSA Board of Directors (requiring 3 of 4 agricultural directors supporting the program). We question that if this type of funding program is to incentivize the reduction of groundwater pumping, the program will eventually defund itself due to declining water use revenue. This has happened to other utilities and is a distinct possibility in the Salinas Valley also as future farming practices may find more efficient means of delivering and using groundwater. We also note that significant analysis will be required to determine the correct rate levels of the proposed framework; fluctuations in crops and land values, availability of any new project water, and intensive cropping patterns may make the process of determining the rate structure nearly impossible. Will the water charges framework be adopted in all sub-basins? What happens to the budget if one or more sub-basins is not needing to adopt this method of funding?		Comments noted. These concerns will be discussed and addressed when the details of the water charges framework are developed during GSP implementation.	GSP Comment Letter-MCFB 112519.pdf
W-58	9.2.1				11/25/2019	Farm Bureau	We point out that the draft language indicates that well registration does not obviously equate to metering, but only that some wells may have meters. There is needed clarity on what well registration and metering requirements intend, how they transect, and how this will be enforced.		Clarifying text has been added.	
W-59	9.2.4				11/25/2019	Farm Bureau	We find that this section may need some enhancements with more details. This is effectively a water trading market mechanism and critical to how pumping allowances will be managed ultimately. If SVBGSA intends to manage this on a case-by-case basis, there will need to be guidelines for how this will be managed and who will make any determinations for transfers; the mechanics of this can get quite complicated and should be fully understood before any transfers are considered. What will be the platform for managing these transfers? Will farmers need to manage these trades amongst themselves? What distance will be allowed as a maximum for a transfer (only within each sub-basin)? In past community discussions there was little support for this type of program; is that why there are no details or the consultants have not recommended a platform or program? We suggest that the fallowing of land needs to be a fully-defined Management Action or Preferred Project. Will SVBGSA purchase water and retire land for a single year or more? There is no direct statement on what will happen if growers decide to change to different crops that may require higher water use, such as vineyard to vegetables. Just as followed land can be recycled into production, can irrigated land that was formerly producing low water use crops convert to a higher water use crop? Will there then be a penalty applied to that farm or land? This could then cross a line into managing land use and dictating which crops can be produced, or even restrict the ability of a farm to change when market conditions alter the economics of any given crop.		These concerns will be discussed and addressed when the details of the water charges framework are developed during GSP implementation. SVBGSA may consider promoting land fallowing to a fully defined Management Action during the next draft of the GSP, planned for 2022. There is no plan to manage which crops can be produced other than establishing pumping charges through the Water Charges Framework.	

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-60	9.3.2				11/25/2019	Farm Bureau	We support the right of landowners to do as they please with their lands in terms of wanting to continue farming, temporarily fallow or permanently retire agricultural lands under SGMA on a voluntary basis. However, we find this section lacking in detail and therefore may not garner the attention from landowners that may be interested. The assumption is that a combination of reduced pumping and Preferred Projects are likely needed; however, there is no statement on how this goal will be achieved with reduced extractions alone. The cost analysis is also incorrect and needs revision. In a basin that has seawater intrusion and facing a long list of expensive projects, we believe this warrants a more proactive and thoughtful approach. SVBGSA and its consultants should conduct a geospatial analysis to assess the best areas to potentially retire land through careful study of the economic value of the land and water, and then proactively contact the specific landowners to gauge interest in voluntarily participating. There is no mention that funding could be sourced from grant programs for water quality, habitat, and conservation easements for a voluntary land retirement program. All sources of financial support should be fully explored and exhausted prior to SVBGSA expending funds on land fallowing or retirement.		Comment noted. SVBGSA agrees that a voluntary land retirement program is the correct approach. The financial incentive for land retirement will be refined during GSP implementation.	
W-61	9.6				11/25/2019	Farm Bureau	We find there is a lack of transparency in understanding the overall goal; the total acre-feet of savings through projects needed to bring the sub-basin into balance should be clearly stated here. What is the current demand? What is the sustainable yield? What is the overdraft amount? What is the target goal that includes a buffer for seawater intrusion mitigation? There is also a lack of understanding of what the cumulative impact of multiple projects would be, if more than one or all are put into place; would there be enough water to manage multiple projects? For example, the three projects listed for the Castroville Seawater Intrusion Project (CSIP) have overlapping water savings, yet these three projects are listed independent of each other.		The current demand, overdraft, and sustainable yield are included in Chapter 6. The cumulative impact of multiple projects will be addressed after the projects are refined during GSP implementation and the SVIHM becomes available for project benefit analysis.	

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-62	9.3				11/25/2019	Farm Bureau	Our members are sensitive to total costs of implementing SGMA over the next 20 years. Between the First and Second drafts of Chapter 9 (between July 18 and August 8, 2019), two new Management Actions (MAs) have been added and the cost for existing MAs have expanded in number of years and cost per year, and total cost. We calculate that annual costs for these Management Actions have increased total costs by $1,000,000 or more. On the "Public Comment" document, there is no apparent public comment on these MA changes; most of the comments were around the Water Charges Framework and Projects. A table listing the MAs with anticipated costs would be a good addition to this chapter of the document. We request more specific information on the following: -Why did MA #1 change from a 4% 30-year amortization to a 6% 25-year amortization? • How many years is MA #2 expected to take? There is only a notation of "on going." • Why has the cost per year increased for MA #4? • SVBGSA will provide oversight for many of the MAs; will these be overseen by SVBGSA staff or the consultants? • Why are there missing MAs on the Table 10-1? • Should 180/400 operational costs specific to MAs be in table 10-1?		Costs have been updated according to feedback provided on subsequent drafts regarding more realistic projected costs of implementation.	
W-63		10-1, 10-2			11/25/2019	Farm Bureau	There appear to be some mathematical errors on these two tables. Table 10-1 lists planning level costs that total to $1,399,000 yet the table reflects a total of $1,784,000, a difference of $385,000. Table 10-2 lists planning level cots of $2,922,000 yet the table reflects a total of $9,423,000, a difference of $6,501,000. If either of these tables reflects planning level costs that are for multiple years, it is not clearly noted; thus, there is a distortion of the projected planning level costs for the first five years of implementation.		Tables have been double checked and corrected.	GSP Comment Letter-MCFB 112519.pdf
W-64		9.4.3.6			11/25/2019	Farm Bureau	The estimated yield for this project is 11,600 AF/yr; yet, “the yield for this project is the same yield that is identified in Priority Project #2 and a portion of the yield identified in Priority Project #3. Is this statement intending that the same water can be saved twice, or is this just a simple double reference to water that can be saved? Clarification is needed to determine the exact savings for this project and the related three projects listed for the CSIP upgrades and expansion.		No, it is not intended that the same water can be saved twice, but the CSIP projects are related. This statement was intended to avoid double counting of project yields, however, text has been added to clarify further.	GSP Comment Letter-MCFB 112519.pdf
W-65	3				11/21/2019	Dept of Fish and Wildlife	The Department recommends changing the map on page 3-14 to include privately conserved lands to Moro Cojo Ecological Reserve. The Department also recommends the GSP include a section within 3.3 Jurisdictional Areas that defines the privately conserved lands within its boundary, including Elkhorn Slough Foundation lands.		The labeling of the the Department's Moro Cojo Ecological Reserve matches the data provided by DWR. We would appreciate further information on any errors that we can remedy. Figure 3-3 is intended to identify Federal and State jurisdictional areas, not private foundation lands. This map shows other government agencies that may have groundwater jurisdiction: the map is not intended to identify all conserved lands.	Dept of Fish and Wildlife SVBGSA GSP Comments

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-66					11/21/2019	Dept of Fish and Wildlife	i.The Department recommends that the GSP model results that identify the estimated quantity and timing of streamflow depletions in the Subbasin. The Department also recommends that the GSP include clear documentation on model development, as numerical modeling is an apt but complex tool for identifying surface water-groundwater connectivity. ii.The Department recommends including the shallow water-bearing sediments above the Salinas Valley Aquifer as a principal aquifer in the GSP to encourage diligent monitoring and management of a resource of great significance to environmental beneficial uses and users in the Subbasin. iv.The Department requests clarification on how surficial recharge can be both severely restricted by the Salinas Valley Aquitard and comprise such a significant portion of the Water Budget inflow when shallow groundwater above the aquitard is not included in the GSP's Water Budget analysis. v.The Department requests including expanded ISW studies and monitoring in the Subchapter 4. 7 Data Gaps.		i. The SVBGSA will use the SVIHM to estimate the quantity and timing of streamflow depletions in the Subbasin when the model becomes available. ii. In accordance with the description in DWR Bulletin 118, the shallow sediments are not identified as a principal aquifer. iii. We have added clarifying language to the text. iv. Text has been added discussing uncertainty regarding the fate of percolation from the river. v. The data gaps address the key issues needed to substantiate the sustainable management criteria for interconnected surface waters.	Dept of Fish and Wildlife SVBGSA GSP Comments
W-67	4				11/21/2019	Dept of Fish and Wildlife	The Department recommends developing a specific plan and timeline for GOE identification that includes methods used to vet the current set of potential GD Es shown in Figure 4-10. If the GSP will include a depth-to-groundwater analysis for GOE verification, in addition to field reconnaissance, the Department advjses development of a hydrologically robust baseline that relies on multiple, climatically representative years of groundwater elevation and that accounts for the inter-seasonal and inter-annual variability of GOE water demand. The Department also suggests careful consideration of potential GDEs near interconnected surface water bodies, as they may depend on sustained groundwater elevations that stabilize the gradient or rate of loss of surface water, rather than directly on the water table itself.		We have identified potential GDEs using the approach detailed by TNC. Currently, there is no plan to further analyze GDEs. However, this subject will likely be addressed again during GSP implementation, and we look forward to working with TNC when we revisit this subject.	Dept of Fish and Wildlife SVBGSA GSP Comments
W-68					11/21/2019	Dept of Fish and Wildlife	ii. The Department recognizes that NCCAG (Klausmeyer et al. 2018) provided by California Department of Water Resources (CDWR) is a good starting reference for GDEs however, the Department recommends that the GSP consider additional resources for evaluating GOE locations, including but not limited to the California Department of Fish and Wildlife (CDFW) Vegetation Classification and Mapping Program (VegCAMP) (CDFW 2019A); the CDFW California Natural Diversity Database (CNDDB) (20198); the California Native Plant Society (CNPS) Manual of California Vegetation (CNPS 2019A); the . CNPS California Protected Areas Database (CNPS 20198); the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (2018); the USFWS online mapping tool for listed species critical habitat (2019); the U.S. Forest Service CAL VEG ecological grouping classification and assessment system (2019); and other publications by Klausmeyer et al. (2019), Rohde et al. (2018), The Nature Conservancy (TNC) (2014), and Witham et al. (2014).		We have identified potential GDEs using the approach detailed by TNC. Currently, there is no plan to further analyze GDEs. However, this subject will likely be addressed again during GSP implementation, and we look forward to working with TNC when we revisit this subject.	Dept of Fish and Wildlife SVBGSA GSP Comments

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-69					11/21/2019	Dept of Fish and Wildlife	The Department recommends that the GSP provide a more robust representation of water quality data for the constituents identified within the plan and provide data (i.e. graphical or tabular) illustrating trends over time. Additionally, the Department recommends that the GSP provide the most current available water quality information for the constituent presented within the plan to further substantiate sustainability for this indicator.		Additional groundwater quality analysis is not warranted under SGMA. The GSP is not intended to address all groundwater quality conditions in the Subbasin; rather it sets a baseline to asses whether future actions taken by the SVBGSA may impact groundwater quality.	Dept of Fish and Wildlife SVBGSA GSP Comments
W-70					11/21/2019	Dept of Fish and Wildlife	The Department recommends that the GSP specify management actions to mitigate potential undesirable results to ISW and GDEs during dry years when groundwater pumping increases. Suggestions include pumping restrictions for areas that may impact surface water flow when streamflow depletion minimum thresholds are reached in dry and critical water years.		The GSP is a long-term management plan, and is not intended to manage to short-term weather fluctuations.	Dept of Fish and Wildlife SVBGSA GSP Comments
W-71					11/21/2019	Dept of Fish and Wildlife	See OTHER COMMENTS beginning on page 9 , Implementation of Project Actions Related to SGMA		Comment noted. These details will be taken into consideration in the planning and implementation of projects and management actions.	Dept of Fish and Wildlife SVBGSA GSP Comments
W-72					11/24/2019	James Sang	I disagree with the proposed groundwater sustainability project unless it can add a managed aquifer recharge project! My objection is that majority of the proposed projects take water and don't add water. The injections wells need a source of water to work. CSIP requires recycled water and water from the Salinas River to work. The Arundo project sounds iffy. Plants only transpire 10 percent of the atmosphere water vapor, which is a small amount of water effecting the ground moisture. I would like the project to include my proposed swale and pond idea to see if we can recharge the ground water and the aquifer and wells. I believe that this is a project that will be accepted by the property owner because this would directly effect the well owner. The project can be monitered easily to find the results and the well owner can use the surface pond water to irrigate.		Managed Aquifer Recharge IS included within the list of projects. It wasn't initially called that specifically, so a paragraph has been added to clarify.	SVBGSA PROJECT James Sang.pdf
W-73	App 11E				11/25/2019	TNC	Appendix 11E states (Responses to Comments 7-26, 8-124, 8-132): “The shallow aquifer is not considered a principal aquifer.” The GSP states (p. 4-17) that some domestic wells draw water from the shallow aquifer, and that groundwater in these sediments is hydraulically connected to the Salinas River. TNC disagrees with the statement that the shallow aquifer is not a principal aquifer; it is indeed a principal aquifer that needs Sustainable Management Criteria established to prevent adverse impacts to GDEs and surface water beneficial users. Additionally, SGMA defines principal aquifers as “aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems” [23 CCR § 351 (aa)].		Comment noted. In accordance with DWR Bulletin 11, The GSP does not identify the shallow sediments as a principal aquifer.	TNC comments - Salinas 180-400ft.pdf

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W-74	App 11E				11/25/2019	TNC	Appendix 11E states (Responses to Comments 8-131, 8-133, 8-134): "The GSP does not protect species; it assesses whether the depletion of surface water due to pumping is significant or unreasonable." However, the Water Code § 10723.2 states: "The groundwater sustainability agency shall consider the interests of all (emphasis added) beneficial uses and users of groundwater, as well as those responsible for implementing groundwater sustainability plans. These interests include, but are not limited to [..] (e) Environmental users of groundwater; and (f) Surface water users, if there is a hydrologic connection between surface and groundwater bodies. Identifying beneficial users of surface water, which include environmental users, is a critical step in defining "significant and unreasonable adverse impacts". Without this it is impossible to know what is being impacted. In the GSP, please propose Sustainable Management Criteria that assure protection of GDEs and instream environmental beneficial users.		As stated in section 8.6.2.3, groundwater elevations are set above historical and current depletion rates, and therefore the impact to surface water bodies, including GDEs, will be less than historical impacts. Thererfore, our impact on GDEs is neither significant nor unreasonable.	TNC comments - Salinas 180-400ft.pdf
W-75					11/25/2019	TNC	TNC considers the 180/400-Foot Aquifer Subbasin Draft GSP to be inadequate under SGMA since key environmental beneficial uses and users are not adequately identified and considered. In particular, ISWs and GDEs are not adequately identified and evaluated for ecological importance or adequately considered in the basin's sustainable management criteria. Please present a thorough analysis of the identification and evaluation of ISWs and GDEs in subsequent drafts of the GSP. Once GDEs are identified, they must be considered when defining undesirable results and evaluated for further monitoring needs.		We have identified potential GDEs using the approach detailed by TNC. Currently, there is no plan to further analyze GDEs. However, this subject will likely be addressed again during GSP implementation, and we look forward to working with TNC when we revisit this subject.	TNC comments - Salinas 180-400ft.pdf
W-76	11				11/25/2019	TNC	The Joint Exercise of Powers Agreement (Appendix 11D) lists the Board of Directors that includes a Director representing environmental users and interests. This is the only mention of environmental users in Chapter 11. No details are given as to the types and locations of environmental uses and habitats supported, or the designated beneficial environmental uses of surface waters that may be affected by groundwater extraction in the Subbasin.		More information on environmental users and interests has been added to Chapter 11.	TNC comments - Salinas 180-400ft.pdf
W-77	3.1		3-39 - 3-50		11/25/2019	TNC	This section discusses the city (Salinas, Gonzales, and Marina) and county (Monterey) general plans covering areas within the Subbasin. Please include a discussion of how implementation of the GSP may affect and be coordinated with General Plan policies and procedures regarding the protection of wetlands, aquatic resources and other GDEs and ISWs.		Section 3.10.7 discusses plan implementaion effects on existing land uses	TNC comments - Salinas 180-400ft.pdf
W-78					11/25/2019	TNC	This section should identify Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) within the Subbasin and if they are associated with critical, GDE or ISW habitats. Please identify all relevant HCPs and NCCPs within the Subbasin and address how GSP implementation will coordinate with the goals of these HCPs or NCCPs.		The Salinas River HCP is addressed in Chapter 8. No NCCPs have been developed to our knowledge.	TNC comments - Salinas 180-400ft.pdf
W-79					11/25/2019	TNC	Please refer to the Critical Species Lookbook4 to review and discuss the potential groundwater reliance of critical species in the basin. Please include a discussion regarding the management of critical habitat for these aquatic species and its relationship to the GSP.		Comment noted. This is not relevant to the general plans discussion.	TNC comments - Salinas 180-400ft.pdf

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W-80	3.3		3-13 - 3-15		11/25/2019	TNC	The GSP describes several wildlife refuges, reserves, and conservation areas under Federal and State Jurisdiction, however there is no discussion of any in-stream flow requirements or other protections in place for species in these critical areas. Please include a discussion regarding the management of critical habitat for aquatic species and its relationship to the GSP, including discussion of any in-stream flow requirements.		The Salinas River HCP is addressed in Chapter 8. This is the only known flow requirement for aquatic species.	TNC comments - Salinas 180-400ft.pdf
W-81	3.10.5		Mar-47		11/25/2019	TNC	The GSP includes a brief discussion of well permitting policies governed by Monterey County. Please include a discussion of how future well permitting will be coordinated with the GSP to assure achievement of the Plan's sustainability goals.		There is no plan to modify the well permitting system	TNC comments - Salinas 180-400ft.pdf
W-82					11/25/2019	TNC	The State Third Appellate District recently found that counties have a responsibility to consider the potential impacts of groundwater withdrawals on public trust resources when permitting new wells near streams with public trust uses (ELF v. SWRCB and Siskiyou County, No. C083239). Compliance of well permitting programs with this requirement should be stated in the GSP.		A paragraph on the case was added to Chapter 3. Monterey County is responsible for well permitting in the Salinas Valley.	TNC comments - Salinas 180-400ft.pdf
W-83	4.3.2				11/25/2019	TNC	[Comment 4-14: GSP text changed but theme of original comment still holds; response does not adequately address the comment.] The SVBGSA has adopted the base of the aquifer defined by the USGS (Durbin et al., 1978). However, as noted on page 9 in DWR's Hydrogeologic Conceptual Model BMP5 "the definable bottom of thebasin should be at least as deep as the deepest groundwater extractions". Thus, groundwater extraction well depth data, as part of the best available data available to the GSA, should also be included in the determination of the basin bottom. This will prevent extractors with wells deeper than the basin boundary from claiming exemption of SGMA due to their well residing outside the vertical extent of the basin boundary.		This GSP has adopted the USGS definition of the bottom of the aquifer for consistency.	TNC comments - Salinas 180-400ft.pdf
W-84	4.4				11/25/2019	TNC	Regional basin-wide geologic cross sections are provided in Figures 4-6 through 4-8 (p. 4-14 to 4-16). These cross-sections do not include a graphical representation of the manner in which the shallow aquifer may interact with ISWs or GDEs that would allow the reader to understand this topic. Please include example near-surface cross section details that depict the conceptual understanding of shallow groundwater and stream interactions at different locations.		Per SGMA regulations, these cross sections illustrate the current understanding of the regional, principal aquifers. Near-surface cross sections are not required by SGMA, and it is unclear that adequate data exists to construct realistic near-surface cross sections.	TNC comments - Salinas 180-400ft.pdf
W-85	4.4.1		4-17		11/25/2019	TNC	TNC disagrees with the statement that the shallow aquifer is not a principal aquifer; it is indeed a principal aquifer that needs Sustainable Management Criteria established to prevent adverse impacts to GDEs and surface water beneficial users.		Comment noted	TNC comments - Salinas 180-400ft.pdf

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W-86	5.6.1		5-54		11/25/2019	TNC	While groundwater in the 180- and 400-foot Aquifers is generally not considered to be hydraulically connected to the Salinas River or its tributaries, the Shallow Aquifer (which resides above the Salinas Valley Aquitard) likely does. To address this, interconnections of surface water with groundwater in the Shallow Aquifer should be evaluated in this section of the GSP, since the Shallow Aquifer is within the 180/400-Foot Aquifer Subbasin. Where data gaps exist, cite them here or refer to a subsequent section of the GSP. Cite cross-sections that relay the conceptual understanding of the shallow aquifer interaction with surface water. Groundwater in the shallow aquifer is also likely to be supporting groundwater dependent ecosystems and interacting with the Salinas River in this part of the basin. Basins with a stacked series of aquifers may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. If pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, that can support springs, surface water, and groundwater dependent ecosystems. This is because the goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits, and while groundwater pumping may not be currently occurring in a shallow aquifer, it could be in the future.		Because the shallow sediments are not a principal aquifer, they are not evaluated in this GSP. The sustainable management criteria state that there will not be any increased depletion of surface water from the Salinas River due to pumping from the 180 for 400-Foot aquifers.	TNC comments - Salinas 180-400ft.pdf
W-87					11/25/2019	TNC	Mapping ISW locations would be best done using contours of depth to groundwater measured from multiple points in time (different seasons and water year types) rather than only from Fall 2013. Groundwater conditions evaluated across the range of seasonal and interannual time frames provides a more representative view of ISWs.		Comment noted. Our ability to identify areas of interconnected surface water will be improved when the SVIHM becomes available.	TNC comments - Salinas 180-400ft.pdf
W-88					11/25/2019	TNC	The groundwater levels shown on Figure 5-35 are irrelevant to the discussion of ISWs since they do not map the shallow water table. The use of piezometric head from confined aquifers should be eliminated from these ISW mapping efforts, since they do not adequately reflect the position of the true water table (see last paragraph on p. 38 of Salinas Valley Basin ISP).		These are maps of groundwater levels in the principal aquifers.	TNC comments - Salinas 180-400ft.pdf
W-89					11/25/2019	TNC	It is unclear on Figure 5-35 whether missing groundwater levels along certain reaches of the Salinas River are due to groundwater levels >20 feet bgs or due to data gaps in groundwater levels. Mapping the position of wells used for the interpolation of groundwater elevation data used to map groundwater level contours near surface water would help provide further clarification.		The groundwater level maps were adopted from MCWRA, who does not provide well locations for their maps. In accordance with SGMA regulations, future groundwater elevation maps will provide well locations.	TNC comments - Salinas 180-400ft.pdf
W-90	5			5-35	11/25/2019	TNC	Please elaborate on how depth to groundwater contours were developed for Figure 5-19 of the Salinas Valley Basin ISP and on Figure 5-35 of the GSP.		Groundwater contours were adopted directly from maps previously developed by MCWRA. These previously developed maps were considered the best available data for historical groundwater level contours.	TNC comments - Salinas 180-400ft.pdf
W-91					11/25/2019	TNC	We recommend mapping the gaining and losing reaches onto Figure 5-19 (Salinas Valley Basin ISP) using the data from Figure 5-23 (Salinas Valley Basin ISP).		Comment noted. We will review this in the ISP.	TNC comments - Salinas 180-400ft.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-92	5.6				11/25/2019	TNC	Please present or refer to a depth to groundwater map in this section. Refer to our comments on Section 5.6 Interconnected Surface Water above. Please ensure that only wells screened in the shallow unconfined aquifer are used to develop the depth to groundwater maps. Using “depth to groundwater” measurements from confined aquifers is mapping piezometric head of the confined aquifer and not detecting groundwater conditions in the unconfined aquifer that is supporting the ecosystem. The GSP refers to data gaps in water levels in the shallow unconfined aquifer. If there are insufficient groundwater level data in the shallow aquifer, then the GDE polygons in these areas should be included as GDEs in the GSP until data gaps are reconciled in the monitoring network.		Figure 5-35 is a depth to groundwater map. As noted in Appendix 4A, the conservative approach to identifying potential GDEs used in this GSP, "clearly has the potential to overestimate the number of GDEs in the Subbasin."	TNC comments - Salinas 180-400ft.pdf
W-93					11/25/2019	TNC	Please clarify how the light blue shaded area shown in Figure 4A-3 (depth to water < 30 ft south of Chualar) is used for the GDE analysis. The figure implies an incorrect interpretation of the GDE Guidance		The methodology is described in Appendix 4A. Only areas south of Chular or near the coast have groundwater elevations within 30 feet of ground surface.	TNC comments - Salinas 180-400ft.pdf
W-94					11/25/2019	TNC	Please use care when considering rooting depths of vegetation. Please list the species in each GDE, and whether the GDE was eliminated or retained based on the 30-foot standard, and provide evidence for the decision.		Comment noted.	TNC comments - Salinas 180-400ft.pdf
W-95					11/25/2019	TNC	While depth to groundwater levels within 30 feet are generally accepted as being a proxy for confirming that polygons in the NC dataset are connected to groundwater, it is highly advised that seasonal and interannual groundwater fluctuations in the groundwater regime are taken into consideration. Utilizing groundwater data from one point in time (e.g., Fall 2013) can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Based on a study we recently submitted to Frontiers in Environmental Science Journal, we've observed riparian forests along the Cosumnes River to experience a range in groundwater levels between 1.5 and 75 feet over seasonal and interannual timescales. Seasonal fluctuations in the regional water table can support perched groundwater near an intermittent river that seasonally runs dry due to large seasonal fluctuations in the regional water table. While perched groundwater itself cannot directly be managed due to its position in the vadose zone, the water table position within the regional aquifer (via pumping rate restrictions, restricted pumping at certain depths, restricted pumping around GDEs, well density rules) and its interactions with surface water (e.g., timing and duration) can be managed to prevent adverse impacts to ecosystems due to changes in groundwater quality and quantity under SGMA. We highly recommend using depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. (see letter for more details)		Our ability to identify areas of interconnected surface water will be improved when the SVIHM becomes available.	TNC comments - Salinas 180-400ft.pdf
W-96					11/25/2019	TNC	Decisions to remove, keep, or add polygons from the NC dataset into a basin GDE map should be based on best available science in a manner that promotes transparency and accountability with stakeholders. Any polygons that are removed, added, or kept should be inventoried in the submitted shapefile to DWR, and mapped in the plan. We recommend revising Figure 4-10 to reflect this change.		Interim maps are included in Appendix 4A. Figure 4-10 is intended to only show the final set of potential GDEs.	TNC comments - Salinas 180-400ft.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-97					11/25/2019	TNC	Please include a description of the types of species (protected status, native versus non-native), habitat, and environmental beneficial uses (see Worksheet 2, p.74 of GDE Guidance Document) and assign an ecological value to the GDEs.		This will be undertaken should the GSA opt to undertake additional GDE analysis.	TNC comments - Salinas 180-400ft.pdf
W-98					11/25/2019	TNC	Are any of the wells from the MCWRA program (described in Section 5.1.1 of the Salinas Valley Basin ISP) close enough (<1 km) to GDEs and screened in the shallow portions of the aquifer to characterize historical and current groundwater conditions for each GDE? If data gaps exist, they should be discussed in Chapter 5.		This has been identified as a data gap that will be addressed during implementation.	TNC comments - Salinas 180-400ft.pdf
W-99					11/25/2019	TNC	The GDE Pulse web application developed by The Nature Conservancy provides easy access to 35 years of satellite data to view trends of vegetation metrics, groundwater depth (where available), and precipitation data. This satellite imagery can be used to observe trends for NC dataset polygons within the 180-400 Foot Aquifer area (Figure 1). Over the past 10 years (2009-2018), NC dataset vegetation polygons have experienced adverse impacts to vegetation growth and moisture which are correlated to declines in groundwater levels (e.g., as indicated by wells GZWA21202, CHEA21208).		Comment noted	TNC comments - Salinas 180-400ft.pdf
W-100					11/25/2019	TNC	In a future draft of the document, please provide more details on how the needs of environmental beneficial users (GDE and ISW ecosystems) will be balanced with other water users in the basin.		In accordance with the SGMA regulations, the GSP currently describes the assessment of whether surface water depletions are significant and unreasonable.	TNC comments - Salinas 180-400ft.pdf
W-101					11/25/2019	TNC	Please provide or crossreference this information, including reference to publicly available information regarding GDEs that was researched and how environmental stakeholders were engaged.		All cited material will be uploaded to the SGMA Portal when the GSP is uploaded. Environmental stakeholder engagement is addressed in Chapter 11.	TNC comments - Salinas 180-400ft.pdf
W-102					11/25/2019	TNC	The shallow aquifer is indeed a principal aquifer that needs SMC established to prevent adverse impacts to surface water beneficial users. SGMA defines principal aquifers as "aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems" [23 CCR § 351 (aa)]. In addition, more nested/clustered wells are needed in the 180-400 Foot Aquifer area to determine vertical groundwater gradients and whether pumping in the deeper aquifers are causing groundwater levels to lower in the shallow aquifer and deplete surface water.		Comment noted. In accordance with DWR Bulletin 11, The GSP does not identify the shallow sediments as a principal aquifer.	TNC comments - Salinas 180-400ft.pdf
W-103					11/25/2019	TNC	As previously mentioned in our April 11 letter regarding Chapter 5 of the Draft GSP, the shallow aquifer in the 180/400 Foot Aquifer and Monterey Subbasins are likely to be supporting GDEs and interconnecting with the Salinas River. Thus, pumping in deeper aquifers can still cause adverse impacts to environmental beneficial users reliant on shallow groundwater. Even if pumping is not occurring in shallow groundwater aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, especially those that support springs, surface water and GDEs for current and future uses.		The sustainable management criteria state that there will not be any increased depletion of surface water from the Salinas River due to pumping from the 180 for 400-Foot aquifers.	TNC comments - Salinas 180-400ft.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-104					11/25/2019	TNC	Several published references indicate that the 180-Foot aquifer is in direct hydraulic communication with the overlying Dune Sand Aquifer or Shallow Alluvial Aquifer where the Salinas Valley Aquitard is thin or absent.7 These same references indicate aquitards within the 180/400 Foot aquifer system are known to be locally discontinuous. In addition, the fact that the Salinas is a losing stream and that 67,000 acre feet are recharged from the stream to the groundwater basin in an average year strongly suggests that the shallow aquifer is hydraulically connected to the underlying pumped aquifer systems.		The GSP notes that the Salinas Valley Aquitard is thin or absent in places. However the depth to groundwater map shown on Figure 5-35 shows that groundwater elevations in the 180-Foot aquifer are high enough to be hydraulically connected to the Salinas River in only limited areas.	TNC comments - Salinas 180-400ft.pdf
W-105	8.10.2				11/25/2019	TNC	Please include a discussion of how baseline conditions, current trends and potential adverse impacts to GDEs were considered in the definition of significant and unreasonable conditions and establishment of Minimum Thresholds and Measurable Objectives. A discussion of applicable state, federal and local standards, policies and guidelines applicable to the GDE species and habitats identified should also be provided. The section should explain how, in light of the nature and condition of the GDEs, these Sustainable Management Criteria will prevent undesirable results related to damage to GDE resources. Any data gaps and the means to address them should be identified.		Chapter 8 includes a discussion of how minimum thresholds effect ecological users for each of the six sustainability indicators.	TNC comments - Salinas 180-400ft.pdf
W-106					11/25/2019	TNC	Please expand the listing of beneficial uses and users to address GDEs and ecosystems that are located adjacent to the river and its tributaries. The discussion of ecological land uses and users should include GDEs and ecosystems adjacent to the river and its tributaries, and their dependence on interactions with ISW and groundwater.		The GSP addresses GDEs as required by regulation. The Board of Directors was informed during open session that they have the ability to expand the definition of significant and unreasonable groundwater elevations to address GDEs	TNC comments - Salinas 180-400ft.pdf
W-107					11/25/2019	TNC	We recommend the streamflow requirements set by the NMFS should be explicitly stated or referenced in the GSP. In addition, any other state, federal or local standards, requirements and guidelines pertaining to the GDE habitats and species identified in the NC dataset or the list of species included in Attachment C should also be discussed or referenced.		As discussed in Section 8.11.1, The U.S. Army Corps of Engineers has re-initiated consultation with the National Marine Fisheries Service on the Biological Opinion. No flow requirements are presently in place, even though MCWRA continues to operate in accordance witht he 2007 biological opinion as a safe harbor practice. The GSP is not required to meet flow requirements, it is only required to assess whether depletions due to pumping are significant and unreasonable. Therefore, there is no need to list flow requirements in this document. The Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River (MCWRA, 2005) will be included in the list of references uploaded to DWR during GSP submission.	TNC comments - Salinas 180-400ft.pdf

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W-108					11/25/2019	TNC	Model estimates should be monitored more closely than every five years in order to detect potentially significant effects in a time frame that allows for rapid response and alleviation of ecosystem decline. Please discuss how the minimum threshold will be measured in a way that assures protection of GDEs and instream environmental beneficial users.		The GSP will be addressed regularly in accordance with SGMA regulations. The modeling approach to assessing depletions due to pumping is the approach proposed in the DWR BMP for monitoring.	TNC comments - Salinas 180-400ft.pdf
W-109					11/25/2019	TNC	It is noteworthy that the table does not include a single well completed in the Shallow Alluvial or Dune Sand Aquifer. Please identify the lack of shallow aquifer monitoring wells as a data gap, and cross reference your plans discussed in Chapter 7 to install a sufficient number of shallow monitoring wells to assess potential undesirable results to GDEs.		No wells are included for the shallow sediments because they do not constitute a principal aquifer. However, shallow wells along the Salinas River that will help estimate river depletions are identified as a data gap, and will be installed during implementation.	TNC comments - Salinas 180-400ft.pdf
W-110	8.6.2.3 and 8.7.2.2				11/25/2019	TNC	Please revise these sections to include a discussion regarding the effects of potential groundwater level declines on GDEs and limitations of groundwater level monitoring alone to assess potential undesirable results to GDEs.		In accordance with SGMA regulations, chapter 8 includes a discussion of how minimum thresholds effect ecological users for each of the six sustainability indicators.	TNC comments - Salinas 180-400ft.pdf
W-111	8.6.2.5 and 8.7.2.4				11/25/2019	TNC	Please include a discussion explaining how GDEs, ISWs and recreational uses may benefit or be protected by implementation of the proposed Minimum Thresholds and Measurable Objectives.		In accordance with SGMA regulations, chapter 8 includes a discussion of how minimum thresholds effect ecological users for each of the six sustainability indicators.	TNC comments - Salinas 180-400ft.pdf
W-112	8.6.4.3		8-26		11/25/2019	TNC	This section should be revised to use these data as a basis for addressing how the proposed compliance strategy will address significant and undesirable decline of GDEs at the spatial scale already observed in the GDE Pulse data.		The undesirable result includes the additional clause that no one well will exceed it's minimum threshold for more than two consecutive years to avoid ongoing, localized water level declines.	TNC comments - Salinas 180-400ft.pdf
W-113	7	7-2	7-4		11/25/2019	TNC	This fact should be acknowledged with a cross reference to Section 7.2.4 which describes the proposed actions to remedy this situation.		Section 7.2.4 only addresses the groundwater level monitoring plan for principal aquifers, and therefore is not relevant as a cross reference for the shallow sediments. Shallow wells along the Salinas River that will help estimate river depletions are identified as a data gap for the surface water depletion SMC.	TNC comments - Salinas 180-400ft.pdf
W-114	7.7		7-29		11/25/2019	TNC	Please revise this section to (1) reflect what is known and published regarding potential surface-groundwater interactions in the subbasin and related groundwater level and budget trends, (2) identify the existing data gaps, and (3) provide recommendations for an adequate number of monitoring wells to assess surface-groundwater interaction and shallow groundwater level trends.		Text has been added to discuss the uncertainty regarding the fate of surface water depletions.	TNC comments - Salinas 180-400ft.pdf
W-115					11/25/2019	TNC	Please specify what other monitoring data and methods will be implemented to inform a determination whether significant and unreasonable impacts to GDEs are occurring, and explain how they will adequately meet the requirements of 23 CCR §354.34(c)(6) relative to GDEs and ISWs.		The groundwater model will be used to assess whether future surface water depletions exceed current rates, and therefore become unreasonable.	TNC comments - Salinas 180-400ft.pdf
W-116					11/25/2019	TNC	In Appendix 7B, please include monitoring protocols that meet the requirements of 23 CCR §354.34(c)(6) relative to GDEs and ISWs.		Because there is no specific GDE monitoring other than estimating surface water depletion rates, no monitoring protocols are required.	TNC comments - Salinas 180-400ft.pdf
W-117	9.1		9-1		11/25/2019	TNC	Please include environmental benefits and multiple benefits as criteria for assessing project priorities.		The SVBGSA will attempt to address multiple benefits as the list of projects are refined.	TNC comments - Salinas 180-400ft.pdf
W-118	9.3		9-9 to 9-21		11/25/2019	TNC	Please consider adding Management Actions which include education and outreach for protection of GDEs and ISWs as well as specific management of these ecosystems and the species they provide for.		Text has been added to the existing education and outreach management action.	TNC comments - Salinas 180-400ft.pdf

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W-119	9.4				11/25/2019	TNC	Section 9.4.1 lists "Direct Recharge through recharge basins or wells" as one of the four major types of projects that can be developed to supplement the 180/400-Foot Aquifer Subbasin's groundwater supplies or limit seawater intrusion. However, only one of this project type is presented, as an Alternative Project. The description of Measurable Objectives for Alternate Project 2 (Recharge Local Runoff from Eastside Range) only identifies benefits to groundwater elevation, groundwater storage, land subsidence, and groundwater quality. Because maintenance or recovery of groundwater levels or construction of recharge facilities may have potential environmental benefits, it would be advantageous to demonstrate multiple benefits from a funding and prioritization perspective. For Alternate Project 2, please consider stating how ISWs and GDEs will benefit or be protected, or what other environmental benefits will accrue.		The comment is inaccurate: priority projects 7, 8 and 9 are all direct recharge projects. Alternate project 2 is included only for Valley-wide completeness, but does not directly impact the 180/400-Foot Aquifer Subbasin. This project will be discussed in more detail in the Eastside Subbasin GSP.	TNC comments - Salinas 180-400ft.pdf
W-120	9.4				11/25/2019	TNC	If ISWs and GDEs will not be adequately protected by the projects listed, please include and describe additional management actions and projects targeted for protecting ISWs and GDEs.		Existing projects and actions, including priority and alternate projects and actions, are sufficient to avoid all undesirable results.	TNC comments - Salinas 180-400ft.pdf
W-121					11/25/2019	TNC	Please consider identifying if there is habitat value incorporated into the design and how the recharge basins will be managed to benefit environmental users. Grant and funding considerations for SGMA-related work may be given to multi-benefit projects that can address water quantity as well as provide environmental benefits. Therefore, please include environmental benefits and multiple benefits as criteria for assessing project priorities.		The SVBGSA will attempt to address multiple benefits as the list of projects are refined. The clear example is project #1 - invasive species removal.	TNC comments - Salinas 180-400ft.pdf
W-122	3.4.1				11/25/2019	Chevron	It is stated in the GSP, that the 180/400-Foot Aquifer Sub-basin has three water source types: groundwater, surface water, and recycled water. However, there is inconsistent use of terminology: both "recycled" and "reclaimed" water appear to be used interchangeably in the document. Chevron recommends the consistent use of the term reclaimed as opposed to recycled. While the terms are synonyms, reclaimed better describes the conversion of wastewater into water that can be reused for other purposes.		All mentions of reclaimed water have been changed to recycled water for consistency.	180_400-Foot_Aquifer_Subbasin_GSP_Chevron_Comments.pdf
W-123					11/25/2019	Chevron	Chevron recommends that the SVBGSA include a fourth category, that being "desalinated water". This will include the desalinated new water that is expected to be produced by the California American Water (Cal-Am) Monterey Peninsula Water Supply Project. It will also allow for the inclusion of water sources created via reverse osmosis or equivalent processes.		This will be considered in the future, but at this point is not included because there currently are not any sources of desalinated water in the Subbasin.	180_400-Foot_Aquifer_Subbasin_GSP_Chevron_Comments.pdf
W-124	3.9				11/25/2019	Chevron	Chevron recommends that the California American Water (Cal-Am) Monterey Peninsula Water Supply Project also be included in this section. While not reclaimed water, the Cal-Am desalination project will represent a new source of water that will be used for urban uses in the Monterey Peninsula, which will offset water demand from the other water sources within the Sub-basin.		There is uncerainty regarding whether this project will move forward, so this was not included at this point.	180_400-Foot_Aquifer_Subbasin_GSP_Chevron_Comments.pdf

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W-125	6				11/25/2019	Chevron	The "future" water budget is based on output from a groundwater model still under developed by the USGS. Chevron notes that the Salinas Valley Integrated Hydrologic Model (SVIHM) has not been made available for public review. Chevron formally requests that a copy of the model and its relevant input parameters be provided for review. Without external review, the water budget lacks foundation for broad stakeholder acceptance and becomes a matter of faith.		USGS will release the SVIHM review in 2020, at which point stakeholders can review it.	180_400-Foot_Aquifer_Subbasin_GSP_Chevron_Comments.pdf
W-126	6				11/25/2019	Chevron	Although this GSP is for the 180/400-Foot Aquifer Sub-basin, the SVIHM is dependent on flow parameters for the entirety of the Salinas Valley Basin. Chevron notes that the amount of monitoring well data at the southern boundary of the Salinas Valley - Upper Aquifer Sub-basin is sparse (between Monterey and San Luis Obispo counties). This could be a consequential source of error in the USGS model.		Comment noted. The USGS is working on reducing error within the model.	180_400-Foot_Aquifer_Subbasin_GSP_Chevron_Comments.pdf
W-127	6.2.2				11/25/2019	Chevron	Chevron notes that the Groundwater budget inflows does not include desalinated water and recommends that it be added to the "Inflows" budget. This will account for new source of desalinated water expected from projects like the California American Water (Cal-Am) Monterey Peninsula Water Supply Project		Comment noted.	180_400-Foot_Aquifer_Subbasin_GSP_Chevron_Comments.pdf
W-128	6.11				11/25/2019	Chevron	In answer to a Chevron question posed at a meeting of the Advisory Committee, it was learned that the USGS model has not been history matched using actual data from prior years. Replicating historical data seems an obvious first step in validating the efficacy of the model. Accordingly, what is the technical foundation for the expressed confidence in the SVIHM Model?		The water budgets will be updated when USGS releases the SVIHM in 2020. It was the best available data while the future water budget was under development.	180_400-Foot_Aquifer_Subbasin_GSP_Chevron_Comments.pdf
W-129		7-5			11/25/2019	Chevron	Table 7-5 contains placeholders for data not yet populated. Will data for desalination projects be include in the data field labeled "Recharge"? If not, Chevron recommends that an additional column be added to capture desalination projects.		Comment noted. This data is to be populated in the future, after GSP submittal.	180_400-Foot_Aquifer_Subbasin_GSP_Chevron_Comments.pdf
W-130					11/25/2019	The Otter Project	The Plan is a plan to create a plan at a later date. The SGMA was passed by the California legislature in 2014 and GSAs have had five years to form and create plans for priority watersheds. The Draft GSA is incomplete. Over and over again the Draft Plan uses “Details to be Developed Later.” This is unacceptable at this late date. Instead of using best available data and modeling, the Draft GSP proposes to wait for a USGS model that has been promised for -- literally -- years. Instead of making a good effort to create a plan around the two existing models that call for reduction of extraction of 22 and 45 percent (in addition, see comment two below), the SVBGSA proposes to wait for a model that they hope will be more generous. As noted, the Central Coast is the region most reliant on groundwater, critically over-drafted, and as noted by numerous studies of nitrate contamination,3 perhaps one of the most contaminated in the state. Waiting is not an option.		Comment noted. The GSP establishes a clear definition of sustainability in the SMC chapter; and presents the tools SVBGSA will use to achieve sustainability in the Projects and Actions Chapter. While many details on the projects and actions have yet to be finalized, this is not a plan to create a plan.	TOP GSP comments.pdf

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W-131					11/25/2019	The Otter Project	The amount of "Usable Storage" is over-estimated by 21 to 32 percent. As stated in section 5.3, the definition of usable storage is: "[T]he annual average increase or decrease in groundwater that can be safely used for municipal, industrial, or agricultural purposes." But the same paragraph goes on to state: "Change in usable groundwater storage is the sum of change in storage due to groundwater level changes and the change in storage due to seawater intrusion." "Usable" does not mean, just for agriculture. Just as saltwater is not available for agricultural use, nitrate contaminated groundwater is not available for municipal use. As outlined in the executive summary, three different studies have shown the lower Salinas basin groundwater to be heavily contaminated with nitrates. Agricultural fields require the application of literally hundreds of pounds of chemicals per acre.4 The impact of not considering nitrate laden groundwater is to allow pumping far above the seven-percent reduction mentioned is the Draft GSP. This pumped groundwater will then percolate through the chemical laden soils and further contaminate groundwater. The actions or inactions of the SVBGSA will directly impact water quality; by allowing excessive pumping water quality will be degraded, an action considered an "undesirable result" not allowed under the SGMA. This SVBGSA action or inaction could also violate the California Nonpoint Source Pollution Policy recently successfully litigated in the trial and appellate courts by Monterey Coastkeeper.		Usable is interpreted to mean usable by at least one group of groundwater users. Therefore, groundwater with elevated nitrates is still considered usable groundwater.	TOP GSP comments.pdf
W-132					11/25/2019	The Otter Project	Comment Three: Nitrate laden groundwater plumes are ignored in the Draft GSA. The Draft GSA states at 7.5: " There are no known significant contaminant plumes in the GSP area, therefore the monitoring network is monitoring non-point source pollution and naturally occurring water quality impacts." This statement contradicts studies performed by the Monterey County Water Resources Agency, a partner agency for implementation of the GSP. Graphically, nitrate plumes in the 180/400 aquifers are demonstrated in the following illustration extracted from a MCWRA report (see document for figure). Increases in nitrate concentration are results of contamination plumes. Monitoring of plumes will most likely require a greater density of monitoring site.		The statement about significant contaminant plumes refers to remediation sites associated with point source contamination. The GSP acknowledges that there are elevated nitrates broadly distributed throughout the Subbasin, and a map of the elevated nitrates is included in the GSP.	TOP GSP comments.pdf

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					11/25/2019	The Otter Project	Comment Four: The cost of priority projects is greatly underestimated. Not all projects were evaluated, but review of the highest priority project, Invasive Species Eradication, revealed a gross under-estimation of the costs of the project. One must wonder if all project costs are under-estimated. The concept is to remove the invasive reed Arundo donax and benefit from the resulting evapotranspiration water savings. Without question, removing Arundo is desirable and would have environmental benefits. However it is extremely expensive as evidenced by the very high cost of the 2014 removal of 75 acres; approximately 1500 acres remain. Referring to the removal project the Draft GSP states: "Implementation costs for these projects are typically capital intensive with only minor long-term maintenance costs. Thus, the water supply benefit/cost ratio can increase significantly over the long term." The concept that removal of 1500 acres of Arundo is financially feasible is a fallacy and the idea that the long term maintenance cost will be minor is equally flawed. As has been experience during the initial roll-out of the project, not all landowners are cooperative and Arundo will re-infest areas very quickly. Continuous removal will be required. The benefits may be exaggerated as well: removal of Arundo do not result in bare dirt, the Arundo is replaced by other plants that could use a very significant amount of water, just as the Arundo did.		Comment noted. Costs and associated benefits will be refined as the projects are refined during GSP implementaiton.	TOP GSP comments.pdf
W-134					11/25/2019	The Otter Project	The Tiering Structure of the pumping allowances will be ineffective – for many years – in reducing over-extraction of groundwater. The Draft GSP states that sustainable pumping allowances will be developed over the first three years. We believe this first step is structured to take far longer. We believe determination of the allowances will take longer because of the structure of the board, and/or allowances will be overgenerous in pro-rata allocation and underpriced (limiting management actions) because of the structure of the board. Once the sustainable pumping allowances are determined, the tiering structure is designed to not meet the goal of sustainable balance within 20 years. As stated on page 9-5, the Tier Two transitional pumping allowance will be phased out over 10 to 15 years. The result of three years of sustainable allowance planning and a 10 to 15-year transition means that it takes 13 to 18 years to even start to come to balance. Also as stated on page 9-5, "Maximum annual (calendar year) pumping between 2012 and 2017 will be used to determine transitional pumping allowances." In other words, the Draft GSP requires absolutely no reduction in pumping from the over-extraction-status-quo for the first 13 to 18 years and then "overnight" growers will be required to meet their sustainable pumping allowance. We believe, the tiering structing leads to growers simply planning to pay supplemental charges instead of reducing pumping. Again, we must state that because of the board voting structure, the growers control the fees.		The tiered water charges framework is designed to encourage, but not demand, pumping reductions that meet the 20-year sustainability goal. Any groundwater pumper will have the option of paying supplemental charges instead of reducing pumping. The funds from these supplemental charges will be used to implment additional projects and retain teh Subbaisn's groundwater balance.	TOP GSP comments.pdf

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W-135					11/25/2019	The Otter Project	The ability to "Carry over" (9.2.3) or"Transfer" (9.2.4) saved water defeats the entire purpose of the Draft GSP and in addition, carry over water is simply "paper water" that will likely no longer exist in the basin. Water moves. Pumping less that the allocation is a very good thing, but that water allowance can not be carried over into a future year as that water has moved downslope and may no longer be in the watershed.		The SVBGSA has the option to either implement the carryover options or not. Carryover can be reduced annually to account for water that leaves the Subbaisn.	TOP GSP comments.pdf
W-136					11/25/2019	Rincon Farms	How are water rights, specifically appropriated water rights being considered in the plan for the 180/400 Sub-Basin? Especially when it comes to allocation and pumping. What are the details or ideas on specifics for well extraction limits? Can previously held water rights be mandated with limits? Legal ramifications will need to be considered. Specifically in Gonzales, please consider the jurisdiction of the former Gonzales Irrigation Company- there are special preliminary water rights in this region from this case. These pre-1914 water rights could take precedent over other rights on other parcels in Monterey County. In drought instances ifthere is a shortage of water, holders of these rights may have first call on river water even if it is not taken directly from the river. (See letter to Clarence "Toots" Vosti and map enclosed). Supporting the invasive species issue in the Salinas River should not just stop at Arundo donax- a more thorough examination and analysis of the species in the river should conclude other finds that with their removal can also gain additional water to help with replenishing our aquifer. Other ways to help penetration and replenishment would be additional clearing of our river channels.		Water rights will be considered and analyzed as projects and management actions are further refined and designed in the implementation phase of the GSP.	Public Comment_Rincon Farms.pdf
W-137					11/25/2019	Rincon Farms	How will this plan handle well drilling rights or replacement wells? In cases of financial hardships, there should not be a penalty or cease of water rights and/or access. Be aware of Ag Order 4.0 on its jurisdiction of groundwater. Part of the new regulations, specifically in Table 5, is crossing into SGMA territory by requiring irrigated riparian habitats/buffers. Most of the irrigated water in the Salinas Valley is groundwater. It is in the best interest of landowners, farmers and SVBGSA to monitor this cross over of regulatory agencies. And a final note, please consider or make sure to be aware of the SVPOLA- Salinas Valley Property Owners for Lawful Assessments v. County of Monterey (Monterey County Superior Court Case No. M66890). From this court case there may need to be reconsideration of the responsibility for salt water intrusion for those represented land parcels whose owners won the ruling of this case. Most of these parcels are in the southern portion of the Pressure Area, which does not fall under the same category or jurisdiction of other parcels in the Pressure Area.		Well drilling rights and replacement wells will be considered in the implementation phase of the GSP. Implementation of the GSP will work together with Ag Order 4.0 and other areas of potential regulatory overlap.	Public Comment_Rincon Farms.pdf

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W-138	5			5-23, 5-24	11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	Based on the seawater intrusion maps developed by the MCWRA, there is significant uncertainty regarding the extent of seawater intrusion in the northern and southern portions of the impacted area for both the 180-Foot and 400-Foot Aquifers.2 These uncertainties are not reflected in the draft GSP's presentation of MCWRA's historical seawater intrusion boundaries (Figure 5-23 and 5-24), or in the draft GSP's adoption of these boundaries as the basis for its seawater intrusion MTs. Therefore, it is not known how far seawater has actually intruded in the areas of Castroville and north of Castroville (DACs) and it is not known to what degree the proposed seawater intrusion MTs are protective of beneficial users in these areas. This uncertainty is not clearly and transparently reflected in the draft GSP, which is of particular significance as these data are used as the basis for MTs.		The GSP includes an action to develop a seawater intrusion working group to address the uncertainty in the extent and location of seawater intrusion.	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf
W-139	7	7-2			11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	The draft GSP includes hydrographs for numerous wells in the 180-Foot and 400-Foot Aquifers, but, as the draft GSP acknowledges, does not include any such data for the Deep Aquifer, which represents a significant data gap. Well 13S02E19Q003M,3 listed in Table 7-2 of the draft GSP, is part of the California Statewide Groundwater Elevation Monitoring (CASGEM) monitoring network and water level data are available. The draft GSP should at least consider and include data from this well. While limited data are available for this well, as shown in the hydrograph below, water levels at this well show a declining trend over the available period (2014 – 2019). In order to develop a better understanding of the subbasin, the interaction between aquifers, and the conditions of the Deep Aquifer, the Salinas Valley Basin Groundwater Sustainability Agency (SVGSA) should work to fill this data gap and at a minimum, should include the limited available data in the draft GSP.		The hydrograph has been added as existing data for the deep aquifer.	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf
W-140	8-6				11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	The review of water quality data in the groundwater conditions section of the draft GSP (Section 5.5) is very limited and focused almost entirely on nitrate. The draft GSP identifies numerous constituents that have been detected in groundwater above drinking water standards, but, with the exception of nitrate, does not present this data spatially or even in tabular format. Even though the draft GSP sets water MTs for these constituents (Table 8-6 through 8-9), the supporting data are not presented, and no analyses of spatial or temporal water quality trends are presented. This does not present a clear and transparent assessment of current water quality conditions in the subbasin with respect to drinking water beneficial use (23 CCR § 354.16(d)). It is therefore recommended that the GSP include specific discussions supported by maps and charts, of the spatial and temporal water quality trends for constituents that have exceeded drinking water standards.		The GSP is based on best available data. No existing maps are available for the mapped extent of most constituents of concern.	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf

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W-141	4.4.1				11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	The draft GSP identifies three principal aquifers, i.e., the 180-Foot Aquifer, the 400-Foot Aquifer, and the Deep Aquifers, and notes that the subbasin's "aquitards and aquifers have long been recognized, and are the distinguishing features of this subbasin" (Section 4.4.1). However, despite this, the draft GSP lumps all three aquifers together in its evaluation of the water budget, and does not appear to account for lag time and flows between aquifers, or the effects of differential pumping rates and changes in pumping rates between aquifers. Given this, it is not clear that the projected water budget, as developed in the draft GSP, is sufficiently robust and representative of subbasin conditions for purposes of fully assessing sustainable yield.		The water budget is developed for the entire Subbasin in accordance with SGMA regulation 354.18(a)	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf
W-142	6	6-31			11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	The projected sustainable yield values presented in Table 6-31 of the draft GSP reflect a roughly 7% reduction in groundwater pumping, but still reflect an annual change in storage deficit of approximately 4,700 acre-feet per year (AFY). It is not clear how the sustainable yield of a subbasin already severely impacted by seawater intrusion can include continued decline in storage, particularly when the proposed inland groundwater flow gradients under the water level sustainable management criteria (SMCs) will allow for continued seawater intrusion into the subbasin. This sustainable yield value also does not take into account of the effects of a hydraulic barrier, which the draft GSP highlights as necessary to achieve the seawater intrusion SMCs. 5 Thus, the sustainable yield values presented in Section 6.10.5 do not appear to be reflective of the sustainability conditions outlined elsewhere in the draft GSP. It is important that the sustainable yield values take into consideration all factors that will lead to long-term sustainability of the subbasin, especially given that these values form the basis for the Water Charges Framework described in Section 9.2.		Text has been added to explain that the sustainable yield is a long term management number, not the amount of pumping needed to stop current seawater intrusion. The sustainable yield assumes seawater intrusion has been halted. In other words, the future sustainable yield is the sustainable yield once actions have been taken to reach measureable objectives and avoid undesirable results. Prior to the future sustainable yield there will need to be actions taken to come to sustainability.	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf

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W-143	8				11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	In its discussion of the relationship between the water level MTs to other sustainability indicators, Section 8.6.2.3 of the draft GSP indicates that "A significant and unreasonable condition for seawater intrusion is seawater intrusion in excess of the extent delineated by MCWRA in 2017. Lower groundwater elevations, particularly in the 180- and 400-Foot Aquifers, could cause seawater to advance inland. The groundwater elevation minimum thresholds are set at or above existing groundwater elevations. Therefore, the groundwater elevation minimum thresholds will not exacerbate, and may help control, seawater intrusion." However, as shown in Figure 8-2 and 8-3 of the draft GSP, the proposed water level MTs are set at 0 feet above mean sea level (ft MSL) along the coastline, and decrease farther east for both the 180- and 400-Foot Aquifers. Figure 8-2 and 8-3 are excerpted below and shown alongside the August 2017 groundwater level contours (Figure 5-3 and 5-5 from the draft GSP). As illustrated here, while the groundwater flow gradient would be less steep, the direction is consistent with the conditions that have resulted in seawater intrusion. Given that the inland water level MTs are below sea level an easterly groundwater flow gradient will remain and seawater intrusion will continue. While the rate of seawater intrusion would likely be slower than observed historically, even if the water level MTs were met today, seawater intrusion will still continue within the subbasin, threatening the drinking water supplies for DACs and other vulnerable populations...(see letter for remainder of comment).		The minimum thresholds are set independently for each sustianability indicator. All six undesirable results must be avoided simultaneously, therefore there is no need to predicate the groundwater elevation undesireable result on the seawater intrusion undesirable result. Furthermore, groundwater elevations will be different if seawater intrusion is manager through an extraction barrier, or if it is managed through significant managed recharge.	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf
W-144	8	8-2			11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	Charts 2a and 2b below reflect the proposed SMCs (per Table 8-3 of the draft GSP) for the 180-Foot and 400-Foot Aquifer water level representative monitoring wells (RMWs) located in and near the areas of seawater intrusion (wells identified on excerpted Figures 8-2 and 8-3 above). If the measurable objectives (MOs) are met, this represents a relatively small decline in water levels from current conditions in most wells, and in some wells an increase in water levels. However, the MTs in most cases represent a substantial decline in water levels from current conditions, to levels well below sea level. Given that current conditions are resulting in significant seawater intrusion conditions, it is unclear from the draft GSP how such declines in water levels will result in sustainability for the beneficial uses and users of the subbasin, and how seawater intrusion will be limited to 2017 limits (i.e., the seawater intrusion MTs).		The measurable objectives are set independently for each sustianability indicator. All six undesirable results must be avoided simultaneously, therefore there is no need to predicate the groundwater elevation undesirable result on the seawater intrusion undesirable result.	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf

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W-145					11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	The draft GSP definition for degraded water quality identifies constituents of concern (COCs) as those that have an established level of concern or affect crop production and have been found in the subbasin above those levels of concern (Section 8.9.2). Further, the list of monitored COCs is dependent on the water quality constituent that each type of well is monitored for independent of the Sustainable Groundwater Management Act (SGMA). As illustrated in Tables 8-6 through 8-9 of the draft GSP, many COCs have been detected in municipal supply wells that have not been detected in domestic or small system wells, because these wells are not routinely tested for as many constituents as municipal supply wells. Given this selective sampling and establishment of MTs for water quality constituents, the draft GSP does not present a monitoring network that is sufficient to monitor for impacts to beneficial users who rely on domestic wells and small water systems for drinking water (pursuant to 23 CCR § 354.34(b)(2)) and the draft GSP does not fully evaluate how these selective MTs will affect the interests of these beneficial users (pursuant to 23 CCR §354.28(b)(4)).		The monitoring system includes both large municipal and small water systems.	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf
W-146					11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	DACs and public water systems in the subbasin, and the seawater intrusion MO and MTs. There are no water level RMWs located in the northernmost portion of the subbasin, in an area with a high concentration of domestic well users. Thus, the water level monitoring network is inadequate to properly monitor for these sensitive beneficial users, as required under 23 CCR §354.34 (b)(2).		Figures 7-4 and 7-5 identify areas with data gaps. These data gaps will be filled by measuring either existing wells or installing new wells.	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf
W-147	3				11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	Figures 3A and 3B show the estimated water decline from current conditions that would occur at each RMW if water levels reach the MTs for the 180-Foot and 400-Foot Aquifers, respectively. As shown in Figure 3B, the MTs for two RMWs (14S/02E-03F03 and 14S/02E-12B03) located along the 2017 seawater intrusion line/seawater intrusion MT are more than 20 feet below current groundwater conditions. The GSP should explain how continued water level declines in areas already or imminently impacted by seawater intrusion will result in sustainable conditions for beneficial users.		The minimum thresholds are set independently for each sustianability indicator. All six undesirable results must be avoided simultaneously, therefore there is no need to predicate the groundwater elevation undesirable result on the seawater intrusion undesirable result.	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf

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W-148	8				11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	The draft GSP does not clearly identify what wells will specifically be used as water quality RMWs, but rather lists MTs by general type of well (i.e., Municipal Supply Wells, Small Systems Supply Wells, Irrigated Lands Regulatory Program (ILRP) Domestic Wells, and Agricultural Use in ILRP Wells) in Tables 8-6 through 8-9, and states that the MOs are the same as the MTs (Section 8.9.3).6 However, under 23 CCR §354.34(h), the GSP must include "The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used." Thus, the GSP must clearly identify on both maps and in tabular form each of the wells to be used as RMWs for water quality. Without this information, the public cannot review and assess the adequacy of the proposed GSP to monitor impacts to beneficial users of groundwater, in particular those reliant on domestic wells for drinking water purposes.		The groundwater quality monitoring wells are shown in Figure 7-9 and 7-10. Well data are listed in Appendix 7E	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf
W-149	7				11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	Table 7-2 of the draft GSP tabulates the locations and well depths of existing CASGEM wells and Table 7-4 of the draft GSP tabulates the locations and well depths of seawater intrusion RMWs. However, the well locations and well depths are different between these two tables for a given well (based on the State Well Number [SWN]).7 Therefore, it is unclear what well information is accurate, and as a result the draft GSP does not fulfill the requirement of 23 CCR § 354.34(h).		All well tables are being double checked.	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf
W-150	9				11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	The draft GSP identifies an estimated groundwater storage deficit of up to 9,600 AFY under 2030 conditions and up to 10,300 AFY under 2070 conditions (Table 6-29), which represents roughly 8.5% of agricultural pumping and 6% of total pumping in the basin (Table 6-30). In order to arrest and roll back seawater intrusion to 2017 levels, significant projects and management actions will need to be implemented. The draft GSP identifies several potential options but does not select one clear path forward. The options include a hydraulic barrier, which "can be operated as a recharge barrier, wherein water is injected into the wells and the resulting water level mound creates the hydraulic barrier. Or the barrier can be operated as an extraction barrier, wherein the wells are pumped and the resulting water level trough creates the hydraulic barrier" (Section 9.4.1.4). The draft GSP identifies a seawater intrusion pumping barrier and estimates that operation will require withdrawing up to 30,000 AFY of groundwater, which would then be conveyed to discharge into the Pacific Ocean or to a new or existing desalination plant (Section 9.4.3.7). The draft GSP also states that an "optional barrier using injection instead of extraction was also considered" and that this option would require injection of approximately 46,000 AFY of water to create a protective mounding effect. While it is clear that one of these options is necessary to achieve the seawater intrusion MTs, the draft GSP does not consider and fully articulate impacts of these options on the projected water budget or sustainable yield. Implementation of either an extraction or a recharge barrier will, by definition, change the localized groundwater flow gradients. An extraction barrier will result in localized seaward flow gradients, and some portion (likely significant) of the estimated 30,000 AFY extracted will be of freshwater from the subbasin. (see letter for remainder of comments)		The projects and management actions identified in Chapter 9 will be implemented as part of an overall program. Each project or management action has both benefits and some impact on the Subbasin water budget. The final selected set of projects and management actions will meet all six sustainability indicators and balance the Subbasin water budget..	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf

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W-151	9				11/25/2019	Clary, Dolan, Arthur, Lukacs, Matsumoto, Ortiz-Partida	The draft GSP contemplates "Agricultural Land and Pumping Allowance Retirement [sic]" as a management action (Section 9.3.2), but does not actually quantify the scale or expected benefit of such a management action.... the future overdraft conditions including implementation of the pumping barrier represents approximately 40% of agricultural pumping. The draft GSP also identifies several potential recharge projects to augment the groundwater supply, but these projects, along with the pumping barrier, require construction of infrastructure and will take years to implement even under the best circumstances. In order to achieve the seawater intrusion MTs and to avoid further degradation of the subbasin, more immediate action is necessary. Thus, the draft GSP should: 1) more transparently lay out and quantify the deficit that needs to be addressed by projects and management actions; 2) provide a clear plan for implementing pumping restrictions and agricultural land retirement with specific targets; 3) clearly articulate how much pumping will need to be reduced in the subbasin; and 4) quantify and present the degree of continued seawater that will occur before the projects and management actions are implemented.		The projects and management will be refined during GSP implementation, and will clearly articulate how the projects individually, and as a program, achieve sustainability.	Salinas Valley - 180_400 Ft Aqufer GSP FULL Analysis V2 Ag Innovations.pdf
W-152					11/25/2019	RCDMC	GSP in section 9.3.3 "Priority Management Action 2: Outreach and Education for Agricultural BMPs" starting on page 9-12. According to personal communication with local UC Cooperative Extension Farm Advisors (Drs. M. Cahn and R. Smith), they have observed potential agricultural water use efficiency increases of 10% on average among the farmers they have surveyed and/or with whom they have conducted water use efficiency trials while factoring in necessary leaching fractions and maintaining comparable yields. We actively engage in local producer and irrigator trainings for water use efficiency. However, beyond simply providing outreach and education, we need to invest in critical tools for guiding more efficient irrigation management decisions. Placement of additional weather stations throughout the valley that better reflect the variable microclimates that farmers experience moving west to east and north to south is a relatively low-cost project with substantial potential benefit. Such stations can be installed relatively cheaply (around $10k each) and connected to the CA Dept of Water Resources' California Irrigation Management Information System (CIMIS) for easy online access and incorporation of weather and reference evapotranspiration data for informing day-to-day water management on area farms. Support for more stations in the Salinas Valley could be a low-expense relative to impact project for the GSP.		Comment noted. Text has been added to management action 2.	RCDMC Salinas Basin GSP Comments 2019-11-25.pdf

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W-153					11/25/2019	RCDMC	The RCD's official name is the 'Resource Conservation District of Monterey County (RCDMC)' rather than the 'Monterey County Resource Conservation District (MCRCD).'		Text has been fixed	RCDMC Salinas Basin GSP Comments 2019-11-25.pdf
W-154					11/25/2019	RCDMC	There are two programs currently underway on the river: the RCD's Arundo Control Program, and the Salinas River Stream Maintenance Program (SMP). While we work very closely and compatibly, and in-fact do have substantial interconnectivity between the two programs, they are, in fact, distinct, with separate lead agencies and separate environmental permits. The RCD is CEQA lead and holds all permits for the Arundo Control Program, and Monterey County Water Resources Agency is the CEQA lead and holds the primary permits for the SMP. It is a bit confounding that the RCD is the CDFW permittee on behalf of the SMP, and that arundo control is a valuable mitigation option for SMP participants. That's a blessing of a history of positive collaboration between two mutually-beneficial programs developed somewhat in parallel in the first half of this decade. The majority of arundo control work on the river is being conducted under the RCD's program.		Text has been modified to discuss the Arundo Control Program	RCDMC Salinas Basin GSP Comments 2019-11-25.pdf
W-155					11/25/2019	RCDMC	It's important to acknowledge the pivotal role that the Monterey County Agricultural Commissioner's Office has played in the genesis, development and continuity of the RCD's Arundo Control Program. They provided the initial funding and encouragement to initiate the program in 2009 and remain a critical partner to the RCD in this endeavor. As such, they are also an important partner for the GSA.		Comment noted	RCDMC Salinas Basin GSP Comments 2019-11-25.pdf
W-156					11/25/2019	RCDMC	On page 9-27, reference is made to the wide range of estimated potential water savings to be garnered from arundo eradication. We have communicated to GSA consultants that there is research needed to better understand the actual water conservation benefits on the Salinas River and that we have pursued research partnerships with Cal State University Monterey Bay (CSUMB) and UC Santa Barbara for this purpose, both at very different scales. CSUMB is currently funded through one of our Wildlife Conservation Board grants to use satellite imagery and data to estimate differences in evapotranspiration rates on Salinas River lands with and without arundo. UCSB is measuring water use on individual plants, a method that would provide the highest level of accuracy for understanding water consumption on-site, but for which we have not yet been able to develop or fund a collaboration. We would encourage GSA consideration of inclusion of research funding to better understand the actual water conservation benefits of arundo control along with seeking funding for the arundo control and maintenance work itself.		Text has been added to acknowledge ongoing studies	RCDMC Salinas Basin GSP Comments 2019-11-25.pdf

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W-157					11/25/2019	RCDMC	On this same topic, figures 9-2 and 9-3 on pages 9-28 and 9-29, respectively, show modeled groundwater elevation benefits from arundo eradication within the 180/400-Foot aquifer subbasin, but it is not clear what base numbers (4 ac-ft/ac/year or 20 ac-ft/ac/year?) were used for informing the model, and the units for the groundwater level benefit gradations (feet?) are not identified.		All groundwater elevations are in feet. The benefits in the GSP are provided as a range, depending on the assumed base number.	RCDMC Salinas Basin GSP Comments 2019-11-25.pdf
W-158					11/25/2019	California Water Service	We recommend the following to be considered and defined in the Water Charges Framework: 1. Recognition of a groundwater user's share of a basin's native safe yield and the benefits and/or effects of previous efforts undertaken by the user to augment basin supplies (e.g., investment in water supplies and conservation); 2. The ability to incorporate and preserve the projects and water management efforts that are implemented by individual agencies that result in additional supplies to the basin; 3. A mechanism by which a projects' yield can be reasonably allocated to those who have contributed to the project, either via the tiered rate structure or through direct investment; 4. Flexibility for groundwater users that are located in multiple Salinas Valley subbasins and are willing to invest in projects. Specifically, given the integrated nature of the Salinas Valley subbasins, groundwater users should receive credit for projects and water management efforts across subbasins where there are demonstrable benefits (i.e. each subbasin's issues do not need to be entirely addressed through projects in that subbasin).		The letter has been read and the comments in the letter have been reviewed and considered. These will be taken into consideration during the GSP implementation phase, as the Water Charges Framework is refined and implemented.	California Water Service 180-400 GSP Comments.pdf
W-159					11/25/2019	ALCO	Because the California Legislature has already declared, in California Water Code § 1063, that the highest use of water is for that 15f domestic purposes, which is the type of water that Alco and all other municipal water providers provide, Alco believes that municipal water providers must be allowed a Tier 1 sustainable allowance, which should be based on historical groundwater pumped by municipal water providers. Courts, including the California Supreme Court and Federal Courts, have upheld California Water Code § 106' s declaration that the highest use of water is domestic use and that this is binding upon all California agencies. Please refer to the cited cases, below: Provision of this section declaring that use of water for domestic purposes is the highest use to which water can be devoted is binding on every California agency, City of Beaumont v. Beaumont Irrigation District (1965) 46 Cal.Rptr. 465, 63 Cal.2d 291, 405 P.2d 377. And, Provisions of this section declaring general state policy that use of water for domestic purposes is the highest and best use and in § 106. 5 that rights of municipalities are to be protected to extent necessary for existing and future uses, do not merely regulate administrative action which state engineer might take on applications to appropriate surplus water, but they constitute part of substantive law of California delineating rights of users of water. Rank v. Krug, S.D.Cal.1956. 142 F.Supp. 1.		Comment noted. The water charges framework will not alter water rights and is not envisaged to ban or place limitations on groundwater pumping, and as such will not restrict municipal pumping directly. Whether it establishes Tier 1 sustianable pumping allowances for municipal water providers will be considered during the design of the framework.	Alco's Comments on SVBGSA GSP for 180-400 ft Aquifer.pdf

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W-160					11/25/2019	ALCO	As Alco has previously stated, when the SVBGSA is establishing water allowances and water charges framework for municipal water providers, it must take into consideration the obligations of California Water Code § 106.3, the requirements of the CPUC (in the case of water utilities like Alco that are regulated by that agency) and SWRCB on municipal water providers. Alco believes that the Tier 1 sustainable water allowance for municipal water providers should be based on the providers' historical pumping information. Also, the municipal water providers should be able to carry over any excess pumping allowances into future years. Municipal water providers should be able to obtain all pumping credits and/or Tier 1 and Tier 2 pumping allowances for irrigated and fallow lands to which the municipal water provider provides water service in excess of the amounts that are pumped on these lands, if any.		Comment noted. This will be taken into consideration during the development of the water charges framework	Alco's Comments on SVBGSA GSP for 180-400 ft Aquifer.pdf
W-161					11/25/2019	ALCO	Alco believes that there should be a mechanism for the transfer of pumping credits and/or Tier 1 and Tier 2 pumping allowances for 1) lands or any portion thereof that are converted from agricultural use (or fallow lands) to development to which the municipal water provider provides service and 2) agricultural lands (or fallow lands) to which the municipal water provider provides water service in excess amounts of the amounts that are pumped on these lands, if any.		Comment noted. This will be taken into consideration during the development of the water charges framework.	Alco's Comments on SVBGSA GSP for 180-400 ft Aquifer.pdf
W-162					11/25/2019	ALCO	The benefit of allowing parties to directly fund such projects is that the SVBGSA will not have to expend the time, monies and efforts to implement a tax and/or go through the Proposition 218 process. Additionally, the tax burden and/or fees to landowners and residents of the Salinas Valley Basin will subsequently be reduced.		Comment noted. This will be taken into consideration during the development of the water charges framework and financing options for projects.	Alco's Comments on SVBGSA GSP for 180-400 ft Aquifer.pdf
W-163					11/25/2019	Community Water Center	This letter contained a number of comments on the GSP and its relation to drinking water sources of the vulnerable, and often underrepresented, groundwater users. Its key points include: the GSP should include immediate actions to take effect in 2020 while projects are being developed; the SVBGSA should immediately develop a robust drinking water well program present or mitigate impacts; include a map of DACs; the GSP should revise the basin setting and water budget to better articulate and quantify the needs of drinking water users within the GSA; provide the locations and depths of all public water systems, state and local small water systems, and private domestic wells in the subbasin using hte best available information; and revise SMC to be protective of drinking water users.		The letter has been read and the comments in the letter have been reviewed and considered. Due to the large number of comments received immediately before GSP adoption, not all comments from this letter are addressed individually in this matrix. Comments that were not able to be individually addressed in this matrix will be addressed as the GSP is implemented and refined. In response to the main points: more detailed analysis and design of projects and management actions is needed before implementation, and this will begin immediately following GSP submittal and simultaneous to the development of other subbasin GSPs; SGMA does not require improving water quality, and it needs to be a choice of the Board to do so, however, there is insufficient time to consider it before GSP submittal; SMC levels and who they protect is a determination of the Board, which can change the levels in the future as needed.	180_400 Foot Aquifer Subbasin GSP Comment Letter with Attachments 11.25.19 Final from CWC and San Jerardo.pdf

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W-164	7				11/25/2019	Community Water Center	Update language on Chapter 7 to reflect the data gaps mentioned in Chapter 8. Specifically, that state and local small water systems and domestic wells will be part of the monitoring network. (CWC p. 21)		The text has been updated	180_400 Foot Aquifer Subbasin GSP Comment Letter with Attachments 11.25.19 Final from CWC and San Jerardo.pdf
W-165	App 7E				11/25/2019	Community Water Center	Clarify through the text or a footnote that well construction information will be added at a later date to the table of state and local small water systems, similar to what is currently Appendix 7E.		Text now reads: Small public water systems wells, regulated by Monterey County Department of Public Health, include a total of 136 wells in the current network. The limitation of this dataset is that the well location coordinates and construction information are currently missing; this is a data gap. SVBGSA work with the County to fill this data gap and additional wells from this network with sufficient data will be added to the public water supply wells network for water quality monitoring. These wells will be added to Appendix 7E when this data gap is filled.	180_400 Foot Aquifer Subbasin GSP Comment Letter with Attachments 11.25.19 Final from CWC and San Jerardo.pdf
W-166		8-6			11/25/2019	Community Water Center	Also for Table 8-6, we noted that the water quality monitoring network in for public water systems should include the same number of wells for each contaminant. The reason for data gaps for individual systems (e.g. some systems are missing data for some contaminants) is likely due to the monitoring schedules as all public water systems have the same requirements. (CWC page 25)		This has been checked.	180_400 Foot Aquifer Subbasin GSP Comment Letter with Attachments 11.25.19 Final from CWC and San Jerardo.pdf
W-167					11/25/2019	Community Water Center	Clarify definitions of drinking water systems. We outlined and recommend the 3 commonly used system types used by all drinking water regulators (CWC p. 8 and throughout).		The definitions of drinking water systems have been clarified	180_400 Foot Aquifer Subbasin GSP Comment Letter with Attachments 11.25.19 Final from CWC and San Jerardo.pdf
W-168	3			3-6	11/25/2019	Community Water Center	Update Figure 3-6 to include Moss Landing and clarify the definition of "municipal areas." In the future, this map can also include GW Dependent domestic wells, SSWS, and LSWS. (CWC p. 11)		Figure 3-6 was made based on a DWR data set on water districts, which does not include Moss Landing. The figure was updated to clarify the data Figure 3-6 is based on.	180_400 Foot Aquifer Subbasin GSP Comment Letter with Attachments 11.25.19 Final from CWC and San Jerardo.pdf
W-169	11				11/25/2019	Community Water Center	Include map of all DACs. Ideally this would be included in Chapter 3, but might be more appropriate in Chapter 11. (CWC p. 3)		A map of DACs was added to Chapter 11.	180_400 Foot Aquifer Subbasin GSP Comment Letter with Attachments 11.25.19 Final from CWC and San Jerardo.pdf
W-170					11/25/2019	Community Water Center	The CWC letter includes many recommendations regarding DACs and drinking water. We suggest adding an appendix on DACs and their relationship to groundwater quality.		An informational appendix on DACs has been added	180_400 Foot Aquifer Subbasin GSP Comment Letter with Attachments 11.25.19 Final from CWC and San Jerardo.pdf

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W-171					11/25/2019	Arroyo Seco GSA	The draft 180/400 Foot Aquifer Subbasin GSP repeatedly oversteps its appropriate geographic scope, which should be limited to the 180/400 Foot Aquifer Subbasin. It is written as if it were the "Valley-Wide Plan." The SVBGSA may develop a Valley-wide plan, but it is not appropriate for a single basin plan. Valley-wide planning has not yet even commenced, much less reached a point that results can be published. There has been neglible coordiantion between SVBGSA and ASGSA regarding data, methods and groundwater conditions outside the 180/400 Foot Subbasin, and there has been no discussion of sustainability criteria or management actions. If interbasin agreements had been developed as part of the 180/400 Aquifer GSP process, it would be appropriate to discuss those in this GSP. However, no agreements have been reached. It is premature to discuss valley-wide problems and solutions in this document. Its geographic scope should be the 180/400 Foot Aquifer Subbasin....The technical chapters (1 through 8) are nearly silent with respect to the Forebay and Upper Valley Subbasins, but Chapter 9 suddenly sweeps them into a valley-wide plan for solving problems in the 180/400 Foot Subbasin.		Comment noted. Based on conversations with DWR, the SVBGSA Board decided to develop a GSP for each subbasin under its jurisdiction with an Integrated Sustainability Plan to coordinate them. The ASGSA is not in the 180/400-Foot Aquifer Subbasin, so is not discussed in this GSP. The SVBGSA is working with the ASGSA to develop a coordination agreement for the Forebay Subbasin. It is not premature to discuss valley-wide solutions in this GSP because the subbasins of the Salinas Valley are hydrologically connected; however, it notes that valley-wide components, such as the projects and management actions will be revised as the GSPs for the other subbasins are developed.	SVBGSA_GSP_comment_ltr_11252019.doc
					11/25/2019	Arroyo Seco GSA	Almost all of the activities and all of the benefits of the management actions and projects described in the draft GSP are local to the 180/400 Foot Subbasin. Therefore, the GSP should describe implementation of those activities within the 180/400 Foot Subbasin. ...Instead of passively accepting the SVBGSA-proposed actions that could potentially benefit the ASGSA area, ASGSA would prefer to implement similar actions on its own. (see letter for more comments).		Comment noted. SVBGSA will work with the ASGSA on proposed projects and management actions that affect the City of Greenfield.	SVBGSA_GSP_comment_ltr_11252019.doc
W-173					11/25/2019	MGSA	SVBGSA Must Evaluate and Incorporate the Best Available Science Regarding the Coastal Portion of the Subbasin into the Draft GSP		The SVBGSA agrees that there are differences in opinion regarding the extent of seawater intrusion. To remedy this, the GSP requires a Seawater Intrusion Working Group be formed early during GSP implementation.	MGSA Comment Letter on the SVBGSA 180_400 Aquifer GSP.pdf
W-174					11/25/2019	MGSA	The Draft GSP Must Designate, Evaluate, and Manage the Dune Sand Aquifer as a Principal Aquifer		In accordance with the geologic descriptions in Bulletin 118, the shallow sediments are not designated as principal aquifers. The three principal aquifers in the Subbasin are the 180-Foot Aquifer, 400-Foot Aquifer, and Deep Aquifers.	MGSA Comment Letter on the SVBGSA 180_400 Aquifer GSP.pdf
W-175					11/25/2019	MGSA	The Draft GSP Must Recognize, Monitor, and take Management Actions for Groundwater Dependent Ecosystems as a Beneficial Water Use.		The GSP adopted TNC's approach to identifying potential GDEs in the Subbasin. Discussions of impacts on GDEs were held during Advisory Committee meetings and Board of Directors meetings. These criteria may be modified in future versions of the GSP.	MGSA Comment Letter on the SVBGSA 180_400 Aquifer GSP.pdf
W-176					11/25/2019	MGSA	The Draft GSP Should Recognize and Consider State and Federal Protections for Habitats and Species in and near the MGSA Area.		This comment does not directly address requirements of SGMA.	MGSA Comment Letter on the SVBGSA 180_400 Aquifer GSP.pdf

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W-177					11/25/2019	MGSA	SVBGSA Must Expand the GSP's Proposed Monitoring Network		The GSP includes an assessment of data gaps, including monitoring locations, that will be filled during implementation. The MCWRA Coastal Monitoring program may fill many of the identified data gaps.	MGSA Comment Letter on the SVBGSA 180_400 Aquifer GSP.pdf
W-178	2		2-4		11/25/2019	MGSA	Subbasin Governance: This section states that SVBGSA developed the GSP for the 180/400-Foot Aquifer Subbasin with input and assistance from MCWD GSA; however, the GSP should also recognize the MGSA and document its efforts to coordinate with SVBGSA. (see letter for more details)		A formal agreement exists between SVBGSA and MCWD that promotes input from MCWD. MGSA is not a party to this agreement.	MGSA Comment Letter on the SVBGSA 180_400 Aquifer GSP.pdf
W-179	2.3.2		2-8		11/25/2019	MGSA	Coordination Agreements: This section describes coordination agreements and is confusing and incomplete as currently worded. We recommend the following edits (see letter for more details).		No coordination agreement exists, and therefore is not cited in the GSP.	MGSA Comment Letter on the SVBGSA 180_400 Aquifer GSP.pdf
W-180		9-5			11/25/2019	MCWD	The total in Table 9-5 is incorrect and should sum up to positive 40,800 AFY.		This has been corrected.	MCWD09582120191125152330; and MCWD Comment Letters to 180-400 GSP Draft Chapters
W-181	3.3.1				11/25/2019	MCWD	Most of the former Fort Ord property has been transferred for civilian use and no long under federal jurisdiction as of 2019, including the airport. This area should be removed from Figure 3-3 and the above statement should be revised (see letter for text).		These changes have been made.	MCWD09582120191125152330; and MCWD Comment Letters to 180-400 GSP Draft Chapters
W-182	6.10.5				11/25/2019	MCWD	Please provide a definition of "well interflow" and clarify why it was subtracted from total pumping.		This has been added.	MCWD09582120191125152330; and MCWD Comment Letters to 180-400 GSP Draft Chapters
W-183	8.6.2.3				11/25/2019	MCWD	It is not accurate to state that groundwater elevation minimum thresholds, which are set below mean sea level and will maintain landward gradients "will not exacerbate and may help control seawater instrusion." The seawater intrusion front will continue to migrate inland if water levels remain below sea level and inland gradients persist. Section 8.6.2.3 should be modified (see letter for suggested wording).		The section has been revised according to the suggested wording.	MCWD09582120191125152330; and MCWD Comment Letters to 180-400 GSP Draft Chapters
W-184	8.6.2.4				11/25/2019	MCWD	We understand that the SVBGSA intends to coordinate SMC development as the managing GSA for each of the adjacent subbasin. However, it is premature to state that the minimum threshold of the 180/400-Foot Aquifer Subbasin has taken sustainable management of adjacent basins into full consideration, as those subbasins are still in their early phases of GSP development. Therefore, the following caveat should be included, and the following would replace the entire paragraph (see letter for suggested wording).		The suggested wording has been incorporated.	MCWD09582120191125152330; and MCWD Comment Letters to 180-400 GSP Draft Chapters

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W-185					11/14/2019	Robin Lee	It is my opinion that the ground water level of sustainable yield has been set at an unsustainable level. The level for sustainable yield should be set at the average depth of domestic wells. For projects, a scalping plant should be used for the east side of Salinas. This plant would be closer to connecting the much disrupted hydrologic cycle on the east side, making the scalping plant both an economical and efficient project. Looking at and correcting the ordinances that prevent the recommendations stated in the GSP from being implemented, should be listed as an administrative project in GSP.		The sustainable yield is determined by the water budget. The SMC for chronic lowering of groundwater levels is a decision of the Board, which can change the level in the future if it so decides. More details are needed on a scalping plant. Relevant ordinances will be reviewed as needed during the implementation phase, together with MCWRA or the corresponding agency.	Lee_comments on draft GSP 11 14 19
W-186					11/25/2019	MCWRA	The GSP refers frequently to the "Eastside" subbasin. Bulletin 118 uses a two-word naming of this subbasin: East Side.		Incorrect, Bulletin 118 uses a one-word naming of this subbasin.	SVBGSA_MCWRA Cover Letter.pdf
W-187					11/25/2019	MCWRA	The GSP refers to the "Deep", "deep aquifer", "Deep Aquifer", and "Deep Aquifers". Suggest that this be standardized to 'Deep Aquifers' for consistency with MCWRA nomenclature.		All these references have been changed to 'Deep Aquifers' to standardize with MCWRA nomenclature.	SVBGSA_MCWRA Comments.pdf
W-188	ES-1		1		11/25/2019	MCWRA	Suggest changing The Salinas Groundwater Valley to the Salinas Valley Groundwater Basin		Fixed	SVBGSA_MCWRA Comments
W-189	ES-1		3		11/25/2019	MCWRA	Spreckles should be changed to Spreckels		Fixed	SVBGSA_MCWRA Comments
W-190	ES-1		3		11/25/2019	MCWRA	Paragraph two states that "The primary water use sector is agriculture, which uses 85% of the water in the Subbasin." Data from the 2015 Groundwater Extraction Summary report published by MCWRA in April 2017 indicates that 88% of groundwater extractions in the 180/400-Foot Aquifer Subbasin were attributed to agriculture.		Changed; The numbers were derived from that report and a MCWRA 2015 report. The 85% is derived from averaging the use from 2010 to 2015. 88% is if only the year 2015 is used; however, since agricultural water use increased in 2015, it is more accurrate to use the average over several years.	SVBGSA_MCWRA Comments
W-191	ES-1		4		11/25/2019	MCWRA	paragraph 3 states " ... the 180-Foot Aquifers and the 400-Foot Aquifer are relatively transmissive aquifers with very good well yields." The phrase "very good" is open to wide interpretation. Perhaps a couple of examples, or a range of well yields for the subbasin, could be used instead. Also, it is critical that the treatment of the Shallow Aquifer is consistent throughout. As it is not a principal aquifer, it should not be included in water budgets. Important gaps in the Salinas Valley Aquitard have been reported (e.g., Kennedy Jinks' 2004 report; "Hydrostratgraphic Analysis of the Northern Salinas Valley") that create important connectivity between the Shallow Aquifer and the 180-Foot Aquifer that must be also be addressed. Additionally, the MCWRA does not agree with the statement, " ... the 400-Foot Aquifer is a single permeable bed approximately 200 feet thick. This disagreement in the characterization of the 400-Foot Aquifer is illustrated in analysis from Kennedy Jinks, 2004 and cross sections from Section 4 of this report. And, it will be important that the statement; "Recharge to the productive zones of the Subbasin is very limited due to the low permeability of the Salinas Valley Aquitard, meaning it is unlikely that any significant surficial recharge in the Subbasin would reach the productive 180-Foot and 400-Foot Aquifers" is consistent with this reports and future water budgets.		Very good was updated to "high." The level of detail is higher level than examples in the Executive Summary. The water budget is for the entire groundwater system, including the shallow sediments and principal aquifers. The Executive Summary was revised to better match the text, including adding "400-Foot Aquifer, a single permeable bed approximately 200 feet thick near Salinas, but variable throughout the Subbasin."	SVBGSA_MCWRA Comments
W-192	ES-1		4		11/25/2019	MCWRA	Consider adding some discussion of induced vertical recharge to the Deep Aquifers from overlying aquifers. Also, consider including the Deep Aquifers in the list of "productive" aquifers of the Subbasin.		This is more detail than we have in the Executive summary and do not want to mislead readers; however, it is detailed in the GSP.	SVBGSA_MCWRA Comments
W-193	ES-1		6		11/25/2019	MCWRA	Are domestic purposes included in the list of applications used to determine change in groundwater storage? Only municipal, industrial, and agricultural purposes are listed.		Different parts of the GSP Regulations refer to different sets of uses...changed to domestic, ind, agr	SVBGSA_MCWRA Comments

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W-194	ES-1		6		11/25/2019	MCWRA	Are domestic purposes included in the list of applications used to determine change in groundwater storage? Only municipal, industrial, and agricultural purposes are listed.		Different parts of the GSP Regulations refer to different sets of uses...changed to domestic, ind, agr	SVBGSA_MCWRA Comments
W-195	ES-5		8		11/25/2019	MCWRA	"High groundwater levels in 1983 suggest groundwater levels previously had the capacity to recover to earlier levels in response to recharge events, but decline since then provides no indication that they can recover to pre-1983 levels." The MCWRA believes this statement to be incorrect and/or too simplistic. See detailed comments to Section 5.1.3 page 15.		This has been clarified.	SVBGSA_MCWRA Comments
W-196	ES-5		8		11/25/2019	MCWRA	Acronym for the Salinas Valley Integrated Hydrologic Model in paragraph two should be SVIHM.		This has been corrected.	SVBGSA_MCWRA Comments
W-197	ES-5		9		11/25/2019	MCWRA	Percolation of streamflow plus percolation of precipitation and excess irrigation frequently provides over 100,000 afy of inflow to groundwater, which doesn't correspond to earlier statements about stream connectivity and recharge to the aquifers. Please state what is included in the water budgets and reconcile that with the description of the conceptual model.		Done. The water budgets are for the entire groundwater system, including the shallow sediments and principal aquifers.	SVBGSA_MCWRA Comments
W-198	ES-5		10		11/25/2019	MCWRA	The section on Projected Water Budgets refers to the "projected SVIHM". Does this mean the provisional, "operational" version of the SVIHM? Consider differentiating between the historical SVIHM and operational SVIHM for clarity, as both versions of the model are being used for projects within Monterey County. The statement; ''The average changes in storage due to groundwater level fluctuations during the historical and current periods are approximately 400 AF/yr. and 600 AF/yr., respectively", does not indicate whether this is a positive or negative change in storage. The statement; "The difference between the storage calculated based on groundwater budgets and storage estimated based on groundwater levels shows the uncertainty of the budgets" is one measure of uncertainty within the budgets, but it should not be inferred to capture the full extent of uncertainty within the budget.		It is unclear what is meant by 'operational' version... It has been clarified that 400 and 600 AF/yr are negative changes in storage.	SVBGSA_MCWRA Comments
W-199	ES-5	1			11/25/2019	MCWRA	Only comparing the calculated difference between the budget and estimated storage changes to the outflow seems to underestimate the "error". This is not a true measurement of error, although it is referred to that way in the text.		Error changed to uncertainty.	SVBGSA_MCWRA Comments
W-200	ES-5	2			11/25/2019	MCWRA	Under the "Groundwater Storage" heading, Groundwater Level Change is positive and Seawater Intrusion is negative, giving a total that is positive. The Change in Storage based on the budget components is negative. These should be reconciled.		This has been fixed.	SVBGSA_MCWRA Comments
W-201	ES-5		12		11/25/2019	MCWRA	GSP states that " ... pumping will need to be reduced by about 7% to meet the sustainable yield." What years(s) are the basis for determining the 7% reduction? That is, a 7% reduction compared to what? Does this consider how much of the action (stream leakage, groundwater ET, and lateral fluxes) is taking place in the Shallow Aquifer, which is not used for water supply? Water that is cycled above the production aquifers should probably not be considered in the calculation of sustainable yield.		The water budget includes all water in the groundwater system, including both in the shallow sediments and principal aquifers. 7% is from the future pumping that the SVIHM projects, and that has been clarified in the ES.	SVBGSA_MCWRA Comments
W-202	ES-6		13		11/25/2019	MCWRA	Consider using groundwater level data from the monitoring wells that have been, and others that are expected to be, installed as part of the Monterey Peninsula Water Supply Project in addition to CASGEM wells.		Good suggestion. Wells that have already been installed will be reviewed during the activity of filling data gaps, and other wells can be added as they become available	SVBGSA_MCWRA Comments

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W-203	ES-7	3			11/25/2019	MCWRA	The aspirational goal (Measurable Objective) for groundwater levels is 2003, but the Minimum Threshold for seawater intrusion is the 2017 extent of intrusion. What is not addressed in this GSP is; was seawater intrusion actively progressing in 2003? If so (it was), the Measurable Objective for groundwater level should reconcile what is hoped to achieve for seawater intrusion? Also, it would be clearer if the Sustainable Management Criteria stated that pumping is to be limited to the long-term future sustainable yield. As it stands, this could be read as suggesting that the reduction in groundwater storage could be 112,000 afy.		Pumping added to description of measurable objective for storage. Changing the measurable objective is something that must go through the Board. The minimum thresholds are set independently for each sustianability indicator. All six undesirable results must be avoided simultaneously, therefore there is no need to predicate the groundwater elevation undesirable result on the seawater intrusion undesirable result. Furthermore, groundwater elevations will be different if seawater intrusion is manager through an extraction barrier, or if it is managed through significant managed recharge.	SVBGSA_MCWRA Comments
W-204	ES-8		17		11/25/2019	MCWRA	One of the management actions refers to "MCWRA restrictions on additional wells in the Deep Aquifers." The existing limitation on new wells in the Deep Aquifers is the result of a County ordinance (Ord. No. 5302) and is not a restriction set in place by MCWRA.		Done	SVBGSA_MCWRA Comments
W-205	ES-8		18		11/25/2019	MCWRA	Section on Mitigation of Overdraft lists "optimizing CIP". Assume this should this be corrected to "CSIP"		Done	SVBGSA_MCWRA Comments
W-206	2.1		2-6		11/25/2019	MCWRA	The name of the "Salinas Valley Groundwater Sustainability Agency" is missing the word "Basin".		Added	SVBGSA_MCWRA Comments
W-207	3.6.1.3		3-25		11/25/2019	MCWRA	"These pumping depressions occur in the 180-Foot and 400-Foot Aquifers between the City of Salinas and the coast. 11 Figure 5-3 and 5-5 show the deepest water levels in both aquifers being approximately along the western edge of the City of Salinas, whereas the text implies that they would be found further west. Although it is understood that this GSP is only for the 180/400-Foot Aquifer subbasin, it seems like the water level monitoring should be contextualized by stating that the far deeper groundwater troughs are located further east, in the East Side. Or, remove this sentence entirely.		The sentence has been deleted	SVBGSA_MCWRA Comments
W-208	3.6.1.4		3-25		11/25/2019	MCWRA	Most CASGEM wells are monitored monthly, except for a few that are monitored twice per year.		Clarifying language was added.	SVBGSA_MCWRA Comments
W-209	3.8				11/25/2019	MCWRA	Consider including Monterey County Water Resources Agency Ordinance No. 3709 which prohibits groundwater extractions and the drilling of new groundwater extraction facilities in certain portions of the 180-Foot Aquifer after January 1, 1995.		This ordinance has been added to the chapter	SVBGSA_MCWRA Comments
W-210	3.8.9		3-39		11/25/2019	MCWRA	This section mentions the Habitat Conservation Plan under development by MCWRA. Was consideration given to any potential impacts to operational flexibility from regulatory documents that are currently in place?		This section lists impacts to operational flexibility from three other in-place regulations.	SVBGSA_MCWRA Comments
W-211	4		4-49		11/25/2019	MCWRA	"Previous studies of groundwater flow across this boundary indicate that there is restricted hydraulic connectivity between the subbasins. 11 While groundwater flow might be "restricted" it may be significant. The HBA calculated something like 8,000 afy of exchange (from Pressure to East Side).		comment noted	SVBGSA_MCWRA Comments
W-212	4		4-13		11/25/2019	MCWRA	Groundwater in the 180/400 Foot Aquifer Sub basin is increasingly being produced from the Purisima and Santa Margarita Formations that comprise the Deep Aquifers. Also, statement; "These three cross sections are adapted from the Final report, hydrostratigraphic analysis of the Northern Salinas Valley (Kennedy-Jenks, 2004). " I believe that Figure 4-6 is adapted from Brown and Caldwell (2015).		The correct citation has been added to the text.	SVBGSA_MCWRA Comments

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W-213	4		4-18		11/25/2019	MCWRA	Statement; "Near Salinas, the 400-Foot Aquifer is a single permeable bed approximately 200 feet thick; but in other areas the aquifer is split into multiple permeable zones by clay layers (DWR, 1973)." This is an important qualification statement that should be used in the Executive Summary for clarification.		This qualification has been added to the executive summary	SVBGSA_MCWRA Comments
W-214	4		4-21		11/25/2019	MCWRA	Statement; "ft is unlikely that any significant surficial recharge in the 180/400-Foot Aquifer Subbasin reaches the productive 180-Foot Aquifer or the 400-Foot Aquifer." "Significant" should be defined. For example, in Section 6 (Water Budgets) net deep percolation to groundwater of precipitation and irrigation is about 20,000 afy, equivalent to lateral inflows from adjoining subbasins and about 20% of the total inflow to the subbasin. If just considering recharge of precipitation, that amounts to 8,500 afy in the historical water budget, about 10% of the total inflow.		The 20,000 AF/yr. cited in this comment does not necessarily reach the productive aquifers. These numbers can be refined when the SVIHM becomes available.	SVBGSA_MCWRA Comments
W-215	4.6.1		4-28		11/25/2019	MCWRA	The caption of the figure and content of the figure do not match		These now match	SVBGSA_MCWRA Comments
W-216	5.1.1		5-2		11/25/2019	MCWRA	Section 5.1.1, page 5-2 - Data collected from privately-owned CASGEM wells is not available prior to 2015 when permission for data sharing was granted by the well owner.		It is our understanding that this comment has been superseded based on MCWRA's revised policies.	SVBGSA_MCWRA Comments
W-217	5.1.3		5-15		11/25/2019	MCWRA	Statement; "The high groundwater levels observed in 1983 suggest that groundwater levels previously had the capacity to recover to earlier levels in response to significant recharge events." This implies that recharge can affect water levels in the 180/400 over a period of several years. There was a statement earlier (Section 4.4.3) that local recharge is "very limited" but that seems inconsistent with the text here. Unless we're to believe that it only takes a few years for groundwater to flow in laterally from adjoining subbasins that don't have aquitards, or that this results from a decrease of pumping during wet years (very little decrease in agricultural pumping is observed in wet periods).		This sentence has been removed from the text	SVBGSA_MCWRA Comments
W-218	5.1.3		5-17		11/25/2019	MCWRA	Statement; "Groundwater levels have declined since 1983 with no indication that they will recover to pre-1983 levels." The data does not necessarily support this conclusion. There hasn't been an extended wet period like that seen in the late 1970's/early 1980's, therefor to conclude that it would not occur again is unsupported. The last period where 2 consecutive years of +1 standard deviation on rainfall occurred was 1982-1983.		This sentence has been removed from the text.	SVBGSA_MCWRA Comments
W-219	5			5-10 thru 5-18	11/25/2019	MCWRA	It is difficult to read the figures due to text/image quality. Placement of vertical axis at 110' artificially dampens changes. Maximum range in data is approximately 85'.		All figures have a similar range on the vertical axis so that hydrographs can be compared to each other. The 110-foot range is chosen to easily accommodate the hydrograph with the greatest range.	SVBGSA_MCWRA Comments
W-220	5.1.4		5-29		11/25/2019	MCWRA	Limited data were available that could be presented, due to confidentiality agreements. More data will be available in the future.		Limited data were available that could be presented, due to confidentiality agreements. More data will be available in the future.	SVBGSA_MCWRA Comments
W-221	5.2.1		5-31		11/25/2019	MCWRA	The 500 mg/L chloride concentration is also significant in that it represents a level that is approximately 10 times greater than native background chloride levels in the groundwater of the 180/400 Foot Aquifer.		This has been added to the text.	SVBGSA_MCWRA Comments

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-222	5.2.2		5-34		11/25/2019	MCWRA	Statement; "Figure 5-23 shows that the extent of seawater intrusion in the 180-Foot Aquifer has nearly reached a local cone of depression, as represented by the small circular water level contour with a -20 foot ms/ label. This partially explains why the rate of seawater intrusion has slowed in recent years: the seawater intrusion is reaching a local low point and is not being drawn further inland." The closed -20 foot msl contour does not represent a local cone of depression, it represents a local high in water level. The closed contour is between the - 20 and -30 feet msl contours, which means that anything outside of the closed contour is below - 20 feet msl. Therefore, the area inside the closed contour must be above -20 feet msl. This statement is incorrect.		This statement has been removed.	SVBGSA_MCWRA Comments
W-223	5			5-25	11/25/2019	MCWRA	Consider stating the year associated with the seawater intrusion data on the figure.		The date has been added.	SVBGSA_MCWRA Comments
W-224	5.2.3		5-37		11/25/2019	MCWRA	Some of the increase in area of seawater intrusion in the 400-Foot Aquifer between 2013 and 2015 was also due to additional data points that made contouring possible, particularly in the Marina area.		comment noted	SVBGSA_MCWRA Comments
W-225	5.2.3		5-37		11/25/2019	MCWRA	Thin/discontinuous aquitards and improperly constructed / improperly abandoned wells may also contribute to the vertical migration of seawater intruded groundwater.		Text added	SVBGSA_MCWRA Comments
W-226	5.3.2		5-37		11/25/2019	MCWRA	Seawater intrusion likely occurs preferentially along pathways determined in part by geology so the rate of advancement of the seawater intrusion "front" can be highly variable.		Comment noted	SVBGSA_MCWRA Comments
W-227	5		5-40		11/25/2019	MCWRA	Suggest changing "Deeper Aquifers" to "Deep Aquifers".		Text has been modified.	SVBGSA_MCWRA Comments
W-228	5		5-40		11/25/2019	MCWRA	Restrictions on new wells in the Deep Aquifers was also driven by previous modeling which suggests that increased pumping in the Deep Aquifers will lead to increased vertical flow from the overlying aquifers (WRIME, 2003).		Comment noted. This is captured in the statement, "...due to concern over this risk [of seawater intrusion into the deep aquifers]..."	SVBGSA_MCWRA Comments
W-229	5		5-40		11/25/2019	MCWRA	Statement; "The volume of seawater flowing into the subbasin every year does not strictly correspond to the acreages overlying the seawater-intruded area that is shown in Figure 5-27 and Figure 5-28. As the seawater intrusion front approaches pumping depressions, the front will slow down and stop at the lowest point in the pumping depression. The seawater intrusion front will then appear to stop; and no more acreage will be added every year. However, seawater will continue to flow in from the ocean towards the pumping depression." There are several reasons that the volume of SWI will never correspond to the acreage intruded. For example, the area behind the mapped SWI front has variable concentrations of chloride (an acre-foot of seawater, with about 22,000 mg/L chloride, could translate to about 44 acre-feet of intruded groundwater at 500 mg/L). Also, the aquifer thickness is quite variable in the subbasin. Regarding the appearance of the SWI front to "slow or stop at pumping depressions", it is not the opinion of the MCWRA that this mechanism is a driver of the rate of SWI in the subbasin. The presented understanding of how the seawater intrusion front reacts at a pumping depression is not relevant in this situation. And in fact, a gradient toward the pumping depression will not necessarily prevent intrusion from continuing.		comment noted	SVBGSA_MCWRA Comments
W-230	5.3.1		5-40		11/25/2019	MCWRA	MCWRA estimates of annual change in groundwater elevation are made on a Subarea (MCWRA management zones) basis rather than for Bulletin 118 subbasins.		Comment noted. This is shown on Figure 5-20.	SVBGSA_MCWRA Comments

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-231	5.3.2		5-41		11/25/2019	MCWRA	The 2015 State of the Basin report from Brown and Caldwell was prepared for Monterey County, not MCWRA		The text has been changed	SVBGSA_MCWRA Comments
W-232	5.3.2		5-43		11/25/2019	MCWRA	It would make more sense to divide into periods based on significant change in the management of the groundwater basin (i.e., up to the beginning of operation of Nacimiento Reservoir in 1957, San Antonio Reservoir in 1967; then introduction of the CSIP in 1998 and the SVWP in 2010). This would be an approach that is defensible as it is based on known fundamental shifts in groundwater management.		These periods are already shown on Figure 5-25. We will consider revising the time periods for analyzing changes in groundwater storage in future iterations of the GSP.	SVBGSA_MCWRA Comments
W-233	5.3.2		5-43		11/25/2019	MCWRA	The variation in storage from 1947 to 1998 has seen large increases in storage during wet periods, along with a cumulative positive storage change from 1949 to 1998. During the period from 1947 to 1998, there were 28 years of negative storage change and 24 years of positive storage change; while technically that indicates that "most" years had decreasing storage, it's very close to an equal number of negative and positive years. Consider revising the statement indicating a trend of steadily-decreasing groundwater storage in most years.		The text has been slightly modified.	SVBGSA_MCWRA Comments
W-234	5			5-29	11/25/2019	MCWRA	Suggest clarifying if the figure depicts data from the 180/400 Foot Aquifer Subbasin or MCWRA's "Pressure Subarea".		Notation added	SVBGSA_MCWRA Comments
W-235	6.3.1		6-7		11/25/2019	MCWRA	Statement; "The BCM-reported average annual precipitation in the 180/400-Foot Aquifer Subbasin is 114,100 AF for the historical water budget period and 106,600 AF for the current water-budget period. As shown in Table 6-1, the runoff for the historical and current periods was 1,100 and 1,700 AF/yr., respectively; equivalent to approximately 1 to 2% of precipitation." It is unclear from the text whether this analysis is limited to runoff generated within the 180/400-Foot Aquifer subbasin, or includes tributary inflow from the hills to the west (not otherwise quantified).		The text states that the calculation is "in the Subbasin"	SVBGSA_MCWRA Comments
W-236	6.3.1	6-1 and 6-2			11/25/2019	MCWRA	It is confusing that runoff would be higher during the Current period compared to the Historical period, when precipitation is lower? In contrast, flow in the Salinas River during the Current period was substantially lower than during the Historical period (Table 6-2).		Comment noted. The difference is small. It is unclear why this difference exists. It may be due to antecedent conditions in the BCM model.	SVBGSA_MCWRA Comments
W-237	6.3.2		6-7		11/25/2019	MCWRA	Statement; "As reported by MCWRA, the Salinas River depletion during September 2017 between Soledad and Gonzales, near the Subbasin boundary, was 134 cubic feet per second (cfs). The Salinas River depletion between Gonzales and the Chualar gauge was 79 cfs. Therefore, approximately 63% of the Salinas River depletion between Soledad and the Chualar gauge occurred in the Forebay Subbasin, above Gonzales; and 37% of the Salinas River depletion occurred in 180/400-Foot Aquifer Subbasin, below Gonzales." This stream depletion is based on a single day's measurement which may not be representative. If this analysis conclusion is used there should be a discussion of the limitations of applying a single data point to annual stream loss calculations.		This does constitute best available data. A comment to this effect has been added to the text.	SVBGSA_MCWRA Comments
W-238	6.5.3		6-15		11/25/2019	MCWRA	The "Pressure Management Area" is more commonly referred to as the "Pressure Subarea". Also, when discussing CSIP deliveries, it is worth noting that SRDF diversions did not begin until 2010.		All instances of Pressure Management Area have been changed to Pressure Subarea	SVBGSA_MCWRA Comments

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-239	6.5.4	6-11	6-17		11/25/2019	MCWRA	Statement; "Based on groundwater flow directions and hydraulic gradients at the Subbasin boundaries, subsurface inflow to the 180/400-Foot Aquifer Subbasin from the Forebay Subbasin has been estimated as approximately 17,000 AF/yr. (Montgomery Watson, 1997; MCWRA, 2006; Brown and Caldwell, 2015}." The Brown and Caldwell reference is incorrect in this context. This reference should also be removed from Table 6-11. The correct reference would be Montgomery Watson, 1998.		The citation has been changed	SVBGSA_MCWRA Comments
W-240	6		6-29	6-5	11/25/2019	MCWRA	Either the vertical scale or data shown on the graph for agricultural and urban pumping seem incorrect. For example, in 1998, total (agricultural and urban) pumping reported by MCWRA was 104,916 AF. The data in Figure 6-5 seems to suggest that total pumping was less than 100,000 AF for that year.		Pumping has been modified to roughly compensate for the difference between the MCWRA Pressure Area and the 180/400-Foot Aquifer area.	SVBGSA_MCWRA Comments
W-241	6.6.2		6-19		11/25/2019	MCWRA	Was any consideration given to capturing variation in ET by crop type? Perhaps data reported through ranch maps could be used as a coarse approximation to group crops and provide a more refined ET value for the basin. Also, the stated ET for Arundo donax of 16 AF/year/acre should be referenced. Regarding riparian ET included with the groundwater, it is the opinion of the MCWRA that riparian ET has a more significant impact on surface water flows		This refinement will be done when the SVIHM becomes available.	SVBGSA_MCWRA Comments
W-242	6.6.2		6-19		11/25/2019	MCWRA	The estimate of riparian ET for the subbasin (12,000 AFY) differs from the calculated value of 4,277 AFY determined by the Agency in a 1997 exercise. Changes to reservoir operations and channel maintenance practices have changed since 1997, surely influencing the extent of some phreatophytes, however, does SVBGSA believe that there has there been enough of a change in coverage to account for a nearly three-fold increase in riparian ET?		These ET estimates were the best available from people currently working along the riparian corridor. However, the text notes that the ET rate is highly variable.	SVBGSA_MCWRA Comments
W-243	6.6.3	6-15	6-19		11/25/2019	MCWRA	"The combined outflow to these two subbasins has been estimated at approximately 8,000 AF/yr. (Brown and Caldwell, 2015)." The correct reference here and in Table 6-15 is Montgomery Watson, 1998.		The citation has been changed	SVBGSA_MCWRA Comments
W-244	6.8.1	6-17			11/25/2019	MCWRA	This section should include a discussion of why there is a substantial difference (5% for historical, 15% for current) between the surface water inflows and outflows for an average year. There is no substantial storage change in the surface water system. (Section 6.9 discusses the differences in terms of uncertainty, and that section should be summarized or referenced here.)		These numbers are a result of the calculations based on best available data. Some data collected during the current period are questionable.	SVBGSA_MCWRA Comments
W-245	6.8.3		6-30		11/25/2019	MCWRA	"A review of water supply sources in the 180/400-Foot Aquifer Subbasin shows that surface water supplies, as measured by the San Antonio and Nacimiento Reservoir releases to the Salinas River, allow for a stable supply in wet and normal years." Direct diversions of reservoir releases provide a very small portion of the water supply for the 180/400-Foot Aquifer sub basin, and only since 2010. The Maximum diversion capacity of the SRDF is approximately an order of magnitude lower than total pumping in this subbasin. This statement should be revised.		This statement is about reliability, not volume. The statement has been modified to emphasize this.	SVBGSA_MCWRA Comments
W-246	6.8.5		6-32		11/25/2019	MCWRA	"Based on the water budget components, the sustainable yield of the Subbasin is 97,200 AF/yr., which represents a 10% reduction in total pumping relative to the average annual historical pumping rate." Using the average annual storage change of - 39,700 afy derived from Table 6-19, the sustainable yield would be 68,400 afy, representing a pumping decrease of 37%.		Because of the high uncertainty in the historical water budget components, the water budget is based on a calculated change in storage using water levels and seawater intrusion, not the difference between inflows and outflows.	SVBGSA_MCWRA Comments
W-247	6.9				11/25/2019	MCWRA	The difference between groundwater inflow and outflow for the historical budget is referred to twice, with different totals: 39,700 AF and 39,900 AF.		The text is now consistent.	SVBGSA_MCWRA Comments

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W-248	6.10.5				11/25/2019	MCWRA	Statement; "For example, the total pumping used to calculate the historical sustainable yield is 86,500 AFY, while the pumping used to estimate the projected sustainable yields varies between 115,300 and 120,600 AFY." Total pumping from Table 6-21 is 108,100 afy, not 86,500 afy. Review value given in Table 6-31.		The text is now consistent.	SVBGSA_MCWRA Comments
W-249	7.2.2		7-3		11/25/2019	MCWRA	The CASGEM network consists entirely of wells that are either owned by MCWRA or were monitored by MCWRA prior to the initiation of the CASGEM program, rather than "primarily" as stated.		The word "primarily" has been deleted	SVBGSA_MCWRA Comments
W-250	7.3.2		7-17		11/25/2019	MCWRA	"During implementation ... the SVBGSA will verify well completion information and location." Does SVBGSA intend to collect location data for all wells during the effort to acquire an accurate accounting of wells in the subbasin? MCWRA has done some preliminary work on the availability of GPS location data for wells and may be able to assist with defining data gaps in this area.		An accurate accounting of wells is one of the implementation actions. We look forward to working cooperatively with the MCWRA in this activity.	SVBGSA_MCWRA Comments
W-251	7.3.2		7-17		11/25/2019	MCWRA	"A potential data gap is the accuracy and reliability of reporting pumping rates." Is this referring to data reported to MCWRA through GEMS? If so, a clarification of what is meant by "pumping rates" would be helpful. Data reported through GEMS is done so annually and includes monthly totals of water usage but not a 'gallons per minute' type of pumping rate for each well.		The word "rates" has been deleted	SVBGSA_MCWRA Comments
W-252	7.7		7-29		11/25/2019	MCWRA	Statement; "As described in Section 5.5, there is little to no connection between the 180-Foot, 400-Foot, or Deep Aquifer and surface water in the 180/400-Foot Aquifer Subbasin. However, the Salinas River is potentially in connection with groundwater in the shallow water-bearing sediments that do not constitute a principal aquifer. The shallow sediments are not used for any significant extraction, and have very little monitoring data. Therefore, the level of interconnection is unclear." According to the water budget, stream percolation accounts for 50,000 afy of the 90,000 afy of annual inflow to the subbasin, more than half the total. This indicates either that the water budget includes the Shallow Aquifer sediments, or that the River is better connected to the 180-Foot Aquifer than is indicated by the text. As stated earlier in the GSP, there are recognized gaps in the Salinas Valley Aquitard.		The water budget includes the shallow sediments.	SVBGSA_MCWRA Comments
W-253	8	8-1	8-6		11/25/2019	MCWRA	The Undesirable Result for Sustainability Indicator "Reduction in Groundwater Storage" refers to a "long-term average". Suggest defining how the period of time for "long-term" will be determined.		Comment noted. No definition of long-term exists.	SVBGSA_MCWRA Comments
W-254	8	8-1	8-6		11/25/2019	MCWRA	Sustainability Indicator "Seawater Intrusion" has interim milestones that suggest measurements will be made relative to some starting point, e.g. "one third of the way". Suggest clarifying the starting point, as the seawater intrusion front consists of irregularly-shaped contours or, in the case of the 400-Foot Aquifer, multiple non-contiguous contours.		The first interim milestone is current conditions, the implied starting point.	SVBGSA_MCWRA Comments
W-255	8.6.2.1		8-17		11/25/2019	MCWRA	Fall groundwater level contour maps are developed from data collected from October through December.		The text has been clarified	SVBGSA_MCWRA Comments
W-256	8.6.2.1		8-34		11/25/2019	MCWRA	MCWRA seawater intrusion contours are developed using data from privately-owned wells and dedicated monitoring wells, not only "dedicated monitoring wells near the coast" as stated in paragraph 3.		The text has been clarified.	SVBGSA_MCWRA Comments

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W-257	8		8-36	8-7	11/25/2019	MCWRA	Suggest showing the 2017 contours as depicted by MCWRA as part of the overall front illustrated on the figure.		The objective must be a single isocontour. therefore, the 2017 contours were combined into a single isocontour.	SVBGSA_MCWRA Comments
W-258	8.11		8-61		11/25/2019	MCWRA	The Salinas River is a losing river, independent of the year type or season.		The text has been clarified.	SVBGSA_MCWRA Comments
W-259	9.3				11/25/2019	MCWRA	Through its extensive experience and knowledge of facilities operation, MCWRA can provide valuable insights to aid the SVBGSA in the implementation of Management Actions. MCWRA looks forward to a cooperative approach in the assessment and implementation of Management Actions.		SVBGSA looks forward to working cooperatively with MCWRA during GSP implementation.	SVBGSA_MCWRA Comments
W-260	9.3.2				11/25/2019	MCWRA	The SVBGSA should evaluate the impact of Prime Agricultural Land designation or Agricultural Preservation Zones prior to the development of policies or ordinances related to agricultural land retirement.		This will be considered during the implementation phase.	SVBGSA_MCWRA Comments
W-261	9.3.4				11/25/2019	MCWRA	The MCWRA Board of Directors adopted a Reservoir Operations Policy in February of 2018 after a robust stakeholder process. As stated on page 2 of the policy, "As a multi-use facility, Nacimiento Dam and Reservoir is operated with consideration to many factors including dam safety, flood protection, groundwater recharge, operation of the SRDF, water supply, fish migration, fish habitat requirements, agriculture, and recreation. This Operation Policy defines parameters and describes guidelines and requirements the Agency will follow to operate the Dam and meet the challenges of balancing the sometimes competing interests involved in operating this multi-use facility." The MCWRA is undertaking a Habitat Conservation Plan (HCP) to update the operations of the reservoirs. The HCP will be developed through an extensive stakeholder process and robust scientific analysis that evaluate a wide range of environmental and operational considerations. The MCWRA anticipates the SVBGSA will play a significant role in the development of a Habitat Conservation Plan for future reservoir operations.		SVBGSA looks forward to participating in MCWRA's HCP development process.	SVBGSA_MCWRA Comments
W-262	9.3.5		9-16		11/25/2019	MCWRA	This management action has the potential to duplicate or conflict with parts of MCWRA Ordinance No. 3790.		SVBGSA will work with MCWRA to ensure management actions do not conflict with MCWRA ordinances.	SVBGSA_MCWRA Comments
W-263	9.3.6		9-18		11/25/2019	MCWRA	Ordinance No. 5302 is a Monterey County ordinance. Restrictions on wells in the Deep Aquifers are not MCWRA's restrictions.		This has been corrected.	SVBGSA_MCWRA Comments
W-264	9.4.3.1				11/25/2019	MCWRA	MCWRA will actively participate in the pre-design phase of all projects related to existing MCWRA infrastructure.		SVBGSA looks forward to working with MCWRA on the pre-design and implementation of projects.	SVBGSA_MCWRA Comments
W-265	9.4.3.2				11/25/2019	MCWRA	The RCD of Monterey County spearheads an arundo eradication project that is not considered mitigation for impacts. It is a comprehensive program that has systematically addressed this invasive species from the upstream to the downstream sections of the Salinas River. The long-term benefits of invasive species eradication will decrease as native vegetation grows in its place. The Salinas River Stream Maintenance Program allows for consistent vegetation treatment to increase flow capacity of the river and will reduce evapotranspiration for the longer term. Additional river flows as considered in Section 9.3.4 will make vegetation management actions even more critical since vegetation will thrive under those conditions.		Comment noted.	SVBGSA_MCWRA Comments

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W-266	9.4.3.2.2				11/25/2019	MCWRA	Statement; "Model results suggest that this project reduces seawater intrusion by approximately 890 AF/yr. on average." First mention of a groundwater model, not referenced in Appendix 9C.		This is the NSV model is discussed in Appendix 9C.	SVBGSA_MCWRA Comments
W-267	9.4.3.3				11/25/2019	MCWRA	The CSIP system has integrated recycled water, well water and river diversion supply through the sharing of infrastructure. As it is currently configured, the recycled water and river diversion water share a storage pond near the treatment facilities. The wells are located out in the irrigation system and therefore serve as a critical link to distributing water when there are peak demands. Substituting more recycled water or river water does not always reduce well use as the previous two compete to fill the storage pond. Irrigation demands are dependent on many other factors such as crop type, stage of growth, and climate conditions. Shifting the irrigation demand to when the water is available may not meet the objectives of optimal plant growth and productivity. Water storage could be from recycled water since		Comment noted. This will be taken into consideration during the implementation phase.	SVBGSA_MCWRA Comments
W-268	9.4.3.3		9-31		11/25/2019	MCWRA	Supplemental wells are responsible for most pumping in the CSIP zone for the reason specified here. Private wells in the CSIP area are standby wells and can be pumped for specified circumstances.		Comment noted.	SVBGSA_MCWRA Comments
W-269	9.4.3.4				11/25/2019	MCWRA	MCWRA is a sister agency to MIW and the agencies work collaboratively on operating and maintaining the tertiary treatment facility (SVRP). Modifications to produce tertiary treated recycled water when demands are low is needed at the SVRP site. All wastewater is treated to the secondary level without any modifications necessary. Groundwater pumping is currently necessary for meeting demand as well as addressing pressure issues in the system. These modifications would need to be coupled with the hydraulic modeling and other system improvements described in the previous section to be most effective at reducing groundwater pumping. This project is not currently funded nor have the CSIP customers approved an increased charge. New funding estimates are $7-10 million and additional funding resources should be identified to implement this project.		The GSP includes an estimated capital cost for the M1W Winter Modification project of $1,493,000, estimated by Raftelis Financial Consultants (2018). This comment does not include sufficient information to revise this estimate at this time, but the SVBGSA will discuss the project and cost with MCWRA during the implementation phase.	SVBGSA_MCWRA Comments
W-270	9.4.1.3		9-72		11/25/2019	MCWRA	Statement; "The desalination alternative project is one of five alternative projects that may provide additional water to the Subbasin. The project will only be implemented after all five alternative projects have been refined. The most cost-effective project of the five will be selected to supply additional water to the Subbasin." There are only four Alternative Projects listed in 9.4.4.		Text revised to say four.	SVBGSA_MCWRA Comments
W-271	9.4.3.5				11/25/2019	MCWRA	Other possible approaches to CSIP expansion should be considered moving forward. A thorough analysis of distribution system upgrades and some reliance of existing wells must be considered. Storage of recycled water may not be able to meet peak demands and SRDF water is not available every year. Areas for expansion should consider more factors than seawater intrusion. Expansion may decrease the need for the SVRP modifications described previously.		Thank you for the information. This will be included as projects are refined during the implementation phase of the GSP.	SVBGSA_MCWRA Comments
W-272	9.4.3.6				11/25/2019	MCWRA	Scheduling irrigation deliveries to reduce peak demands and re-operating the SVRP storage pond could help increase SRDF efficiency. Additional analysis to understand how the water would be used in the system is necessary. In years when SRDF diversions are not available, an alternate back up supply, such as groundwater, will be needed. As the system is currently configured, when SVRP usage increases SRDF reduces and vice versa as they are sharing facilities that limit the amount of water that can be delivered. Capital expenditures may be necessary to accomplish the increased use of SRDF water.		Thank you for the information. This will be included as projects are refined during the implementation phase of the GSP.	SVBGSA_MCWRA Comments

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W-273	9.4.3.7		9-50		11/25/2019	MCWRA	GSP States that "Supplemental water to replace the extracted water would come from one of a number of other sources" but does not elaborate on what those other sources might be.		Sources of supplemental water will be evaluated during the implementation phase of the GSP as projects are refined.	SVBGSA_MCWRA Comments
W-274	9.4.3.7		9-51		11/25/2019	MCWRA	GSP includes assumptions about the pumping rates of wells in the 180- and 400-Foot Aquifer but does not explain the origin of these assumptions, subsequently making it difficult to evaluate the validity of the assumptions and the project as a whole.		Comment noted. Section 4.4.2 gives a range of pumping rates for the principal aqiufers.	SVBGSA_MCWRA Comments
W-275	9.4.3.9				11/25/2019	MCWRA	Preferred Project 8 (11043 Diversion Facilities Phase II: Soledad) should include coordination with MCWRA and consultation on construction and operation of a diversion facility.		Text added: The SVBGSA will coordinate and consult with MCWRA on planning, construction, and operation of this project.	SVBGSA_MCWRA Comments
W-276	9.4.3.9.2		9-60		11/25/2019	MCWRA	Consider including water quality as a relevant measurable objective for this project.		Water quality is not a primary expected benefit of this project; however, could be added during the planning phase.	SVBGSA_MCWRA Comments
W-277	9.4.3.10				11/25/2019	MCWRA	The SRDF is a point of re-diversion from Nacimiento and San Antonio Reservoir's two water right licenses and permit. Permit 21089 is a right to store and use water from the Nacimiento River. Changes to all three would be necessary to change the time of year water could be rediverted, along with the addition of an additional storage component. These changes are currently in conflict with the amou nt of water available to redivert at the SRDF from April 1st to October 31st, when demands are at their peak. The reservoirs have a limit on the amount of water that can be stored on an annual basis; and the water right licenses and permits have restrictions as to how much is withdrawn from storage annually. Additionally, treatment of river water should must comply with all state and federal regulations for injection into the groundwater aquifers.		Thank you for the additional information. The SVBGSA will work with MCWRA in the planning stages of this project.	SVBGSA_MCWRA Comments
W-278	10.3		10-8		11/25/2019	MCWRA	Statement; 'To develop better estimates of aquifer properties, the SVBGSA will identify up to three wells in the 180-Foot Aquifer and up to three wells in the 400-Foot aquifer for aquifer testing. Each well test will last a minimum of 8 hours, and will be followed by a 4-hour monitored recovery period. Wells for testing will be identified using the following criteria." It is the opinion of the MCWRA that three data points and the minimum test period in each aquifer will do little to refine the hydrogeologic properties of this subbasin. At a minimum, the MCWRA would recommend six to eight additional data points in the Deep Aquifers with an additional four to six data points in each of the 180-Foot and 400-Foot Aquifers. Pumping for the tests should last for a minimum of 12 hours, with a six to eight-hour recovery period in order to derive aquifer properties beyond the immediate vicinity of each well (data point).		Comment noted. The number of wells or duration of test was not changed at this point, as it would increase the budget ; however, SVBGSA will revisit these details when the testing program is initiated.	SVBGSA_MCWRA Comments
W-279	10.4				11/25/2019	MCWRA	Numbering errors in subsections		Numbering is fixed	SVBGSA_MCWRA Comments
W-280	10.1.9		10-8		11/25/2019	MCWRA	Two Shallow wells adjacent to the Salinas River are inadequate to characterize level of interconnection.		Comment noted. MCWRA can raise this with stakeholders in future SVBGSA meetings.	SVBGSA_MCWRA Comments
W-281					11/25/2019	SVWC	Many of the references to the other Sub-Basins within the text of the 180/400 GSP should be deleted as they are confusing as to whether they apply other subbasins and/or how they would apply. This GSP is specific to the 180/400 Aquifer Subbasin and it should be clear to the reader that the various thresholds, standards, projects and/or management actions work to provide the needed and required sustainability to the 180/400 Aquifer Subbasin.		The GSP needs to be clear as to how this GSP relates to other subbasins. Text has been revised to try to clarify these relationships and avoid confusion.	SVWC comments on 180 400 GSP 112519 final.pdf

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W-282					11/25/2019	SVWC	Data gaps and lack of data: Section ES-5, Historical and Current Water Budgets states the historical and current water budgets are based on "best available data and tools", but goes on to state that "no groundwater model is available that produces an accurate historical and current water budget." That is, there are significant data gaps due to the unavailability of a groundwater model. We understand that it is anticipated that the water budgets will be updated to reflect the SVIHM output when it is released. The water budgets are key to this critically overdrafted subbasin. It is difficult to fully know what management actions and projects are needed to bring this subbasin into sustainability without having accurate historical and current water budgets. This is an important element of the entire GSP. Because of the lack of accurate data and tools, it is important to look at what management actions and projects should be implemented in the near-term (immediately) and the short-term (within 6 months to one year) and the long-term in order to bring the 180/400 subbasin into sustainability as soon as possible while preparing to meet long-term sustainability. This section also states that the "relatively high percentage error emphasizes the need to adopt the modeled historical groundwater budget when the historical SVIHM becomes available." It is because of this statement, in part, that it is difficult to understand the extent of the existing seawater intrusion problem in the 180/400 subbasin and the level of management actions and/or projects needed to meet sustainability, and whether the ones presented in the GSP will provide it. Table 1 on page 10 demonstrates the level of uncertainty of using the 'best available data and tools', and only further confuses the matter and the reader.		Comment noted. Lack of a groundwater model does not prohibit the determination of water budgets from other available data and tools, so it is not a data gap. However, the water budget wil be updated when the SVIHM is available.	SVWC comments on 180 400 GSP 112519 final.pdf
W-283					11/25/2019	SVWC	Water Charges Framework: The water charges framework discussion should be geared only for the 180/400 GSP. While this type of framework may work for the other subbasins, this plan is ONLY for the 180/400 subbasin and what management actions and projects need to be implemented to meet the required sustainability for this critically overdrafted subbasin. Any contemplated water charges for implementing management actions and/or projects to address the seawater intrusion issue in this subbasin, should not be applied to the other subbasin unless and until it is shown how, and if, the other subbasins contribute to the seawater intrusion of the 180/400 subbasin and how they will benefit from the implementation of the management actions and/or projects. o Please know that the Salinas Valley Water Coalition supports all lands within the entire SVGBGSA paying fees to meet the overall administrative costs. However, they do not support blanket implementation of pumping charges to offset costs of implementing management actions and/or projects within the 180/400 subbasin; the costs for implementing these actions and projects should be paid for by those who would benefit from them – i.e. those within the 180/400 subbasin.		Comment noted. The SVBGSA decided to include the water charges framework, projects, and management actions for the entire SVBGSA area because they are hydraulically connected and affect each other. Comment noted regarding what SVWC supports.	SVWC comments on 180 400 GSP 112519 final.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-284					11/25/2019	SVWC	Management Actions: This section identifies six management actions that "are most reliable, implementable, cost-effective, and acceptable to stakeholder." The GSP then goes on to state "the first three would benefit the entire Salinas Valley; the last three are specific to the 180/400 Aquifer Subbasin." "Agricultural land and pumping allowance retirement". The SVWC does not believe that the Salinas Valley, other than the 180/400 Aquifer Subbasin will benefit from such pumping allowances and/or agricultural land retirement. Science and 'accurate' data has shown that areas outside of the 180/400 Aquifer do not contribute to seawater intrusion in the 180/400 and/or will the Salinas Valley, other than the 180/400, benefit from stopping seawater intrusion – except and to the extent of being a good neighbor and wanting to see this problem in the northern end of the Salinas Valley solved. Science and data have shown that this problem can only be solved by those within the 180/400 Aquifer Subbasin. See letter for specific comments.		SVWC preferences are noted. These comments will be taken into consideration during the implementation phase when projects and management actions are further developed.	SVWC comments on 180 400 GSP 112519 final.pdf
W-285					11/25/2019	SVWC	Without offering a tracked changes version for each document, it is difficult for the public to sift through all text, figures and tables to determine what has been changed. Although the SVB GSA website is a repository for all documents, not all previous versions of Chapters are easily accessible to the public. On the GSP Valley Wide page, only Chapter 7 (released 5/16/19), Chapter 5 ((released 3/14/19) and Chapter 4 ((released 1/10/19) are available.1 The 180/400 page lists a simple one page "Update No. 1" description of a few high level changes. 2 Instead, one has to look through old meeting agendas and packets to find previous versions of documents. Unfortunately, many of these documents, although included as part of a dated agenda, do not have a date and the bottom of the document.		While meeting materials are transparent and located with the corresponding meeting agendas, the SVBGSA only makes the chapters public by putting them on the main pages after Board approval.	SVWC comments on 180 400 GSP 112519 final.pdf
W-286	9.2				11/25/2019	SVWC	As mentioned above, the water charges framework should be considered for implementation only within the 180/400 Aquifer Subbasin. It should not be assumed to apply and be appropriate for the entire Salinas Valley. The GSP should also include other types of funding mechanisms to fund the implementation of management actions and projects for this GSP – but again, it should only consider such funding mechanisms as needed for the 180/400 Aquifer Subbasin, and not the entire Salinas Valley. Each subbasin should be allowed to consider other funding mechanisms as need to support implementation of their individual GSP. See letter for specific comments related to the text		Comment noted	SVWC comments on 180 400 GSP 112519 final.pdf
W-287	9.2.7				11/25/2019	SVWC	As we have stated above, this section should add: "Which financing method will fund GSA functions and projects for the 180/400 sub basin" o The option for multiple funding sources is clearly stated earlier, but at this point the document is making it sound as if WCF is already finalized and that it will be applied throughout all subbasins in the Salinas Valley—when it should only be applied within the 180/400 Aquifer Subbasin for this GSP and then may be considered within the other subbasins as their GSP's are developed and implemented. o Page 9-2: "Depending on the outcome of the negotiations, long-term GSP implementation may be funded by the water charges framework, other financing method as permitted by SGMA and other state law, or a combination thereof."		The water charges framework has not been finalized. As stated in the text, there will be numerous stakeholder discussions to design and agree upon it.	SVWC comments on 180 400 GSP 112519 final.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-288	9.2.7				11/25/2019	SVWC	The GSP states, "What is an equitable balance between the Tier 1 Sustainable Pumping Charge collected in the 180/400-Foot Aquifer Subbasin and the Tier 1 Sustainable Pumping Charge collected in other subbasins?" o However, this seems to conflict with what is stated on Page 9-2: "Therefore, actual costs seen by growers are proportional to individual needs project water." o This statement assumes that other subbasins will have Tiered WCF similar to the 180/400, as we have stated, this may not be the case. The 180/400 Aquifer Subbasin GSP should clearly state that the water charges framework will be applied to the 180/400 Aquifer Subbasin GSP and "may' be considered for implementation in other subbasins as their GSP's are developed.		The GSP outlines a notional idea of what the water charges framework could look like; however, as stated in the text, there are many details to be discussed and agreed upon, such as this question.	SVWC comments on 180 400 GSP 112519 final.pdf
W-289	9.3.2				11/25/2019	SVWC	The assumption of Chapter 9 is that a combination of reduced pumping and projects are likely needed, however, doesn't state how we may be able to achieve our goal with reduced pumping alone. The 180/400 Aquifer Subbasin GSP should state what other action(s) would be needed if projects are not supported and approved – this would be comparable to including a 'no project' alternative.		An analysis of how to achieve the sustainability goal with reduced pumping alone has not been done at this point, but the SVBGSA may do so during the implementation and GSP update period.	SVWC comments on 180 400 GSP 112519 final.pdf
W-290	9				11/25/2019	SVWC	SGMA requires projects and management actions to have quantified benefits. Management Action #1 is the only Management Action that has potential water savings, therefore it should either state those savings or be moved to the Projects section in the Final Draft. It should consider, and be limited to, opportunities for such savings within the 180/400 Aquifer. The "Project" would be for SVB GSA staff or consultants to conduct a geospatial analysis to assess the best areas to potentially purchase lands for retirement, study the economic value of the land and water		Projects are defined as activities that support groundwater sustainability that require infrastructure, so Management Action #1 would not qualify. The amount of water savings is unknown at this time. The SVBGSA includes the suggested assessment as part of the overall management action.	SVWC comments on 180 400 GSP 112519 final.pdf
W-291	9				11/25/2019	SVWC	In order provide a full understanding as to what it would be mean to the 180/400 Aquifer if NO projects were approved and implemented, at the minimum, the Permanent Retirement estimated cost calculations (9.3.2.8) needs to be refined		While water savings will continue, to obtain a comparable number, 25 years was used. More detailed refinement of the cost of implementation and benefits will be calculated during the implementation period.	SVWC comments on 180 400 GSP 112519 final.pdf
W-292	9				11/25/2019	SVWC	Relevant Measurable Objectives - Why isn't Water Quality Objective mentioned in any of these sections? • The GSP should state that it is the intent to collaborate with other agencies, entities, including the Regional Water Quality Control Board to promote water quality objectives.		The Retional Water Quality Control Board is one of the stakeholders. The GSP does not list all stakeholders individually.	SVWC comments on 180 400 GSP 112519 final.pdf
W-293	9				11/25/2019	SVWC	"The project cost will be covered through delivery charges to existing CSIP customers. Because a funding mechanism for this project has already been identified, these costs will not be incorporated into the Water Charges Framework." • Seems that this would apply to PP2 and PP5 as well. Shouldn't optimizing CSIP be paid by those who would benefit, and expanding CSIP be paid by those who benefit? Would all growers in the 180/400 pay into PP2 and PP5 or just those that receive water from CSIP? • Page 9-2: "Therefore, actual costs seen by growers are proportional to individual needs project water."		Which projects are included in the water charges framework will be part of future discussions.	SVWC comments on 180 400 GSP 112519 final.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-294	9.4.3.6.6				11/25/2019	SVWC	" The estimated projected yield for the project is 11,600 AF/year. "The yield for this project is the same yield that is identified in Priority Project #2 and a portion of the yield identified in Priority Project #3." • What does this statement mean, does it mean it is the same water saved (it cannot be double-counted)? • If this is the case, why is the project yield AF related to CSIP projects listed separately in Table 9-5 if the water saved is the same? • The 3 CSIP-related projects need to be clarified for the public, growers and land owners to understand o How are they interrelated? o How many acre-feet exactly result from the separate projects of 2,3 and 5? o What is the intention of separating projects vs. combining all into one if they have overlapping water savings? o Could these projects be listed as one project to be implemented in phases?		The text has been clarified and now reads "The yield for this project will facilitate achieving the yield that is identified in Priority Project 2 and a portion of the yield identified in Priority Project 4." The 11,600 was removed from Table 9-4. The questions will be considered as the projects are refined.	SVWC comments on 180 400 GSP 112519 final.pdf
W-295	9.4.3.7				11/25/2019	SVWC	Does the cost estimate include environmental review under CEQA? PG&E costs? Where will brackish water go? There are many unanswered questions that require significant analysis before a decision can be made as to whether this project can work. It might be helpful to also compare this project to a desal plant.		CEQA is not included in estimated project costs, but is included in the budget because it is part of the design and permitting phase (whereas the water charges framework or other funding mechanism would fund construction).	SVWC comments on 180 400 GSP 112519 final.pdf
W-296	9.4.3.7				11/25/2019	SVWC	Does the cost estimate include desalination so it can be used? If not, it is not a "yield" of water for the basin to use. Although the seawater intrusion wells may pump this amount per year, none of this water will be useful for irrigation or domestic purposes. Therefore a reader cannot easily make an "apples to apples" comparison from this to other Preferred Projects, such as PP2,3,4,5. Even PP1, Invasive Species removal, which is of a different category, still has the supposed end result that less water is taken up by evapotranspiration and therefore more water will be left in the river or groundwater basin that could be available to recharge. To the contrary, PP6 takes brackish water out of the basin and discharges it into the ocean, so where is the water savings?		The estimation of yield for the seawater intrusion barrier is only included for the purpose of comparing its cost to other projects (and that has been clarified in the text). The benefit it provides is not directly comparable to other projects.	SVWC comments on 180 400 GSP 112519 final.pdf
W-297	9.4.3.7				11/25/2019	SVWC	Whether environmentally and politically possible, the cost-benefit analysis of this proposed project does not seem to be correct. Specifically: o If the project yield is 30,000 AFY, why is it stated that it extracts 22,000 AFY in the notes below Table 9-5? o If project yield and costs calculation use the denominator 30,000 AFY, why is it listed as a value of only -11,000 AFY in table 9-5? If this is the actual value to the basin, shouldn't the cost be divided by 11,000 AF? o If the value is negative 11,000 AFY (and other projects are positive) how exactly does this add up to helping mitigate overdraft? Again, it is hard to compare apples to oranges.		The seawater intrusion barrier yield has been removed from Table 9-5 since it does not directly mitigate overdraft.	SVWC comments on 180 400 GSP 112519 final.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-298	9.4.3.7				11/25/2019	SVWC	Why is PP6 the same cost as PP9, when capital costs are $50 million higher and annual O&M is $6Million higher/year? (Again, the 30,000 AF "yield" of PP6 does not increase water in the aquifer – it takes it out, therefore you cannot divide by yield in PP6 similarly to PP9). o PP6 Seawater Intrusion Pumping Barrier: "Capital cost for the Seawater Intrusion Pumping Barrier project is estimated at $102,389,000. This includes 44,000 LF of 8-inch to 36-inch pipe and rehabilitation of the existing M1W outfall. Annual O&M costs are anticipated to be approximately $9,800,000. The total projected yield for the Seawater Intrusion Pumping Barrier is 30,000 AF/yr. The cost of water for this project is estimated at $590/AF." o PP9 SRDF Winter Flow Injection: "The majority of the costs are for the construction of the injection wells. Capital costs are assumed to be $51,191,000 for construction of an injection well field consisting of 16 wells as well as construction of a 4-mile conveyance pipeline between the SRDF site and the injection well system. Annual O&M costs are estimated at $3,624,000 for the operation of the injection well field. Total annualized cost is $7,629,000. Based on a project yield of 12,900 AF/yr., the unit cost of water is $590/AF/yr."		The costs in the text are correct. The capital costs are annualized and the O&M costs are then added to the annualized capital costs.	SVWC comments on 180 400 GSP 112519 final.pdf
W-299	9.4.3.10				11/25/2019	SVWC	This project proposes injection wells, have groundwater recharge basins been considered? This would include a water savings from taking ground out of production (3 af/acre) and no major ongoing O&M/capital costs. • Why is there 4 miles of pipeline? Could you contact landowners closer to facilities, purchase land, permanently fallow ground closer to region to be served and reduce fee. Compare the cost/mile pipe vs. land costs.		Because the 180 and 400 foot aquifers are somewhat confied, surface recharge is inefficient at recharging these aquifers. The deatils of implementation we'll work out during the design phase.	SVWC comments on 180 400 GSP 112519 final.pdf
W-300	9.6				11/25/2019	SVWC	What is the current demand in the 180/400 Aquifer Subbasin? What is the sustainable yield for Subbasin? What is the overdraft of the Subbasin? - According to 5.3.4 Total Change in Groundwater Storage, the basin is over drafted by 11,700 AFY. - According to 9.6 Mitigation of Overdraft, the historical subbasin overdraft estimated in Chapter 6 is 12,600 AF/yr. - If we have to add on to the overdraft as a "buffer" to stop seawater intrusion, what is the target goal? 20,000 AFY?		Text has been added to clarify that mitigation of overdraft is based on the long-term future overdraft, and is not sufficient for reaching sustainability.	SVWC comments on 180 400 GSP 112519 final.pdf
W-301	9.6				11/25/2019	SVWC	What is the cumulative impact of multiple projects? If all projects were put in place, or a certain combination of projects in place, would there be enough water for it?		Table 9-5 demonstrates that there are ample projects to mitigate overdraft	SVWC comments on 180 400 GSP 112519 final.pdf
W-302	9.6				11/25/2019	SVWC	Table 9-5 – total in table is -58,201, but this appears to be incorrect, if added the total is 40,800 AF		Table 9-5 has been modified	SVWC comments on 180 400 GSP 112519 final.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-303	10				11/25/2019	SVWC	Our members are sensitive to total costs to implement SGMA, especially for Management Actions that may be lumped into the shared Valley Wide budget. Between the First and Second drafts of Chapter 9 (between July 18 and August 8, 2019, as described in Process section above), the two Management Actions (MAs) have been added and the cost for existing MAs have increased in both years, cost per year and total cost. In total we have calculated that annual costs for these MAs have gone up +$255,000 and assuming MA #2 education lasts 5 years, total costs increase by $1,000,000. On the "Public Comment" document, there is no apparent public comment on these MA changes, most of the comments were around the Water Charges Framework and Projects.6 Since the release of the August draft and the October draft, there doesn't seem to be substantial changes despite the extensive comments received.		Discussions and comments received. Only formal comments and meetings were included in the spreadsheet. Only technical edits and more realistic cost estimates were made to projects and management actions, not substantive changes that require more thorough analysis, which will be done as the projects are refined during the implementation period.	SVWC comments on 180 400 GSP 112519 final.pdf
W-304	10				11/25/2019	SVWC	Why did MA 1 change from a 4% 30 year mortgage to a 6% 25-year mortgage? • How many years is MA #2 expected to take? • Why has the number of years gone up for MA #3, 4, 5? • Why has the cost per year gone up for MA #4? • MA6 creating a Seawater Intrusion Working Group (SIWG) was recently added, and while this may be a good idea, it is the most expensive Management Action. It also isn't clear as to the level of inclusion of stakeholders – they need to be included in any working group. o Why is there $250,000 on Tale 10-1 for "Seawater Intrusion Working Group" and an additional $200,000 on Table 10-2 for "Coordinate SIWG? If total budget is $250,000+$200,000, why aren't these costs stated in Chapter 9? o Table 10-2: We have $1.2 million for Operational Costs, why is SWIG listed as a separate line item whereas other Management Actions are assumed to be included under Operational Costs? • It states that the SVB GSA is only providing "oversight" for many of the Management Actions and even some Projects. Will these be overseen by other agencies? If so, would SVBGSA have any authority over these actions and projects? o If it is just to primarily stay informed and attend meetings, why is the cost to GSA so high (especially MA 3,4,5)? o Has SVB-GSA Board of Directors approved expansion to its staffing? o If not, will salaries of two existing staff be significantly increasing?		The cost assumptions for MA1 were changed to be consistent with the cost assumptions for all other projects Management Action 2: Outreach and Education is ongoing with no set end date The timeframes and costs for management actions were set based on our best estimate of when these actions could reasonable be implemented and the estimated effort. The costs for seawater intrusion working group include coordination, meeting, and negotiation costs (Coordinate SIWG), as well as costs for technical analyses of existing data (Seawater Intrusion Working Group). SVBGSA plans to work cooperatively with other agencies and NGOs to effectively and efficiently implement the management actions and projects. SVBGSA currently does not plan to duplicate work done by others. While not agreed to yet, it is possible that SVBGSA will share authority on shared projects.	SVWC comments on 180 400 GSP 112519 final.pdf
W-305	10	10-1 and 10-2			11/25/2019	SVWC	Are all Management Actions assumed to be included under Table 10-2 Operational Costs ($1.2M)? o We have $1.2 million for Operational Costs, why is SWIG listed as a separate line item if other Management Actions are assumed to be included under Operational Costs?		As stated in the text: "Costs for implementing projects and actions are in addition to the agreed-upon funding to sustain the operational costs of the GSA, and the funding needed for monitoring and reporting. "	SVWC comments on 180 400 GSP 112519 final.pdf

Number	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Response	Commenter doc name
W-306	10	10-1 and 10-2			11/25/2019	SVWC	All 180/400 planning, operational costs and specific actions should be put under table 10-1, not 10-2. This is important because the basin is different both scientifically and in the eyes of the State Water Board. It is considered a high priority basin and therefore has different regulatory time schedule for the implementation of 180/400 projects. Because saltwater intrusion issue it faces is more challenging than other sub-basins, the potential need for complex and multiple projects will also drive up the costs for compliance for this sub-basin. For example, o Why is SIWG ($200,000) listed on "Valley-wide" planning cost Table 10-2 when seawater intrusion isn't a valley-wide issue? o Why is Refine Projects and Actions ($460,000) on table 10-2 if other basins may have no need for projects, or the projects they may partake in (such as PP#1 Invasive Species Removal) already exist? o While the cost/benefit analysis of projects for the 180/400 may have some interaction with other basins such as the Forebay, to put a generic placeholders on table 10-2 and claim that they are "Whole Valley" line items is erroneous.		Table 10-1 lists costs that are specific to the 180/400-Foot Aquifer Subbasin; Table 10-2 are costs that could reasonably viewed as Valley-wide. These are estimated costs, but are open to revision when the funding mechanisms are finalized. The Seawater intrusion were accidently duplicated. The seawater intrusion working group costs have been removed from the Valley-wide costs.	SVWC comments on 180 400 GSP 112519 final.pdf
W-307	10	10-1 and 10-2			11/25/2019	SVWC	There appears to be an addition error in Table 10-2 as the 'Total' of $9,422,600.00 is not correct – but rather it should be $2,921,800.00 according to our addition. This is a significant error as it distorts the overall total costs of the projects, and then distorts the average annual cost and hence, the potential costs to be paid by landowners. Table 10-1 also appears to be added incorrectly, calling into question the integrity of the document.		In both Tables 10-1 and 10-2 costs are marked as 'lump sum' or 'annual' costs. Annual costs are included in the total budget for 5 years. Numbers have been double checked and are correct.	SVWC comments on 180 400 GSP 112519 final.pdf

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1	11/15/2018	Bob Jaques email to D. Williams, G. Petersen	BobJaques.11.15.2018 comment_180-400 and ISP	1-3
2	11/13/2018	Tamara Voss to D. Williams, G. Petersen	TamaraVossGSP Comments 1-3_TV111418	1-3
3	11/21/2018	Mike McCullough email to D. Williams	12-18-2018 email from Mike McCullough	1-3
4	12/18/2018	Paul Tran CHISPA email to G. Petersen	11-21-2018 email from Paul Tran	1-3
5	1/17/2019	EKI	Draft Hydrostratigraphy Summary_MCWD_2019-01-17_EKI	4
6	2/7/2019	Sandi Matsumoto/TNC	TNC_180-400ftAquifer_Chapter4	4
7	3/26/2019	EKI	Preliminary Comments_Chapter4_2019-3-26_EKI	4
8	12/6/2018	Heather Lukacs	HeatherLukacs_WaterQuality for Chapter 4_12.06.2018	4
9	12/21/2018	Brian Frus	GSP 180_400 Aquifer Comments Chs 4 Salinas Brian Frus 18 12 21	4
10	4/4/2019	Glenn Church	GChurch_Public Comment Chapters 5	5
11	4/11/2019	The Nature Conservancy	TNC_180-400ftAquifer_Chapter5 submitted 04.11.2019	5
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13	5/6/2019	Central Coast Water Board	Signed CC Regional Board comments chpater 5 - final	5
14	4/8/2019	Gus Yates	GusYates_Valleywide_Plan_Ch_5_comments_cw)4102019	5
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19	7/10/2019	Anderson, MC Water Systems	Chapter 6. MOCOW Comments	6
20	6/18/2019	Virsik	Public Comments, Tom Virsik, Chapter 6 cc'd Derrik Williams	6
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26	7/16/2019	CC Regional Board	CC Regional Board comments Salinas Valley 180 400 Ch 8.pdf	8
27	7/26/2019	NMFS	NOAA National Marine Fisheries Service Comments on Draft Chapter 8	8
28	11/4/2019	Rural Well Owner P Scholz	MOCOWS comment letter#3	8
29	6/4/2019	Virsik	Public Comments, Tom Virsik, Chapter 6 cc'd Derrik Williams Listed above for Ch. 6	8
30	7/10/2019	Marla Anderson	MOCOWS GSP comment letter 11-3-19	8
31	7/17/2019	Thomas Virsik/Orradres & Scheid	GSABadvisor 17July2019	9
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38	10/9/2019	Monterey One Water, Salinas, Cal Water	SVBGSA Joint Letter for Chapter 9 M1W Salinas Cal Water.pdf	9
39	9/30/2019	CC Water Board	CC Regional Board comments Salinas Valley 180 400 Ch 9.pdf	9
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53	11/14/2019	Thomas Virsik	Virsik_GSPComment14Nov2019	Whole GSP
54	11/14/2019	Robin Lee	Lee_comments on draft GSP 11 14 19	Whole GSP
55	11/21/2019	Chevron	180_400-Foot_Aquifer_Subbasin_GSP_Chevron_Comments.pdf	Whole GSP
56	11/21/2019	Department of Fish and Wildlife	Dept of Fish and Wildlife SVBGSA GSP Comments	Whole GSP
57	11/25/2019	James Sang	SVBGSA PROJECT email Sang.pdf	Whole GSP
58	11/25/2019	TNC	TNC comments - Salinas 180-400ft.pdf	Whole GSP
59	11/25/2019	Farm Bureau	GSP Comment Letter-MCFB 112519.pdf	Whole GSP
60	11/25/2019	The Otter Project	TOP GSP comments.pdf	Whole GSP
61	11/25/2019	Community Water Center	180_400 Foot Aquifer Subbasin GSP Comment Letter with Attachments 11.25.19 Final from CWC and San Jerardo.pdf	Whole GSP
62	11/25/2019	Arroyo Seco GSA	SVBGSA_GSP_comment_ltr_11252019.pdf	Whole GSP
63	11/25/2019	City of Marina	MGSA Comment Letter on the SVBGSA 180_400 Aquifer GSP.pdf	Whole GSP
64	11/25/2019	RCDMC	RCDMC Salinas Basin GSP Comments 2019-11-25.pdf	Whole GSP
65	11/25/2019	MCWRA	SVBGSA_MCWRA Cover Letter.pdf	Whole GSP
66	11/25/2019	MCWRA	SVBGSA_MCWRA Comments.pdf	Whole GSP
67	11/25/2019	California Water Service	California Water Service 180-400 GSP Comments.pdf	Whole GSP
68	11/25/2019	Alco	Alco's Comments on SVBGSA GSP for 180-400 ft Aquifer.pdf	Whole GSP

List of Letters

	Date	Commenter	Commenter document name	Chapter PDF
69	11/25/2019	SVWC	SVWC comments on 180 400 GSP 112519 final.pdf	Whole GSP
70	11/25/2019	Ag Innovations	Salinas Valley - 180_400 Ft Aquifer GSP FULL Analysis V2 Ag Innovations.pdf	Whole GSP
71	11/25/2019	Rincon Farms	Public Comment_Rincon Farms.pdf	Whole GSP
72	11/25/2019	MCWD	MCWD09582120191125152330	Whole GSP
73	11/25/2019	MCWD	MCWD Comment Letters to 180-400 GSP Draft Chapters	Whole GSP
74	12/12/2019	City of Marina	Marina Comment Letter 12-12-19	Whole GSP
75	1/8/2020	James Sang	Sang 1-8-2020	Whole GSP
76	1/8/2020	Virsik	Virsik_Jan-8-2020_Comment_Letter	Whole GSP
77	1/8/2020	City of Marina	2020-01-08 Marina and MGSA Opp. Letter to SVBGSA	Whole GSP
78	1/9/2020	Bunn	Bunn letter River Clearing 01-09-2020	Whole GSP

From: bobj83@comcast.net <bobj83@comcast.net>
Sent: Thursday, November 15, 2018 12:39 PM
To: Derrik Williams <dwilliams@elmontgomery.com>; Gary Petersen <peterseng@svbgsa.org>
Cc: Bob Jaques <bobj83@comcast.net>
Subject: 180-400 Foot GSP and Valley Wide Management Plan

Derrik/Gary:

I request that a short para, such as this one below, be added to the GSP on page 10 under Section 3.2, and to the Management Plan on page 6 under Section 3.2, so that readers will have a general understanding of what is meant by an adjudicated basin, and some specifics about the adjudicated Seaside Basin.

> *An adjudicated basin is one in which, through legal action, the basin has certain requirements placed on it by the Court, and those requirements are normally administered and enforced by a "Watermaster" that is appointed by the Court. The Seaside SubBasin Watermaster was appointed through the Decision filed February 9, 2007 by the Superior Court in Monterey County under Case No. M66343 - California American Water v. City of Seaside et al. The Seaside Basin Watermaster has 10 members, including several cities on the Monterey Peninsula, representatives from certain subareas with that basin, the Monterey Peninsula Water Management District, the Monterey County Water Resources Agency, and California American Water Company.*

In the Management Plan under Section 3.6.1 on page 20 and in Section 3.6.3 on page 22, it might be good to note that the Seaside Basin Watermaster has an extensive Monitoring and Management Plan that has been implemented for the Seaside SubBasin, which includes both water quality and water level data from numerous wells. That data may be useful to the SVBGSA in developing GSPs for the subbasins that are adjacent to the Seaside SubBasin.

Similarly, under Section 3.6.2 on page 20 of the Management Plan it might be good to note that there is extraction data compiled from numerous wells in the Seaside Subbasin by the Seaside Basin Watermaster.

Thanks,

Robert S. Jaques, PE
Technical Program Manager
Seaside Basin Watermaster
83 Via Encanto
Monterey, CA 93940
Office: (831) 375-0517
Cell: (831) 402-7673

SVRP ..... Salinas Valley Recalmation Project
SVWP ..... Salinas Valley Water Project
SWQCB ..... State Water Quality Control Board
UWMP ..... Urban Water Management Plan
USGS ..... United States Geological Survey

SECTION 1
INTRODUCTION TO THE 180/400-FOOT AQUIFER SUBBASIN GROUNDWATER SUSTAINABILITY PLAN

1.1 PURPOSE OF THE GROUNDWATER SUSTAINABILITY PLAN

In 2014, the State of California enacted the Sustainable Groundwater Management Act (SGMA). This law required groundwater basins or subbasins that are designated as medium or high priority to be managed sustainably. Satisfying the requirements of SGMA generally requires four basic activities:

1. Forming one or more Groundwater Sustainability Agency(s) (GSAs) in the basin
2. Developing a Groundwater Sustainability Plan (GSP)
3. Implementing the GSP and managing to measurable, quantifiable objectives
4. Regular reporting to the California Department of Water Resources (DWR)

This document satisfies the GSP requirement for the Salinas Valley – 180/400-Foot Aquifer Subbasin (Subbasin or 180/400-Foot Subbasin). The GSP describes the Subbasin, establishes local sustainable management criteria and provides projects and programs for reaching sustainability in the Subbasin by 2040. The GSP also includes monitoring and reporting protocols to document long-term sustainable management in the Subbasin.

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) developed this GSP with cooperation from the Marina Coast Water District (MCWD) GSA. This GSP is developed in concert with GSPs for five other Salinas Valley subbasins under SVBGSA jurisdiction: the East Side Aquifer Subbasin (DWR subbasin number 3-004.02), the Forebay Aquifer Subbasin (DWR subbasin number 3-004.04), the Upper Valley Aquifer Subbasin (DWR subbasin number 3-004.05), the Langley Area Subbasin (DWR subbasin number 3-004.09) and the Monterey Subbasin (DWR subbasin number 3-004.10). The projects and programs presented in this GSP are part of a cohesive set of projects and programs designed to achieve sustainability throughout the entire Salinas Valley GW Basin

1.2 DESCRIPTION OF THE 180/400-FOOT AQUIFER SUBBASIN

The 180/400-Foot Aquifer Subbasin is identified by DWR as Subbasin 3-004.01. The Subbasin is part of the greater Salinas Valley groundwater Basin in the Central Coastal region of California (DWR, 2016). The Subbasin is named for its two primary water-bearing units: the 180-Foot Aquifer and the 400-Foot Aquifer. The Subbasin encompasses an area of approximately 84,400 acres, or 132 square miles. The subbasin lies in Monterey County and

SECTION 3
DESCRIPTION OF PLAN AREA

3.1 180/400-FOOT AQUIFER SUBBASIN INTRODUCTION

This GSP covers the entire 180/400-Foot Aquifer Subbasin, as shown on Figure 3-1. The Subbasin lies in northwestern Monterey County and includes the northern end of the Salinas River Valley. The Subbasin covers an area of 84,400 acres (132 square miles) (DWR, 2004). The boundaries of the Subbasin, combined with those of the Monterey and Seaside subbasins, are generally consistent with the Monterey County Water Resource Agency's (MCWRA) Pressure Subarea (MCWRA, 2006).

The Salinas River drains the Subbasin, discharging into Monterey Bay. The Subbasin contains the municipalities of Salinas and Gonzales and the census-designated places of Castroville, Moss Landing, Elkhorn, Boronda, Spreckels, and Chualar. United States Highway 101 runs north-south along the eastern border of the Subbasin. State Highways 1, 156, 183, and 68 also cross the subbasin. Rivers and streams, urban areas, and major roads are shown on Figure 3-1.

3.2 ADJUDICATED AREAS, OTHER GSAS, AND ALTERNATIVES

The Subbasin is not adjudicated. The only adjudicated area in the Salinas Valley Basin is the Seaside Subbasin (3-004.08), which is not adjacent to the 180/400-Foot Aquifer Subbasin. The adjudicated Seaside Subbasin is shown by the shaded area on Figure 3-2.

One non-exclusive GSA that is not a party to this GSP exists in the Subbasin: The City of Marina. Figure 3-1 shows the area within the 180/400-Foot Aquifer Subbasin covered by the City of Marina GSA. No alternative plans have been submitted for any part of the Subbasin, or for any other Salinas Valley subbasin.

NO IT DOESN'T
FIG 2.1 DOES.

3.3 Jurisdictional Areas

There are several federal, state, and local agencies with water management authority in the Subbasin.

3.3.1 Federal Jurisdiction

A portion of the Fort Ord former Army base lies in the Subbasin. The United States Department of Defense manages this part of Fort Ord. The United States Department of Fish and Wildlife manages the Salinas River National Wildlife Refuge. Areas under federal jurisdiction are shown on Figure 3-3.

3.3.2 State Jurisdiction

NAME NOT SAME AS ON MAP

The California Department of Fish and Wildlife owns and operates the Elkhorn Slough Ecological Reserve, the Moro Cojo Slough State Marine Reserve, and the Moss Landing Wildlife Area. The California Department of Parks and Recreation manages several areas in the Subbasin near Moss Landing including: Moss Landing State Beach, Salinas River Dunes Natural Preserve, Salinas River State Beach, and the Salinas River Mouth Natural Preserve. Areas under State jurisdiction are shown on Figure 3-3.

3.3.3 County Jurisdiction

MAP 3-4 LISTS MCWRA NOT MPC

The entire Subbasin lies in Monterey County; and the County of Monterey has jurisdiction over the entire Subbasin. The County operates Toro Regional Park in the Subbasin.

NOT ON MAP - WHY INCLUDED IN TEXT?? WHAT'S THE POINT??

3.3.4 City and Local Jurisdiction

The cities of Salinas and Gonzales have water management authority in their incorporated areas. The Castroville Community Service District provides water and sewer collection services in the town of Castroville. A small portion of the Marina Coast Water District's service area extends from the Monterey subbasin into the 180/400-Foot Aquifer Subbasin. The jurisdictional boundaries of these areas are shown on Figure 3-4.

3.4 Land Use

Land use planning authority in the 180/400-Foot Aquifer Subbasin is the responsibility of the County of Monterey and the cities of Salinas and Gonzales. Land use information for the Subbasin was collected from the Department of Water Resources. Current land use in the Subbasin is shown on Figure 3-5 and summarized by major category in Table 3-1 (DWR, 2014). The majority of land in the Subbasin is used for agriculture; major crops are truck crops, including lettuce, berries, onions and garlic.

?? Grapes

??

Table 3-1: Land use summary

Category	Area in subbasin (acres)
Agriculture (non-Vineyard)	50,170
Urban	6,716
Vineyard	1,592
Idle Cropland	1,472
Pasture	87
Total	60,037

Look @ Ag. Comish Crop RPT!!

Fallow? Catch-all category

Source of Data may be improved upon!!

* ADD DESCRIPTION OF CATEGORIES

Are you going to stick w/ this data sources??

3.6 Existing Monitoring Programs

3.6.1 Existing Groundwater Level Monitoring

3.6.1.1 MCWRA Monthly Groundwater Level Monitoring

As of 2018, MCWRA collects monthly groundwater level measurement from approximately 100 ~~105~~ wells throughout the Salinas Valley. Of these wells, 38 ~~41~~ are in the 180/400-Foot Aquifer Subbasin. MCWRA processes these monthly measurements to develop a computed average of depth to water for each Subbasin.

3.6.1.2 MCWRA Annual Fall Groundwater Level Monitoring

WRONG!! PRIOR TO THE ONSET OF SEASONAL WINTER RECHARGE

Each fall, MCWRA collects annual groundwater level measurements from AN ADDITIONAL 120 ~~approximately~~ 52 wells in the 180/400-Foot Aquifer Subbasin. The fall usually coincides with the end of the irrigation season, and groundwater levels at this time reflect RELAXED ~~depleted~~ aquifer conditions ~~due to pumping for irrigation~~. MCWRA uses these annual measurements to estimate the change in storage in each Subbasin. — USE USE THESE TO CONTOUR/MAPS

3.6.1.3 August Groundwater Level Monitoring

MCWRA collects groundwater level measurements every August in the 180/400-Foot Aquifer Subbasin to establish the location and extent of groundwater pumping depressions that drive seawater intrusion. These pumping depressions occur in the Pressure 180-Foot and Pressure 400-Foot Aquifers between the City of Salinas and the coast. Changes in pumping stress and recharge conditions cause the troughs to vary in location and depth from year to year. MCWRA uses the August groundwater elevation data to develop groundwater contour maps of the coastal pumping depressions on odd-numbered years.

3.6.1.4 California Statewide Groundwater Elevation Monitoring (CASGEM)

MCWRA is the responsible agency for CASGEM monitoring in Monterey County. The monitoring network comprises 32 ~~48~~ wells throughout the Salinas Valley. Of these 51 ~~48~~ wells, 14 ~~22~~ are in the 180/400-Foot Aquifer Subbasin. Some of the CASGEM monitoring wells are owned by MCWRA and others are privately owned by owners who have volunteered the well for inclusion in the CASGEM program. MCWRA collects groundwater elevation data two times each year from the CASGM wells and reports the groundwater elevation data to DWR. Figure 3-10 shows the locations of the CASGEM monitoring wells in the 180/400-Foot Aquifer Subbasin.

DATA COLLECTED 4x/yr - SUBMITTED 2x/yr

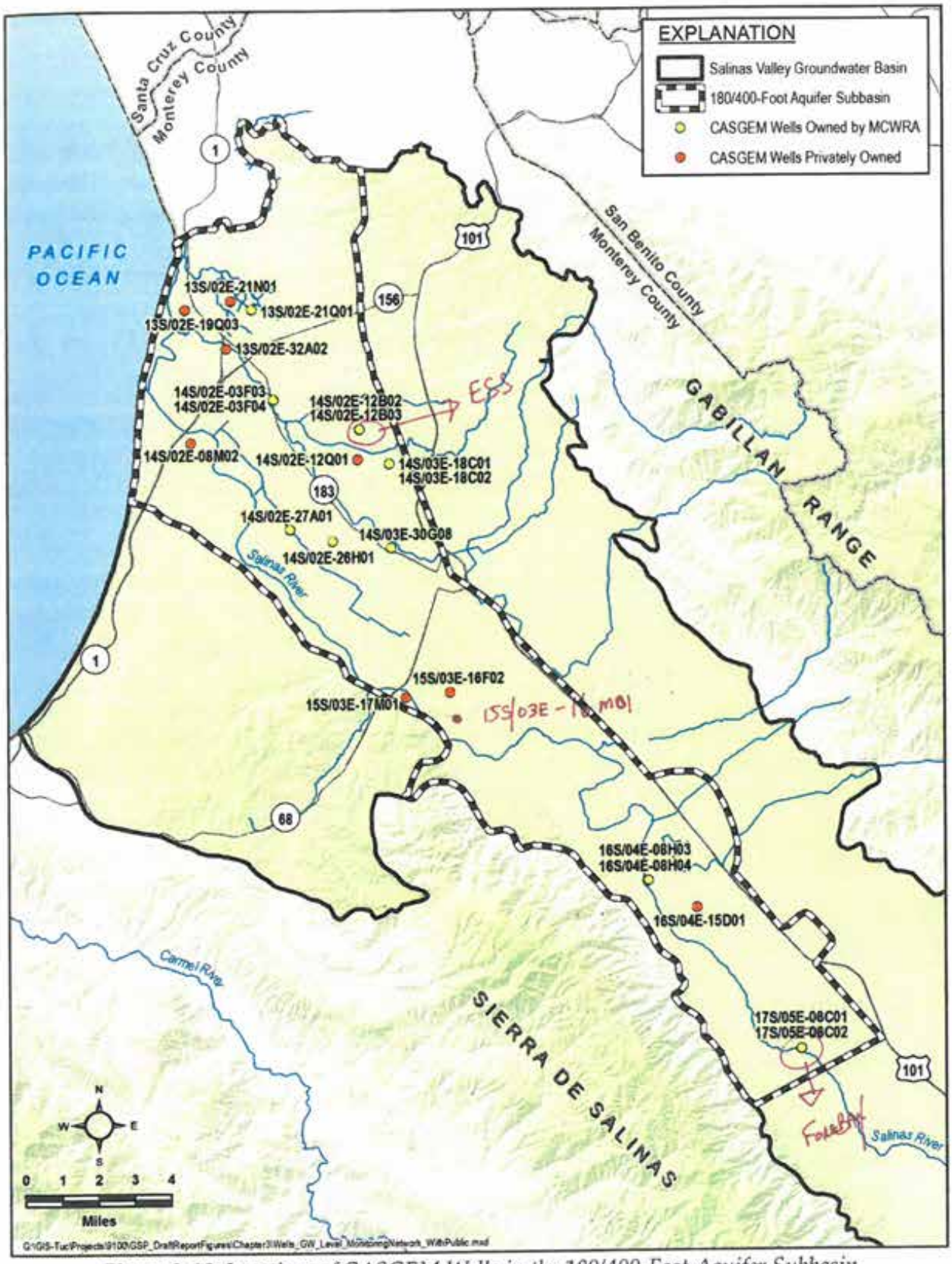

Figure 3-10: Locations of CASGEM Wells in the 180/400-Foot Aquifer Subbasin

3.6.2 Groundwater Extraction Monitoring

MCWRA collects groundwater extraction information from all wells in the 180/400-Foot Aquifer Subbasin that have discharge pipes of three inches or greater in diameter. These data have been collected since 1993. Extraction is self-reported by well owners.

3.6.3 Groundwater Quality Monitoring

3.6.3.1 MCWRA Seawater Intrusion Monitoring

MCWRA monitors seawater intrusion in the Salinas Valley with a network of 121 monitoring wells located in the 180/400-Foot Aquifer Subbasin. 96 wells in the network are agricultural production wells that are sampled annually in June and August (during peak pumping). 25 wells in the network are dedicated monitoring wells that are maintained by MCWRA and/or the Monterey Peninsula Water Supply Project (MPWSP).

Water quality samples from the wells are analyzed for major constituents, including anions and cations, conductivity, etc. The data are used to develop time-series plots of chloride and conductivity trends, Stiff and Piper diagrams, and to compute ratios of chloride concentration ~~to sodium.~~ Cl/Na

vs.

The data are used to prepare ~~annual~~ odd yrs maps of ~~saltwater~~ seawater intrusion in the 180/400-Foot Aquifer. Additional information about the occurrence and extent of ~~saltwater~~ seawater intrusion is provided in Section 5. Fort Butte 180 & 400 FT AQs

3.6.3.2 Other

Groundwater quality is monitored under several different programs and by different agencies including:

- Muncipal and community water purveyors must collect water quality samples on a routine basis for compliance monitoring and reporting to the California Division o Drinking Water.

- The USGS collects water quality data on a routine basis under the Groundwate Ambient Monitoring and Assessment (GAMA) program. These data are stored in th State's GAMA/Geotracker system. Figure 3-11 shows the location of wells in th State's GAMA Geotracker database that are in the 180/400-Foot Aquifer subbasin.

- There are multiple sites that are monitoring groundwater quality as part of investigation or compliance monitoring programs through the Central Coast Regional Water Quality Control Board.

3.6.4 Surface Water Monitoring

Streamflow gages operated by the USGS within the 180/400-Foot Aquifer Subbasin include:

- Reclamation Ditch near Salinas (USGS Site #11152650)
- Salinas River near Chualar (USGS Site #11152300)
- Salinas River near Spreckels (USGS Site #11152500)

Water levels (stage) in the Salinas River Lagoon are measured by MCWRA at Monte Road. The locations of the surface-water monitoring facilities are depicted in Figure 3-12.

& NEAR THE SLIDE GATE TO THE OSR

3.3 JURISDICTIONAL AREAS

There are several federal, state, and local agencies with water management authority in the SVIGSP area.

3.3.1 FEDERAL JURISDICTION

The A portion of the Fort Ord former Army base lies in the SVIGSP area. The United States Department of Defense manages this part of Fort Ord. The United States Department of Fish and Wildlife manages the Salinas River National Wildlife Refuge. The United States Bureau of Land Management (BLM) manages a 27.5-acre parcel in the Salinas River floodplain approximately 3.5 miles north of Greenfield. The BLM additionally owns several parcels of land approximately 5.5 miles southwest of Soledad; a portion of these are within the SVIGSP area. The BLM also owns land contiguous with Fort Ord. Areas under federal jurisdiction are shown on Figure 3-3. ← TEXT & FIGURE DON'T MATCH

MAP COLOR CODE MATCHES FED JURISDICTION.

THERE ARE 2 PRISONS HERE THE 2ND ONE IS THE CORRECTIONAL TRAINING FACILITY.

3.3.2 STATE JURISDICTION

NOT ON MAP

The California Army National Guard operates Camp Roberts, a military training facility located in both Monterey and San Luis Obispo counties. The California Department of Corrections and Rehabilitation manages the Salinas Valley State Prison, located 5 miles north of Soledad. The California Department of Fish and Wildlife owns and operates the Elkhorn Slough and Moro Cojo ecological reserves; and the Big Sandy and Moss Landing Wildlife Areas. The California Department of Parks and Recreation manages several areas in the SVIGSP area near Moss Landing: Moss Landing State Beach, Salinas River Dunes Natural Preserve, Salinas River State Beach, and Salinas River Mouth Natural Preserve. Areas under State jurisdiction are shown on Figure 3-3. ← TEXT & FIGURE DON'T MATCH.

3.3.3 COUNTY JURISDICTION

The entire SVIGSP area lies in Monterey County. The Monterey County Water Resources agency has been responsible for water management in Monterey County since 1947. Specific lands managed by the County include Royal Oaks Park, Manzanita Regional Park, Toro Regional Park and San Lorenzo Park. Areas under County jurisdiction are shown on Figure 3-3.

WHAT IS YELLOW AREA SW CORNER OF FT. ORD ARMY BASE

3.3.4 CITY AND LOCAL JURISDICTION

The cities of Salinas, Gonzales, Soledad, Greenfield, and King City have water management authority in their incorporated areas. The Castroville Community Service District provides services in the town of Castroville. The Marina Coast Water District's has water management authority in its service. The jurisdictional boundaries of these areas are shown on Figure 3-4.

WHY ARE ~~[illegible]~~ CHUALAR & SEASIDE ON FIG 3-4??

3.4.2 Water Use Sectors

Groundwater demands in the SVIGSP area are organized into the six water use sectors identified in the GSP emergency regulations. These include:

- **Urban**. Urban water use is assigned to non-agricultural water uses in the cities and census-designated places. Domestic use outside of census-designated places is not considered urban use. For the years 2010-2015, urban water use averaged 42,896 ac-ft and accounted for an average of 9% of the groundwater pumped in the SVIGSP area (MCWRA, 2016). WRONG IT'S FOR 2, 2A & 2B ONLY
- **Industrial**. There is limited industrial use in the SVIGSP area. DWR does not have any records of wells in the SVIGSP area that are specifically categorized as industrial use wells. Most industrial use is associated with agriculture and is likely lumped into the agricultural water use sector. GEMS DOES SEPERATE NON INDUSTRIAL & AG INDUSTRIAL
- **Agricultural**. This is the largest water use sector in the SVIGSP area; with an annual average use of 448,049 ac-ft between 2010 and 2015 (MCWRA, 2016). Agricultural water use accounted for an average of 91% of the groundwater pumped in the SVIGSP area (MCWRA, 2016). WRONG
- **Managed wetlands**. DWR land use records indicate that there is one managed wetland in the SVIGSP area; an 11.2-acre wetland owned by the State of California and located northeast of the Monte De Lago neighborhood, between state highway 156 and Castroville Boulevard.
- **Managed recharge**. There is no managed recharge in the SVIGSP area. Wastewater treated by the Monterey One Water is distributed by the Castroville Seawater Intrusion Project (CSIP) distribution system and used to offset agricultural groundwater pumping within the CSIP service area.
- **Native vegetation.** Approximately 43% of the SVIGSP area is composed of agricultural, urban, or vineyard land uses. Native vegetation is largely present on the remaining 57% of the land; identified as pasture and grazing, federal land, conservation/recreation, or other. Groundwater use by native vegetation has not been quantified for these areas.

3.5 Density of Wells

Groundwater in the SVIGSP area is used for agricultural, municipal, and domestic purposes. Based on data available from DWR's Well Completion Report Map Application, more than half of the wells in the DWR dataset are used for production; all production wells are assumed to be used for agricultural irrigation. Domestic use accounts for most of the remaining wells. Well counts in the SVIGSP area are summarized in Table 3-2. Figure 3-7 and Figure 3-8 show the density of domestic and production wells, respectively, per square mile in the SVIGSP area.

87

SAME COMMENTS AS 180-400 GSP

3.6 EXISTING MONITORING AND MANAGEMENT PROGRAMS

3.6.1 GROUNDWATER LEVEL MONITORING

3.6.1.1 MCWRA MONTHLY GROUNDWATER LEVEL MONITORING

As of 2018, MCWRA collects monthly groundwater level measurement from approximately 100 ~~105~~ wells throughout the Salinas Valley. MCWRA processes these monthly measurements to develop a computed average depth to water for each Subbasin.

3.6.1.2 MCWRA ANNUAL FALL GROUNDWATER LEVEL MONITORING

Each fall, MCWRA collects annual groundwater level measurements from approximately 5(OVER 400+ wells in the Salinas Valley. The annual groundwater elevation measurements are collected in fall of each year, which usually coincides with the end of the irrigation season. MCWRA uses these annual measurements to estimate the change in storage in each Subbasin.

SEE EARLIER SECTION

3.6.1.3 AUGUST GROUNDWATER LEVEL MONITORING

MCWRA collects groundwater ~100 level measurements every August to establish the location and extent of groundwater pumping depressions that drive seawater intrusion. These pumping depressions occur in the 180-Foot and 400-Foot Aquifers between the City of Salinas and the coast. Changes in pumping stress and recharge conditions cause the trough to vary in location and depth from year to year. MCWRA uses the August groundwater elevation data to develop groundwater contour maps of the coastal pumping depressions in odd-numbered years.

3.6.1.4 CALIFORNIA STATEWIDE GROUNDWATER ELEVATION MONITORING (CASGEM)

MCWRA is the responsible agency for CASGEM monitoring in Monterey County. The monitoring network comprises 51 ~~48~~ wells throughout the Salinas Valley. Some of the CASGEM monitoring wells are owned by MCWRA and others are privately owned by owners who have volunteered the well for inclusion in the CASGEM program. MCWRA collects groundwater elevation data 4 ~~two~~ times each year from the CASGM wells and report the groundwater elevation data to DWR. Locations of CASGEM monitoring wells are shown on Figure 3-10. 2x/yr

3.6.2 GROUNDWATER EXTRACTION MONITORING

MCWRA collects groundwater extraction information from all wells that have discharge pipes of three inches or greater in diameter. These data have been collected since 199. Extraction is self-reported by well owners.

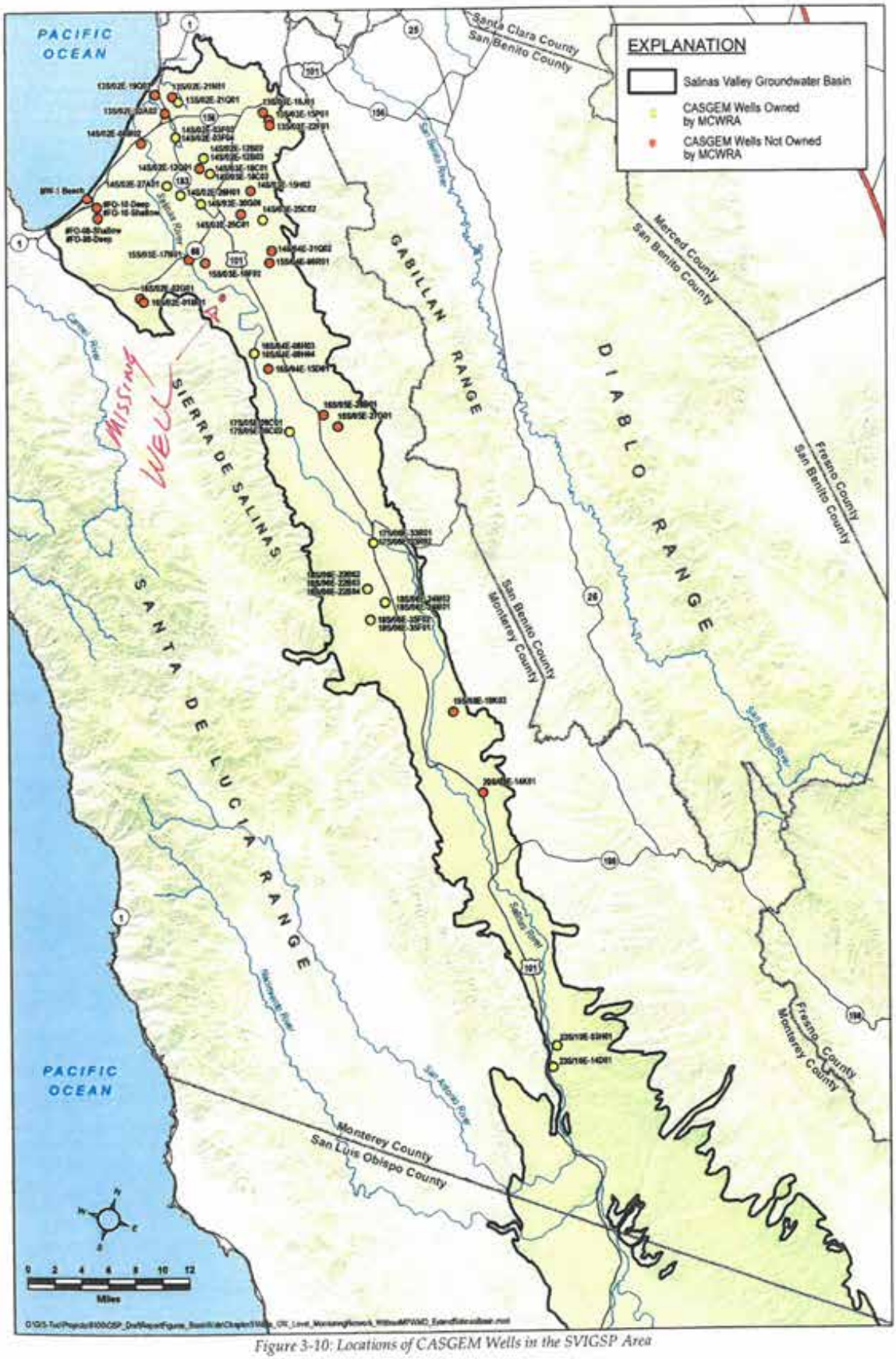

Figure 3-10: Locations of CASGEM Wells in the SVIGSP Area

Same comments as 180-400 GSP

3.6.3 Groundwater Quality Monitoring

3.6.3.1 MCWRA Seawater Intrusion Monitoring

MCWRA monitors seawater intrusion in the Salinas Valley with a network of 121 monitoring wells located in the 180/400-Foot Aquifer Subbasin. Of these 121 well, 96 are agricultural production wells that are sampled annually in June and August: timed to occur during peak pumping. 25 wells in the network are dedicated monitoring wells that are maintained by MCWRA and/or the Monterey Peninsula Water Supply Project (MPWSP).

Water quality samples from the wells are analyzed for major constituents, including anions and cations, conductivity, etc. The data are used to develop time-series plots of chloride and conductivity trends, Stiff and Piper diagrams, and to compute ratios of chloride concentration to sodium.

The data are used to prepare annual maps of saltwater intrusion in the 180/400-Foot Aquifer Subbasin. Additional information about the occurrence and extent of saltwater intrusion is provided in Section 5.

3.6.3.2 Other

Groundwater quality is monitored under several different programs and by different agencies including:

- Muncipal and community water purveyors must collect water quality samples on a routine basis for compliance monitoring and reporting to the California Division o Drinking Water.
- The USGS collects water quality data on a routine basis under the Groundwate Ambient Monitoring and Assessment (GAMA) program. These data are stored in th State's GAMA/Geotracker system. Figure 3-11 shows the location of wells in th State's GAMA Geotracker database that are in Monterey County.
- There are multiple sites that are monitoring groundwater quality as part c investigation or compliance monitoring programs through the Cedntral Coa: Regional Water Quality Control Board.

3.6.4 Surface Water Monitoring

Streamflow gages operated by the USGS within the SVIGSP area include:

- Arroyo Seco near Soledad (USGS Site #11152000)
- Arroyo Seco below Reliz Creek near Soledad (USGS Site #11152050)
- Salinas River near Bradley (USGS Site #11150500)
- Salinas River near Chualar (USGS Site #11152300)
- Salinas River near Spreckels (USGS Site #11152500)
- Reclamation Ditch near Salinas (USGS Site #11152650)
- Salinas River near Soledad (USGS Site #11151700)
- Gabilan Creek near Salinas (USGS Site # 11152600)

Water levels (stage) in the Salinas River Lagoon are measured at Monte Road. The location of the surface-water monitoring facilities are depicted on Figure 3-12.

NEAR SLIDE GATE @ USR

From: Mike McCullough <MikeM@my1water.org>
Sent: Tuesday, December 18, 2018 9:55 AM
To: Derrik Williams <dwilliams@elmontgomery.com>
Subject: GSP

Derrik,

Giving the chapters one through 3 a quick read.

Can we make sure our new name Monterey One Water is used versus Monterey Regional Water Pollution Control Agency.

Page 30.

I think you could also get an idea of how much water the industries use in and around Salinas. The City should know how much they are extracting each month.

Mike McCullough, MPA
Government Affairs Administrator
Monterey One Water
P:831-645-4618
www.MontereyOneWater.org

Monterey One Water
Providing Cooperative Water Solutions

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From: Paul Tran <ptran@chispahousing.org>
Date: November 21, 2018 at 3:49:28 PM PST
To: "Gary Petersen (GPetersen@rgs.ca.gov)" <peterseng@svbgsa.org>
Cc: Alfred Diaz-Infante <alfredd@chispahousing.org>, Dana Cleary <dcleary@chispahousing.org>
Subject: Advisory Committee Comments on both Draft GSP Chapters 1-3

Hi Gary –

Below are our comments on both draft GSPs:

180/400 Foot Aquifer Subbasin Draft GSP

- Starting with page 40, section 3.10 should include the complete language of the settlement agreement in reference to a long-term water supply in the Zone 2C benefit assessment area. This language is contained in the amended Monterey County 2010 General Plan section PS-3.1

Valley-Wide Intergrated Draft GSP

- Same comment above for section 3.9 (page 34)

Have a Happy Thanksgiving!

Regards,

Paul V. Tran
Project Manager
CHISPA, Inc.
295 Main Street, Suite 100
Salinas, CA 93901
831.757.6251 x 119 Fax 831.757.6268
ptran@chispahousing.org

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17 January 2019

MEMORANDUM

To: Patrick Breen, Marina Coast Water District Groundwater Sustainability Agency
Keith Van Der Maaten, Marina Coast Water District Groundwater Sustainability Agency

From: Vera Nelson, P.E., EKI Environment & Water, Inc.
Tim Ingrum, EKI Environment & Water, Inc.
Tina Wang, P.E., EKI Environment & Water, Inc.

Subject: Draft Hydrostratigraphic Summary for the Marina Coast Water District Study Area (B60094.03)

A draft hydrostratigraphic summary is provided herein for the Marina Coast Water District (MCWD) Study Area, which consists of the Marina Subarea and the Ord Subarea of the Monterey Subbasin. This summary intends to serve as the basis for developing the hydrogeologic conceptual model (HCM) for the MCWD Study Area as part of the Monterey Subbasin Groundwater Sustainability Plan (GSP) (Figure 1).

We understand that MCWD GSA is coordinating with Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) to develop a single GSP for the Monterey Subbasin, which includes developing a HCM for the entire basin pursuant to California Code of Regulations (CCR) Title 23 Section 354.14. In addition, SVBGSA is preparing the GSP for areas adjacent to the MCWD Study Area in the 180/400 Foot Aquifer Subbasin. Therefore, upon review and approval by MCWD GSA, we recommend that this information to be shared with SVBGSA to coordinate HCM development both within the Monterey Subbasin and with the adjacent basin.

According to the GSP Regulations, the HCM will define significant water-bearing zones as principal aquifers. This designation has important implications because groundwater elevations, groundwater quality, and seawater intrusion must be discussed, monitored, and reported for each principal aquifer within the GSP. Therefore, we recommend careful consideration be given to the identification of principal aquifers within the HCM, as the identification of many principal aquifer zones could drive additional monitoring requirements. The proposed HCM would limit the number of principal aquifers to the following: (1) Principal Shallow Aquifer, (2) Principal Intermediate Aquifer System (3) Principal Deep Aquifer System. Further description of these zones is provided below. Under this structure, zones within each principal aquifer could be evaluated and discussed within the GSP, but monitoring could be limited to the principal aquifer zones if desired.

MCWD STUDY AREA BOUNDARIES

The MCWD Study Area is shown on Figure 1. The western boundary of the MCWD Study Area is defined by extent of Quaternary sand dunes on the shore of Monterey Bay (DWR, 2004). The eastern and northern boundaries of the MCWD Study Area are defined by MCWD jurisdictional boundaries. A portion of the northwestern boundary is coincident with the Monterey Subbasin boundary, which is defined by a groundwater flow divide and the Reliz Fault passing through the MCWD area (DWR, 2016). Similarly, the southwestern boundary is coincident with the Monterey Subbasin boundary, defined by a groundwater flow divide that outlines the Adjudicated Seaside Subbasin (MPWMD, 2016).

HYDROSTRATIGRAPHIC SUMMARY

1. Principal Shallow Aquifer
    a. Fine to medium, well sorted dune sands (Ahtna Engineering, 2013).
    b. Locally named "Dune Sand Aquifer" (Harding ESE, 2001; HWG, 2017) and "A-Aquifer" beneath Fort Ord (Harding Lawson Associates, 1994; Jordan et al., 2005; Harding ESE, 2001).
    c. Recharged primarily by rainfall and surface water infiltration (Harding Lawson Associates, 1994).
    d. Measured horizontal hydraulic conductivity in the Fort Ord area ranges from 0.14 to 120 ft/d, and vertical conductivity ranges from 0.6 to 4.0 ft/d (Harding Lawson Associates, 1994; Harding Lawson Associates, 1999; MACTEC, 2006; HydroGeoLogic, Inc., 2006; Jordan et al., 2005).
    e. In the USGS Salinas Valley Integrated Hydrologic Model (SVIHM), the Shallow Aquifer is represented by model layer 1 (Hanson et al., 2017).
2. Principal Intermediate Aquifer System
    a. Salinas Valley Aquitard
        i. The Salinas Valley Aquitard (SVA) includes the Fort Ord Salinas Valley Aquitard (FO-SVA). The SVA and FO-SVA have distinct characteristics and may have been formed in different depositional environments, but hydraulically they behave similarly in confining the underlying 180-Ft Aquifer (Harding ESE, 2001). The SVA exists under Marina, the northern part of the Fort Ord area, and extends northeast to Salinas (Harding ESE, 2001). The FO-SVA occurs beneath most of Fort Ord (Kennedy/Jenks, 2004; Ahtna Engineering, 2013; MACTEC, 2006).
        ii. The SVA thins to the south (Harding ESE, 2001), and the FO-SVA thins toward the coast and appears to pinch out near Highway 1 (Harding ESE, 2001). The reduction in aquitard thickness increases the vertical hydraulic connection between the Shallow Aquifer and underlying 180-Ft Aquifer.

iii. Airborne electromagnetics (AEM) data AEM collected in the North Salinas Valley (Gottschalk I, Knight R, 2018) showed that fresh groundwater exists in the vicinity of the Salinas River in the 180-Ft Aquifer and 400-Ft aquifer zones. These data indicate that that the Salinas River may recharge these aquifers and that there may be gaps in the SVA/ FO-SVA near the river.

iv. Measured vertical hydraulic conductivity in the Fort Ord area ranges from 5.7×10^{-5} to 2.8×10^{-3} ft/d; no horizontal hydraulic conductivity data are reported (MACTEC, 2006).

v. In the SVIHM, the SVA is represented by model layer 2 (Hanson et al., 2017).

b. 180-Ft Aquifer

i. The aquifer is comprised of valley fill material including older alluvium and alluvial fan deposits (Greene, 1970). The sediments "extend to submarine outcrops on the floor and canyon walls of Monterey Bay" (Harding ESE, 2001; cf. Greene, 1970; Greene,1977; DWR, 1946).

ii. South of Marina, in a portion of Fort Ord the 180-Ft Aquifer is separated into "upper" zone of sandy deposits with some gravel and "lower" zone of gravel with sand and clay lenses; the two zones are separated by thin clay (Ahtna Engineering, 2013).

iii. Receives recharge from Salinas Valley, Monterey Bay, overlying Shallow Aquifer, and the Aromas Sand and Paso Robles formations southeast of the study area (Harding Lawson Associates, 1994).

iv. Measured horizontal hydraulic conductivity in the Fort Ord area ranges from 0.04 to 390 ft/d; no vertical hydraulic conductivity data are reported (Harding Lawson Associates, 1994; Harding Lawson Associates, 1999; MACTEC, 2006; HydroGeoLogic, Inc., 2006; Jordan et al., 2005).

v. In the SVIHM, the 180-Ft Aquifer is represented by model layer 3 (Hanson et al., 2017).

c. Middle Aquitard

i. Confines the 400-Ft Aquifer (Harding ESE, 2001; Kennedy/Jenks, 2004).

ii. At the boundary between Fort Ord and Marina, an aquitard separating the 180-Ft and 400-Ft Aquifers was not observed, though it was reported elsewhere beneath Fort Ord indicating the aquitard probably "varies laterally throughout the Fort Ord area" (MACTEC, 2006). Kennedy/Jenks (2004) also identify Fort Ord as one of several locations where the aquitard is thin or discontinuous.

iii. No measured hydraulic conductivity data are available.

iv. In SVIHM, the Middle Aquitard is represented by model layer 4 (Hanson et al., 2017).

d. 400-Ft Aquifer
    i. The aquifer is comprised of a fine to medium grained sand (Ahtna Engineering, 2013).
    ii. The bottom of the 400-Ft Aquifer has been defined as the bottom of the Aromas Sand (Hanson et al., 2002). Under Fort Ord, the aquifer appears to be composed of portions of the Aromas Sand and Paso Robles formations (Harding Lawson Associates, 1994), but it is difficult to delineate where the two formations occur (Harding ESE, 2001). In the southeast portion of the study area, wind-blown sand deposits equivalent to the Aromas Sand are present in the Fort Ord hills (Geosyntec, 2007).
    iii. Receives recharge from Salinas Valley, Monterey Bay, Paso Robles Formation, and leakage down from the 180-Ft Aquifer (Harding Lawson Associates, 1994). Surface recharge rate for the Aromas-Paso Robles Formation in the southeastern portion of the study area has been estimated as 2–3 inches per year (Geosyntec, 2007).
    iv. Measured horizontal hydraulic conductivity in the Fort Ord area ranges from 7.4 to 230 ft/d; no vertical hydraulic conductivity data is reported (Harding Lawson Associates, 1994; Harding Lawson Associates, 1999; MACTEC, 2006; HydroGeoLogic, Inc., 2006; Jordan et al., 2005).
    v. In the SVIHM, the 400-Ft Aquifer is represented by model layer 5 (Hanson et al., 2017).

3. <u>Principal Deep Aquifer System</u>
    a. Deep Aquitard
        i. Confines the underlying Deep Aquifer (Kennedy/Jenks, 2004).
        ii. No measured hydraulic conductivity data are reported.
        iii. In the SVIHM, the Deep Aquitard is represented by model layer 6 (Hanson et al., 2017).
    b. Deep Aquifer
        i. Locally named “900-Ft Aquifer” (WRIME, 2003; Kennedy/Jenks, 2004).
        ii. Composed of Paso Robles Formation and Purisima Formation deposits (Hanson et al., 2002), and can represent multiple aquifers and aquitards (Kennedy/Jenks, 2004).
        iii. The primary recharge source is leakage from overlying aquifers (Feeney and Rosenberg, 2003).
        iv. Sand and gravel of the Paso Robles Formation apparently extends to the Fort Ord hills in the southeastern portion of the study area, at least as far as HWY-68 (Geosyntec, 2007).
        v. Measured horizontal hydraulic conductivity ranges from 2.5 to 36 ft/d (horizontal) in the Fort Ord area and 2.0 to 25 ft/d in the Marina area; no

vertical hydraulic conductivity data are reported (Harding Lawson Associates, 1994; Harding Lawson Associates, 1999; MACTEC, 2006; HydroGeoLogic, Inc., 2006; Hanson et al., 2002; Feeney and Rosenberg, 2003).

vi. In the SVIHM, the 900-Ft Aquifer is represented by model layers 7 and 8 (Hanson et al., 2017).

HYDROSTRATIGRAPHIC CORRELATION TABLE

<table>
<tr><th>180/400-Foot Aquifer Subbasin (North of Study Area)</th><th colspan="2">Monterey Subbasin (Includes MCWD Study Area)</th><th>Seaside Subbasin (South of Study Area)</th></tr>
<tr><td>“Shallow Aquifer”
“Dune Sand Aquifer”
“35-Ft Aquifer”
“-2-Ft Aquifer”</td><td>Principal Shallow Aquifer</td><td>“Shallow Aquifer”
“A-Aquifer”</td><td>“Surficial deposits”</td></tr>
<tr><td>“Salinas Valley Aquitard” (SVA)</td><td rowspan="4">Principal Intermediate Aquifer System</td><td>“Salinas Valley Aquitard” (SVA)
“Fort Ord Salinas Valley Aquitard” (FO-SVA)</td><td>“Salinas Valley Clay”
“Surficial deposits”</td></tr>
<tr><td>“180-Ft Aquifer”
“Pressure 180-Ft Aquifer”</td><td>“180-Ft Aquifer”</td><td rowspan="2">“Surficial deposits”</td></tr>
<tr><td>”180/400-Ft Aquitard”</td><td>“Middle Aquitard”</td></tr>
<tr><td>“400-Ft Aquifer”
“Pressure 400-Ft Aquifer”</td><td>“400-Ft Aquifer”</td><td rowspan="2">“Paso Robles Aquifer”</td></tr>
<tr><td>”400/900-Ft Aquitard”</td><td rowspan="2">Principal Deep Aquifer System</td><td>“Deep Aquitard”</td></tr>
<tr><td>“900-Ft Aquifer”
“Pressure 900-Ft Aquifer”
“Deep Aquifer”</td><td>“Deep Aquifer”</td><td>“Paso Robles Aquifer”
“Santa Margarita/Purisima Aquifer”
“Deep Aquifer”</td></tr>
</table>

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7 February 2019

General Manager Gary Petersen
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Submitted online via email: peterseng@svbgsa.org

Re: 180-400 Foot Aquifer Subbasin Draft GSP Chapter 4

Dear Mr. Gary Petersen,

The Nature Conservancy (TNC) appreciates the opportunity to comment on the 180-400 Foot Aquifer Subbasin Chapter 4 in the Draft Groundwater Sustainability Plan (GSP) being prepared under the Sustainable Groundwater Management Act (SGMA).

TNC as a Stakeholder Representative for the Environment

TNC is a global, nonprofit organization dedicated to conserving the lands and waters on which all life depends. We seek to achieve our mission through science-based planning and implementation of conservation strategies. For decades, we have dedicated resources to establishing diverse partnerships and developing foundational science products for achieving positive outcomes for people and nature in the Salinas Valley. TNC was part of a stakeholder group formed by the Water Foundation in early 2014 to develop recommendations for groundwater reform and actively worked to shape and pass SGMA.

Our reason for engaging is simple: California's freshwater biodiversity is highly imperiled. We have lost more than 90 percent of our native wetland and river habitats, leading to precipitous declines in native plants and the populations of animals that call these places home. These natural resources are intricately connected to California's economy providing direct benefits through industries such as fisheries, timber and hunting, as well as indirect benefits such as clean water supplies. Given the inextricable connection between the Salinas River and the Salinas Valley's groundwater supply, SGMA must be successful for a sustainable future for the Salinas Valley in which people and nature thrive.

SGMA is now law and the success of SGMA depends on bringing the best available science to the table, engaging all stakeholders in robust dialog, providing strong incentives for beneficial outcomes and rigorous enforcement by the State of California.

Given our mission, we are particularly concerned about the inclusion of nature, as required, in GSPs. The Nature Conservancy has developed a suite of tools based on best available science to help GSAs, consultants, and stakeholders efficiently incorporate nature into GSPs. These tools and resources are available online at GroundwaterResourceHub.org. The Nature

Conservancy's tools and resources are intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

Addressing Nature's Water Needs in GSPs

SGMA requires that all beneficial uses and users, including environmental users of groundwater, be considered in the development and implementation of GSPs (Water Code § 10723.2).

The GSP Regulations include specific requirements to identify and consider groundwater dependent ecosystems (23 CCR §354.16(g)) when determining whether groundwater conditions are having potential effects on beneficial uses and users. GSAs must also assess whether sustainable management criteria may cause adverse impacts to beneficial uses. In addition, monitoring networks should be designed to detect potential adverse impacts to beneficial uses due to groundwater. Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decision, and using data collected through monitoring to revise decisions in the future. Over time, GSPs should improve as data gaps are reduced and uncertainties addressed.

To help ensure that GSPs adequately address nature as required under SGMA, The Nature Conservancy has prepared a checklist (Attachment A). The Nature Conservancy believes the following elements are foundational for 2020 GSP submittals.

1. Environmental Representation

SGMA requires that groundwater sustainability agencies (GSAs) consider the interests of all beneficial uses and users of groundwater. To meet this requirement, we recommend actively engaging environmental stakeholders by including environmental representation on the GSA board, technical advisory group, and/or working groups. This could include local staff from state and federal resource agencies, nonprofit organizations and other environmental interests. By engaging these stakeholders, GSAs will benefit from access to additional data and resources, as well as a more robust and inclusive GSP.

2. Basin GDE and ISW Maps

SGMA requires that groundwater dependent ecosystems (GDEs) and interconnected surface waters (ISWs) be identified in the GSP. We recommend using the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) provided online (https://gis.water.ca.gov/app/NCDatasetViewer/) by the Department of Water Resources (DWR) as a starting point for the GDE map. The NC Dataset was developed through a collaboration between DWR, the Department of Fish and Wildlife and TNC.

3. Potential Effects on Environmental Beneficial Users

SGMA requires that potential effects on GDEs and environmental surface water users be described when defining undesirable results. Because effects to plants and animals are difficult and sometimes impossible to reverse, we recommend erring on the side of caution to preserve sufficient groundwater conditions to sustain GDEs and ISWs.

4. Biological and Hydrological Monitoring

If sufficient hydrological and biological data in and around GDEs is not available in time for the 2020/2022 plan, data gaps should be identified along with actions to reconcile the gaps in the monitoring network.

Our comments related to the 180-400 Foot Aquifer Subbasin GSP Draft Chapter 4 are provided in detail in Attachment B and are in reference to the numbered checklist items in Attachment A.

Thank you for fully considering our comments as you develop your GSP.

Best Regards,

Sandi Matsumoto
Associate Director, California Water Program
The Nature Conservancy

Attachment A: Considering Nature under SGMA: A Checklist

The Nature Conservancy is neither dispensing legal advice nor warranting any outcome that could result from the use of this checklist. Following this checklist does not guarantee approval of a GSP or compliance with SGMA, both of which will be determined by DWR and the State Water Resources Control Board. The checklist is available online: https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_GDE_Checklist_for_SGMA_Sept2018.pdf

GSP Plan Element*		GDE Inclusion in GSPs: Identification and Consideration Elements		Item Number
Admin Info	2.1.5 Notice & Communication *23 CCR §354.10*	Description of the types of environmental beneficial uses of groundwater that exist within GDEs and a description of how environmental stakeholders were engaged throughout the development of the GSP.		1.
Basin Setting	2.2.2 Current & Historical Groundwater Conditions *23 CCR §354.16*	Interconnected surface waters:		2.
		Interconnected surface water maps for the basin with gaining and losing reaches defined (included as a figure in GSP & submitted as a shapefile on SGMA portal).		3.
		Estimates of current and historical surface water depletions for interconnected surface waters quantified and described by reach, season, and water year type.		4.
		Basin GDE map included (as figure in text & submitted as a shapefile on SGMA Portal).		5.
		If NC Dataset *was* used:	Basin GDE map denotes which polygons were kept, removed, and added from NC Dataset (Worksheet 1, can be attached in GSP section 6.0).	6.
			The basin's GDE shapefile, which is submitted via the SGMA Portal, includes two new fields in its attribute table denoting: 1) which polygons were kept/removed/added, and 2) the change reason (e.g., why polygons were removed).	7.
			GDEs polygons are consolidated into larger units and named for easier identification throughout GSP.	8.
		If NC Dataset *was not* used:	Description of why NC dataset was not used, and how an alternative dataset and/or mapping approach used is best available information.	9.
		Description of GDEs included:		10.
		Historical and current groundwater conditions described in each GDE unit.		11.
		Ecological condition described in each GDE unit.		12.
		Each GDE unit has been characterized as having high, moderate, or low ecological value.		13.
		Inventory of species, habitats, and protected lands for each GDE unit with ecological importance (Worksheet 2, can be attached in GSP section 6.0).		14.

	2.2.3 Water Budget *23 CCR §354.18*	Groundwater inputs and outputs (e.g., evapotranspiration) of native vegetation and managed wetlands are included in the basin's historical and current water budget.		15.
		Potential impacts to groundwater conditions due to land use changes, climate change, and population growth to GDEs and aquatic ecosystems are considered in the projected water budget.		16.
Sustainable Management Criteria	3.1 Sustainability Goal *23 CCR §354.24*	Environmental stakeholders/representatives were consulted.		17.
		Sustainability goal mentions GDEs or species and habitats that are of particular concern or interest.		18.
		Sustainability goal mentions whether the intention is to address pre-SGMA impacts, maintain or improve conditions within GDEs or species and habitats that are of particular concern or interest.		19.
	3.2 Measurable Objectives *23 CCR §354.30*	Description of how GDEs were considered and whether the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment.		20.
	3.3 Minimum Thresholds *23 CCR §354.28*	Description of how GDEs and environmental uses of surface water were considered when setting minimum thresholds for relevant sustainability indicators:		21.
		Will adverse impacts to GDEs and/or aquatic ecosystems dependent on interconnected surface waters (beneficial user of surface water) be avoided with the selected minimum thresholds?		22.
		Are there any differences between the selected minimum threshold and state, federal, or local standards relevant to the species or habitats residing in GDEs or aquatic ecosystems dependent on interconnected surface waters?		23.
	3.4 Undesirable Results *23 CCR §354.26*	For GDEs, hydrological data are compiled and synthesized for each GDE unit:		24.
		If hydrological data *are available* within/nearby the GDE	Hydrological datasets are plotted and provided for each GDE unit (Worksheet 3, can be attached in GSP Section 6.0).	25.
			Baseline period in the hydrologic data is defined.	26.
			GDE unit is classified as having high, moderate, or low susceptibility to changes in groundwater.	27.
			Cause-and-effect relationships between groundwater changes and GDEs are explored.	28.
		If hydrological data *are not available* within/nearby the GDE	Data gaps/insufficiencies are described.	29.
			Plans to reconcile data gaps in the monitoring network are stated.	30.
		For GDEs, biological data are compiled and synthesized for each GDE unit:		31.
		Biological datasets are plotted and provided for each GDE unit.		32.
		Data gaps/insufficiencies are described.		33.
		Plans to reconcile data gaps in the monitoring network are stated.		34.
		Description of potential effects on GDEs, land uses and property interests:		35.

		Cause-and-effect relationships between GDE and groundwater conditions are described.	36.
		Impacts to GDEs that are considered to be "significant and unreasonable" are described.	37.
		Known hydrological thresholds or triggers (e.g., instream flow criteria, groundwater depths, water quality parameters) for relevant species or ecological communities are reported.	38.
		Land uses include and consider recreational uses (e.g., fishing/hunting, hiking, boating).	39.
		Property interests include and consider privately and publicly protected conservation lands and opens spaces, including wildlife refuges, parks, and natural preserves.	40.
Sustainable Management Criteria	3.5 Monitoring Network *23 CCR §354.34*	Description of whether hydrological data are spatially and temporally sufficient to monitor groundwater conditions for each GDE unit.	41.
		Description of how hydrological data gaps and insufficiencies will be reconciled in the monitoring network.	42.
		Description of how impacts to GDEs and environmental surface water users, as detected by biological responses, will be monitored and which monitoring methods will be used in conjunction with hydrologic data to evaluate cause-and-effect relationships with groundwater conditions.	43.
Projects & Mgmt Actions	4.0. Projects & Mgmt Actions to Achieve Sustainability Goal *23 CCR §354.44*	Description of how GDEs will benefit from relevant project or management actions.	44.
		Description of how projects and management actions will be evaluated to assess whether adverse impacts to the GDE will be mitigated or prevented.	45.

* In reference to DWR's GSP annotated outline guidance document, available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/GD_GSP_Outline_Final_2016-12-23.pdf

Attachment B

TNC Evaluation of the 180-400 Foot Aquifer Subbasin GSP Draft Chapter 4

Items 5-8 on Environmental User Checklist (Attachment A) were most relevant to Chapter 4: Hydrologic Conceptual Model.

We support the use of the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) to map groundwater dependent ecosystems in the Salinas Valley Groundwater Basin (GSP Draft Figure 4-11). Since the NC Dataset is intended as a starting point, The Nature Conservancy has developed a Guidance Document to assist GSAs and their consultants address GDEs in GSPs. To adequately address GDEs, we offer the following suggestions:

- The identification of GDEs within GSPs is a required GSP element of the Basin Setting Section under the description of Current & Historical Groundwater Conditions (23 CCR §354.16). Recognizing natural points of discharge (seeps & springs) as GDEs is consistent with the SGMA definition of GDEs[1], however, we recommend the identification of GDEs (GDE map Figure 4-11) for the 180-400 Foot Aquifer be moved to Chapter 5: Groundwater Conditions and elaborated upon with a description of current and historical groundwater conditions in the GDE areas. Chapter 5 is a more appropriate place for the identification of GDEs, since groundwater conditions (e.g., depth to groundwater, interconnected surface water maps, groundwater quality) are necessary local information and data from the GSP in assessing whether polygons in the NC dataset are connected to groundwater in a principal aquifer. Appendix 4A (Page 27, Chapter 4) was referenced as describing methods used to determine the extent and type of potential GDEs, but that document was not available on the SVBGSA website for us to review.
- Decisions to remove, keep, or add polygons from the NC dataset into a basin GDE map should be based on best available science in a manner that promotes transparency and accountability with stakeholders. Any polygons that are removed, added, or kept should be inventoried in the submitted shapefile to DWR, and mapped in the plan. We recommend revising Figure 4-11 to reflect this change.
- Best practices for identifying GDEs in GSPs are outlined in detail in Step 1 of The Nature Conservancy's Guidance Document: "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans". Here are some highlights:
    - The NC dataset is a starting point for GSAs, and needs to be groundtruthed with aerial photography to screen for changes in land use that many not be reflected in the NC dataset (e.g., recent development, cultivated agricultural land, obvious human-made features).
    - Grouping multiple GDE polygons into larger units by location (proximity to each other) and principal aquifer will simplify the process of evaluating potential effects on GDE due to groundwater conditions under GSP Chapter 7: Sustainable Management Criteria.
    - Groundwater conditions within GDEs should be briefly described within the portion of the Basin Setting Section where GDEs are being identified.

[1] *Groundwater dependent ecosystem refer to ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. [23 CCR §351 (m)]*

- When using groundwater levels to confirm that a connection to groundwater in a principal aquifer exists, please refer to Attachment C for best practices in doing so.
- Not all GDEs are created equal. Some GDEs may contain legally protected species or ecologically rich communities, whereas other GDEs may be highly degraded with little conservation value. Including a description of the types of species (protected status, native versus non-native), habitat, and environmental beneficial uses (see Worksheet 2, p.74 of GDE Guidance Document) can be helpful in assigning an ecological value to the GDEs. Identifying an ecological value of each GDE can help prioritize limited resources when considering GDEs as well as prioritizing legally protected species or habitat that may need special consideration when setting sustainable management criteria.

Other Comments

The basin boundary bottom for the aquifer was determined using the 1970 USGS TDS=3,000ppm contour lines ("usable water" boundary), but groundwater extraction well depth data should also be included in the determination of the basin bottom to prevent extractors with wells deeper than the basin boundary from claiming exemption of SGMA due to their well residing outside the vertical extent of the basin boundary. As noted on page 9 in DWR's Hydrogeologic Conceptual Model BMP[2] "the definable bottom of the basin should be at least as deep as the deepest groundwater extractions".

[2] *Available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_HCM_Final_2016-12-23.pdf, accessed Feb 6, 2019.*

Attachment C

IDENTIFYING GDEs UNDER SGMA
Best Practices for using the NC Dataset

The Sustainable Groundwater Management Act (SGMA) requires that groundwater dependent ecosystems (GDEs) be identified in Groundwater Sustainability Plans (GSPs). The California Department of Water Resources has provided the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) online (https://gis.water.ca.gov/app/NCDatasetViewer/) to help Groundwater Sustainability Agencies (GSAs) identify GDEs within a groundwater basin. The NC Dataset is a compilation of 48 publicly available State and Federal agency datasets that map vegetation, wetlands, springs, and seeps commonly associated with groundwater in California[3]. The NC Dataset is intended to be a starting point, and it is the responsibility of the GSAs to utilize best available science and local knowledge on the hydrology, geology, and groundwater levels in an area to verify whether or not a connection to groundwater exists (Figure 1). Guidance on identifying GDEs within a groundwater basin from the NC dataset is available[4]. As detailed in the guidance, one of the key factors to consider when mapping GDEs is the depth to groundwater below the ecosystem. However, detailed groundwater data may not always be available for areas in and around the NC Dataset polygons to confirm whether a connection to groundwater exists.

[3] For more details on the mapping methods, refer to: Klausmeyer, K., J. Howard, T. Keeler-Wolf, K. Davis-Fadtke, R. Hull, A. Lyons. 2018. Mapping Indicators of Groundwater Dependent Ecosystems in California: Methods Report. San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE_data_paper_20180423.pdf

[4] "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans" is available at https://groundwaterresourcehub.org/gde-tools/gsp-guidance-document/

This document highlights three best practices that Groundwater Sustainability Agencies (GSAs) and their consultants can apply when using groundwater data to locally confirm a connection to groundwater for the NC Dataset. If sufficient data are not available in time for the 2020/2022 plan, The Nature Conservancy strongly advises that questionable polygons from the NC dataset be included in the GSP until data gaps are reconciled in the monitoring network. Erring on the side of caution will help minimize inadvertent impacts to GDEs as a result of groundwater use and management actions during SGMA implementation.

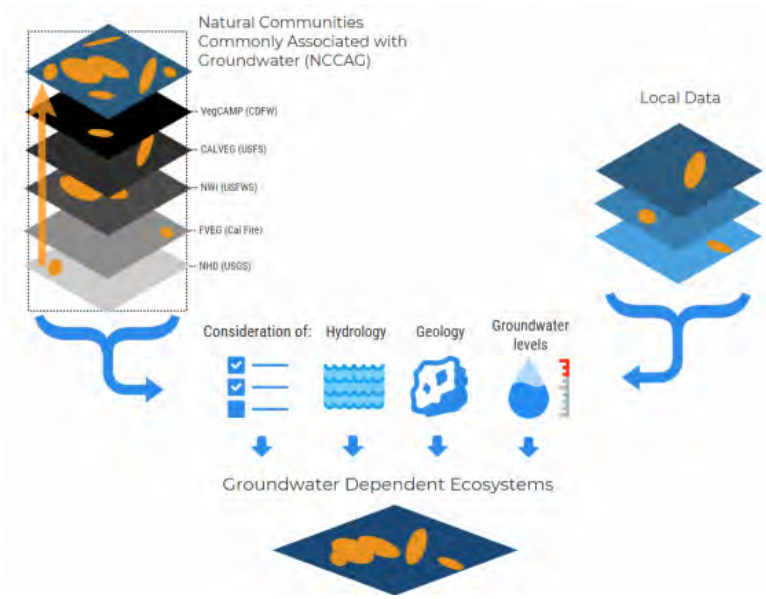


Figure 1. Considerations for the identification of groundwater dependent ecosystems. Source: DWR, 2018[5].

KEY DEFINITIONS

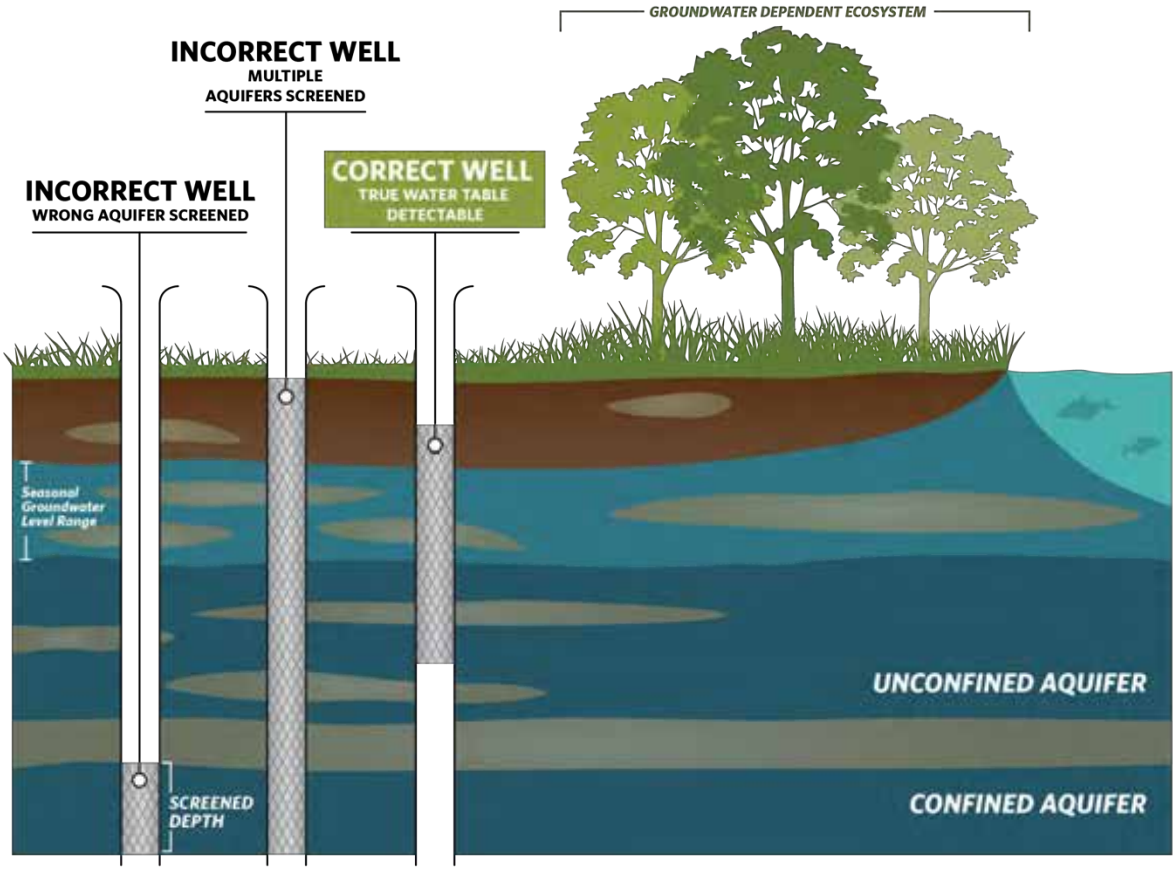
Groundwater Dependent Ecosystem ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. [23 CCR §351(m)]

Principal aquifers aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems [23 CCR §351(aa)]

[5] *"Summary of the "Natural Communities Commonly Associated with Groundwater" Dataset and Online Web Viewer. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Statewide-Reports/Natural-Communities-Dataset-Summary-Document.pdf*

The NC Dataset indicates the likely presence of a groundwater dependent ecosystems that should be verified locally for its presence or absence, as well as for its dependence on groundwater. To create a map of GDEs in the basin, a hydrologic connection between each GDE to a principal aquifer needs to be confirmed. The most practical approach[6] for a GSA to assess whether polygons in the NC dataset are connected to groundwater is to rely on groundwater elevation data. To do this, we recommend using data from representative wells, interpolating groundwater elevations, and characterizing groundwater conditions that represent the variable fluctuations of groundwater depths due to seasonal and interannual patterns. When assessing the depth of groundwater below a polygon from the NC dataset, follow these three best practices:

BEST PRACTICE #1. Select Representative Groundwater Wells



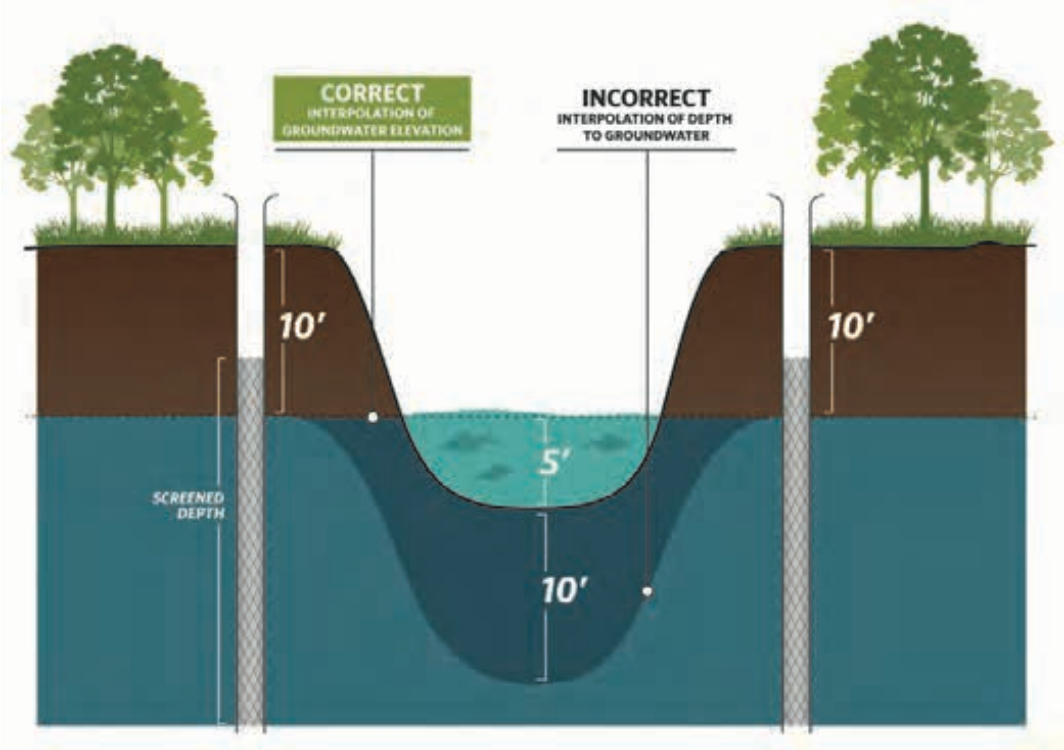
- Consider the subsurface heterogeneity (especially near river/streams where groundwater and surface water interactions occur around

[6] Groundwater reliance can also be confirmed via stable isotope analysis and geophysical surveys. For more information see The GDE Assessment Toolbox (Appendix IV, GDE Guidance Document for GSPs - link in footnote above).

heterogeneous stratigraphic units or aquitards formed by fluvial deposits)

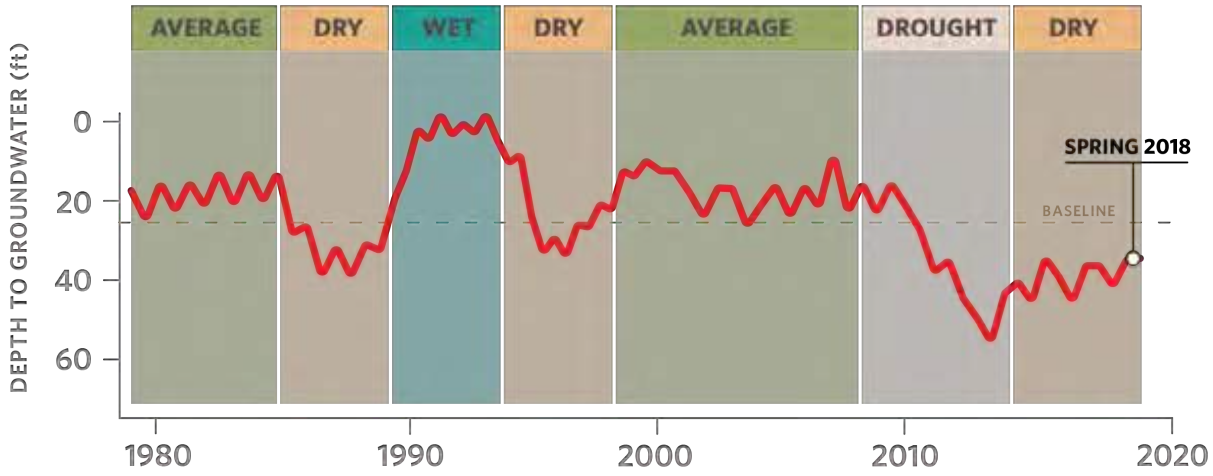
- Choose wells that are within 1 kilometer (0.6 miles) of the NC Dataset polygons, and more likely to reflect the local conditions relevant to the ecosystem.
- Choose wells that are screened within the surficial unconfined aquifer and capable of measuring the true water table.
- Avoid wells that have insufficient well information on the screened well depth interval.

BEST PRACTICE #2. Interpolate Groundwater Depth



- When interpolating groundwater levels in and around surface water features (e.g., streams, wetlands) take land surface elevations into consideration. The most accurate way to interpolate depth to groundwater in GDEs is first interpolate groundwater elevations and then to subtract land surface elevation to get a depth to groundwater measurement.
- Subsurface heterogeneity in and around GDE areas may not be adequately captured if the interpolated well density is too low.

BEST PRACTICE #3. Characterize Groundwater Conditions



SGMA requires GSAs to describe current and historical conditions when identifying GDEs [23 CCR §354.16(g)]. Relying solely on the SGMA benchmark date (January 1, 2015) to characterize groundwater conditions (e.g., depth to groundwater) is inadequate because managing groundwater conditions with data from one point in time fails to capture the seasonal and interannual variability (i.e., wet, average, dry, and drought years) that is characteristic of California's climate.

ABOUT US

The Nature Conservancy is a science-based nonprofit organization whose mission is *to conserve the lands and waters on which all life depends*. To support successful SGMA implementation that meets the future needs of people, the economy, and the environment, TNC has developed tools and resources (www.groundwaterresourcehub.org) intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

26 March 2019

MEMORANDUM

To: Gary Peterson, Salinas Valley Basin Groundwater Sustainability Agency
Derrik Williams, P.G., C.Hg., Montgomery & Associates

From: Keith Van Der Maaten, P.E., Marina Coast Water District
Patrick Breen, Marina Coast Water District
Vera Nelson, P.E., EKI Environment and Water, Inc.
Tina Wang, P.E., EKI Environment and Water, Inc.

Subject: Preliminary Comments Regarding Salinas Valley Basin Groundwater Sustainability Agency Draft Groundwater Sustainability Plan Chapter 4 (EKI B60094.03)

On behalf of the Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA), EKI has reviewed and prepared preliminary comments on the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) draft 180/400 Foot Aquifer Subbasin and Salinas Valley Integrated Groundwater Sustainability Plans (GSPs) Chapter 4, dated 30 November 2018 and updated 3 January 2019.

EKI has provided a majority of these comments during SVBGSA's December 6 Planning Committee Meeting and received concurrence from SVBGSA as identified below.

Comments for 180/400 Foot Aquifer Subbasin GSP, Chapter 4

1. <u>Section 4.4.1 – Principal Aquifers and Aquitards</u>

   The GSP Regulations specifically define the term "Principal Aquifer" (California Code of Regulations (CCR) §351 (aa)) and have plan development as well as monitoring network requirements for identified Principal Aquifers. Currently, GSP Section 4.4.1 appears to have included all alluvial deposits/valley fill deposits from ground surface to the bottom of the subbasin in a single Principal Aquifer.

   As agreed upon during the December 6 Planning Committee Meeting, the 180/400 Foot Aquifer Subbasin GSP should define multiple Principal Aquifers given the definable layers of aquifer and aquitard units in the subbasin. At least one Principal Aquifer should be defined for the Deep Aquifers (i.e. the 900-Foot and 1,500-Foot Aquifers). Per GSP Regulations, groundwater elevation contours, hydrographs, minimum thresholds for

seawater intrusion, sufficient monitoring network coverage, etc. should be developed for each Principal Aquifer identified in this GSP.

2. Section 4.4.1 – Principal Aquifers and Aquitards

   In addition to the comment above, this section discusses extensive continuous clay layers within the 180/400 Foot Aquifer Subbasin. However, there are existing wells and abandoned wells that are potentially acting as "conduits" for saline water to flow to the lower aquifers[1]. Airborne electromagnetic analysis conducted in the northern Salinas Valley Basin also showed that there are gaps in the 180/400-Foot Aquitard in the 180/400-Foot Aquifer Subbasin near the coast.

   Please add a discussion of potential conduits of vertical flow in the Subbasin. This comment was not provided during the December 6 Planning Committee Meeting.

3. Section 4.4.2 – Aquifer Properties

   In addition to defining multiple Principal Aquifers, the 180/400 Foot Aquifer Subbasin GSP should provide aquifer properties for each of the defined Principal Aquifers. The GSP should provide storativity, conductivity (per CCR §354.14 (b)(4)(B)), and transmissivity for each Principal Aquifer. We understand that Section 4.7 of the January 2019 update discussed aquifer parameters as a data gap. As agreed upon during the Planning Committee meeting, SVBGSA will obtain these aquifer property parameters from the Water Resources Agency to include in this section.

   This section could benefit from either a table or description on an aquifer and aquitard basis compiling all the relevant data (e.g. from field tests or models) and tabulating ranges for each aquifer or aquitard.

4. Figures 4-6, 4-7, and 4-8 – Cross-Sections

   The Deep Aquifers are unrepresented in cross-sections. Please provide a discussion if this is a data gap.

   This comment has been noted by and concurred to by SVBGSA during the Planning Committee Meeting. Section 4.7 of the January 2019 update has included information on the deep aquifer as a data gap.

5. Section 4.6.2 – Seawater Intrusion

[1] Monterey County Water Resources Agency. Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, October 2017.

Please add the following text after the second paragraph on Page 33. This comment was not provided during the December 6 Planning Committee Meeting.

"Groundwater with a total dissolved solid of 3,000 mg/L or less, is groundwater that is considered to be suitable, or potentially suitable, for beneficial uses in accordance with SWRCB Resolution No. 88-63 as adopted in its entirety in the Central Coast Regional Water Quality Control Board's Basin Plan. California Code of Regulations, Title 23, Section 659 – 669 lists the beneficial uses of surface water, which is also applicable to groundwater. Those beneficial uses include (1) domestic use, (2) irrigation use, (3) power use, (4) frost protection use, (5) municipal use, (6) mining use, (7) industrial use, (8) fish and wildlife preservation and enhancement use, (9) aquaculture use, (10) fish and wildlife protection and enhancement, (11) recreational use, (12) water quality use, and (13) stock watering use. In addition, Water Code Section 1242 states that the storing of water underground constitutes a beneficial use."

Comments for Salinas Valley Integrated Subbasin GSP, Chapter 4

1. <u>Section 4.4 – Groundwater Hydrology</u>

   On Page 17, the GSP states

   "The presence of laterally continuous clay layers distinguishes the 180/400-Foot Aquifer Subbasin from the other subbasins in the Valley. As described in the following two subsections, the presence of continuous clay layers affects the following aspects of the basin hydrogeology:
   - *A near-surface clay layer creates relatively shallow confined conditions in the 180/400-Foot Aquifer Subbasin, in contrast to the unconfined conditions over most of the basin*
   - *Deeper clay layers create definable aquifers in the 180/400-Foot Aquifer Subbasin, whereas most of the basin includes only a single undifferentiated aquifer."*

   This section implies that the 180/400 Foot Aquifer Subbasin contains definable aquifer layers, whereas other subbasins in Salinas Valley do not have definable aquifer layers. However, definable aquifers also exist throughout the Monterey Subbasin and throughout most of the Forebay Aquifer Subbasin to just north of King City.

   Additionally, this section should provide a discussion of the sediments across the basin that are stratigraphically equivalent. For example, the shallow zone and deep zones in the Eastside Subbasin "are generally time-stratigraphically equivalent to the Pressure 180-Foot and Pressure 400-Foot Aquifers".[2]

[2] Brown and Caldwell, 2015. State of the Salinas River Groundwater Basin, dated 16 January 2015.

2. Section 4.7.2 – Seawater Intrusion

   Please add the following text on Page 35. This comment was not provided during the December 6 Planning Committee Meeting.

   "Groundwater with total dissolved solids of 3,000 mg/L or less, is groundwater that is considered to be suitable, or potentially suitable, for beneficial uses in accordance with SWRCB Resolution No. 88-63 as adopted in its entirety in the Central Coast Regional Water Quality Control Board's Basin Plan. California Code of Regulations, Title 23, section 659 – 669 lists the beneficial uses of surface water, which is also applicable to groundwater. Those beneficial uses include (1) domestic use, (2) irrigation use, (3) power use, (4) frost protection use, (5) municipal use, (6) mining use, (7) industrial use, (8) fish and wildlife preservation and enhancement use, (9) aquaculture use, (10) fish and wildlife protection and enhancement, (11) recreational use, (12) water quality use, and (13) stock watering use. In addition, Water Code Section 1242 states that the storing of water underground constitutes a beneficial use."

From: Gary Petersen <peterseng@svbgsa.org>
Sent: Thursday, December 6, 2018 1:42 PM
To: Derrik Williams <dwilliams@elmontgomery.com>; Chris Peters <cpeters@elmontgomery.com>
Subject: Fwd: Comments on Water Quality for next chapter (and maybe Chapter 4)

Comments from Heather Lukacs fro this morning.

Gary

---------- Forwarded message ---------
From: **Heather Lukacs** <heather.lukacs@communitywatercenter.org>
Date: Thu, Dec 6, 2018 at 11:52 AM
Subject: Comments on Water Quality for next chapter (and maybe Chapter 4)
To: <peterseng@svbgsa.org>
Cc: <camela@svbgsa.org>

HI Gary (and Ann),

Could you please pass along this email to Derek to make sure these important data sources are included in the water quality sections of Chapter 4 and other chapters?

We have been working on a factsheet on Water Quality and SGMA. We are working with academic partners on informational materials that present geochemistry science on how pumping, recharge, and water level changes in groundwater influence water quality. Therefore, we find it imperative that water quality is considered as it relates to other GSP data and implementation.

For the Salinas Valley Basin, we would specifically like you to start by considering at least the following contaminants for inclusion in the GSP and your monitoring network:
1. Nitrate
2. Arsenic
3. Hexavalent Chromium
4. Uranium
5. 123-TCP
6. DBCP
7. (also, chloride and TDS, as others have mentioned)

This Map Viewer shows state/local small water system water quality data for Nitrate, Arsenic, and Chrom-6. Monterey County does not have the budget to monitor for 123-TCP which has been shown in several pubic water systems including San Jerardo Cooperative (and also in our own testing of private domestic wells). More info about the Map Viewer here. Please let me know if you have any questions.

Thanks!
heather

Integrated Plan to Address Drinking Water and Wastewater Needs of Disadvantaged Communities in the Salinas Valley and Greater Monterey County IRWM Region

Database and Map Viewer: A database and mapping tool was created for this project, and is being hosted on a three-year renewable basis at California State University, Water Resources and Policy Initiatives. A new viewing platform, called the *Greater Monterey County Community Water Tool*, has been created to show the locations of disadvantaged and suspected disadvantaged communities, geographic areas with water quality contamination (including nitrate, arsenic, and hexavalent chromium contamination), and the boundaries of nearby water districts. The GMC Community Water Tool provides a powerful tool for the Greater Monterey County Regional Water Management Group, local agencies, and non-profit community assistance organizations to identify "hot spots" of contamination and to evaluate options for potential consolidation of small disadvantaged communities with nearby water utilities. The GMC Community Water Tool can be viewed at this link.

--

Heather Lukacs, PhD
Pronouns: She/Her/Hers
Director of Community Solutions
Community Water Center

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406 Main Street, Suite 421, Watsonville, CA 95076
Tel. (831) 288-0450 Cell (831) 500-2828 (voice/text)
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716 10th St. Suite 300 Sacramento, CA 95814
Tel: (916) 706-3346
Visalia Office:
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--

Gary Petersen

Regional Government Services

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RGS REGIONAL GOVERNMENT SERVICES
SERVING PUBLIC AGENCIES SINCE 2002

Assignmnent:

General Manager

Salinas Valley Groundwater Sustainability Agency

SVBGSA.org

Salinas Valley Basin
Groundwater Sustainability Agency

Document	Chapter	Section	Page	Comment	Commenter	Date
GSP 180/400	4	4.3.2	14	Line 4 - "Error! Reference source not found." Should be deleted.	Brian Frus	12/21/18
GSP 180/400	4	4.5	29	Line 8 should read "35,000" acre-feet	Brian Frus	12/21/18
GSP 180/400	4	4.6.1	31	Suggest this section state in layperson terms what is happening to the concentrations of the constituents discussed as one moves down the valley (or deeper into either the180 or 400 aquifers)	Brian Frus	12/21/18

---------- Forwarded message ---------
From: **Glenn Church** <gwchurch@gmail.com>
Date: Thu, Apr 4, 2019 at 12:41 PM
Subject: Public Comment for Chapters 5, Groundwater Conditions, of the draft Valley-Wide Integrated Groundwater Sustainability Plan and the 180-400 Foot Aquifer Subbasin GSP
To: <peterseng@svbgsa.org>

Mr. Petersen,

After reviewing the draft for the 180/400 aquifer, my main concerns rest with the northern section of the aquifer, primarily north of Dolan Rd./Castroville Blvd.

There is a serious lack of data on this section of the aquifer, primarily a lack of data on saltwater intrusion. I find it difficult to imagine that an adequate groundwater sustainability plan can be drafted without having basic scientific information for this area. We know saltwater has advanced considerably since the years following World War II in the Castroville area and continues to advance towards Salinas. The area north of this has traditionally been marshy. Until the early 1900s the Salinas River used to flow past where Moss Landing harbor now is and emptied into the ocean about a mile north of the Elkhorn Slough's opening. Historically, the Elkhorn Slough was a fresh and saltwater mix, depending on the time of year. In the early 1980s, the state of California cut dikes easterly from the Elkhorn Slough towards Elkhorn Rd. This brought saltwater onto lands that had freshwater vegetation growing on them. Many freshwater ponds were turned to saltwater. Besides forever altering the freshwater environments in these locations, the opening of these lands to a saltwater marsh greatly expanded saltwater over what appears to be thousands of acres.

I do not know of any studies that show how the presence of aboveground saltwater has affected groundwater levels. This knowledge is of extreme importance in developing a sustainability plan along the Elkhorn Slough. Many places on the slough, such as Moro Cojo and Parson's Slough are no longer freshwater, but they were just a few years ago. Some wells in these areas have been lost to the introduction of saltwater over the years. The many organizations involved in the Elkhorn Slough have done tremendous work, but they have used saltwater primarily as a means to rehabilitate the lands. While saltwater intrusion in the groundwater in the Castroville area is an unplanned result of water use, the expansion of saltwater in the Elkhorn Slough is a planned action. Future plans will continue to advance the saltwater easterly. This runs counter to the goals of the SVBGSA which is to protect groundwater.

The SVBGSA needs to coordinate with the organizations along the Elkhorn Slough in developing a sustainability plan for this area. There should also be coordination with the Pajaro Valley Water Management Agency handling the GSA there. The boundaries of all three of these interests (SVBGSA, Elkhorn Slough, Pajaro Valley) meet at the Elkhorn Slough and even overlap. The Elkhorn Slough is the largest surface saltwater encroachment on the Central Coast. There is

a case to be made that the diversion of the Salinas River a hundred years ago, and the filling of the Elkhorn Slough purely with saltwater are contributors to saltwater intrusion from the current boundaries of the Salinas River to the Elkhorn Slough. Any sustainability plan must take these factors into consideration.

Respectfully,
Glenn Church

--

Gary Petersen

Regional Government Services

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RGS Regional Government Services
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Assignment:

General Manager

Salinas Valley Groundwater Sustainability Agency

SVBGSA.org

Salinas Valley Basin
Groundwater Sustainability Agency

The Nature Conservancy
Protecting nature. Preserving life.

CALIFORNIA WATER | GROUNDWATER

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nature.org
GroundwaterResourceHub.org

11 April 2019

General Manager Gary Petersen
Salinas Valley Basin Groundwater Sustainability Agency
200 Lincoln Avenue
Salinas, CA 93901

Submitted online via email: peterseng@svbgsa.org

Re: Chapter 5 of the 180-400 Foot Aquifer Subbasin Draft GSP and the Salinas Valley Basin Integrated Sustainability Plan Draft GSP

Dear Mr. Gary Petersen,

The Nature Conservancy (TNC) appreciates the opportunity to comment on Chapter 5 for the 180-400 Foot Aquifer Subbasin and Salinas Valley Basin Integrated Sustainability Plan Draft Groundwater Sustainability Plans (GSPs) being prepared under the Sustainable Groundwater Management Act (SGMA).

TNC as a Stakeholder Representative for the Environment

TNC is a global, nonprofit organization dedicated to conserving the lands and waters on which all life depends. We seek to achieve our mission through science-based planning and implementation of conservation strategies. For decades, we have dedicated resources to establishing diverse partnerships and developing foundational science products for achieving positive outcomes for people and nature in California. TNC was part of a stakeholder group formed by the Water Foundation in early 2014 to develop recommendations for groundwater reform and actively worked to shape and pass SGMA.

Our reason for engaging is simple: California's freshwater biodiversity is highly imperiled. We have lost more than 90 percent of our native wetland and river habitats, leading to precipitous declines in native plants and the populations of animals that call these places home. These natural resources are intricately connected to California's economy providing direct benefits through industries such as fisheries, timber and hunting, as well as indirect benefits such as clean water supplies. SGMA must be successful for us to achieve a sustainable future, in which people and nature can thrive within the Salinas Valley and California.

We believe that the success of SGMA depends on bringing the best available science to the table, engaging all stakeholders in robust dialog, providing strong incentives for beneficial outcomes and rigorous enforcement by the State of California.

Given our mission, we are particularly concerned about the inclusion of nature, as required, in GSPs. The Nature Conservancy has developed a suite of tools based on best available science to help GSAs, consultants, and stakeholders efficiently incorporate nature into GSPs.

These tools and resources are available online at GroundwaterResourceHub.org. The Nature Conservancy's tools and resources are intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

Addressing Nature's Water Needs in GSPs

SGMA requires that all beneficial uses and users, including environmental users of groundwater, be considered in the development and implementation of GSPs (Water Code § 10723.2).

The GSP Regulations include specific requirements to identify and consider groundwater dependent ecosystems (23 CCR §354.16(g)) when determining whether groundwater conditions are having potential effects on beneficial uses and users. GSAs must also assess whether sustainable management criteria may cause adverse impacts to beneficial uses, which include environmental uses, such as plants and animals. In addition, monitoring networks should be designed to detect potential adverse impacts to beneficial uses due to groundwater. Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decision, and using data collected through monitoring to revise decisions in the future. Over time, GSPs should improve as data gaps are reduced and uncertainties addressed.

To help ensure that GSPs adequately address nature as required under SGMA, The Nature Conservancy has prepared a checklist (Attachment A) for GSAs and their consultants to use. The Nature Conservancy believes the following elements are foundational for 2020 GSP submittals. For detailed guidance on how to address the checklist items, please also see our publication, *GDEs under SGMA: Guidance for Preparing GSPs* (https://groundwaterresourcehub.org/public/uploads/pdfs/GWR_Hub_GDE_Guidance_Doc_2-1-18.pdf).

1. Environmental Representation

SGMA requires that groundwater sustainability agencies (GSAs) consider the interests of all beneficial uses and users of groundwater. To meet this requirement, we recommend actively engaging environmental stakeholders by including environmental representation on the GSA board, technical advisory group, and/or working groups. This could include local staff from state and federal resource agencies, nonprofit organizations and other environmental interests. By engaging these stakeholders, GSAs will benefit from access to additional data and resources, as well as a more robust and inclusive GSP.

2. Basin GDE and ISW Maps

SGMA requires that groundwater dependent ecosystems (GDEs) and interconnected surface waters (ISWs) be identified in the GSP. We recommend using the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) provided online (https://gis.water.ca.gov/app/NCDatasetViewer/) by the Department of Water Resources (DWR) as a starting point for the GDE map. The NC Dataset was developed through a collaboration between DWR, the Department of Fish and Wildlife and TNC.

3. Potential Effects on Environmental Beneficial Users

SGMA requires that potential effects on GDEs and environmental surface water users be described when defining undesirable results. In addition to identifying GDEs in the basin, The Nature Conservancy recommends identifying beneficial users of surface water, which include environmental users. This is a critical step, as it is impossible to define "significant and unreasonable adverse impacts" without knowing *what* is being impacted. For your convenience, we've provided a list of freshwater species within the boundary of the 180-400 Foot Aquifer in Attachment C. Our hope is that this information will help your GSA better

evaluate the impacts of groundwater management on environmental beneficial users of surface water. We recommend that after identifying which freshwater species exist in your basin, especially federal and state listed species, that you contact staff at the Department of Fish and Wildlife (DFW), United States Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Services (NMFS) to obtain their input on the groundwater and surface water needs of the organisms on the freshwater species list. Because effects to plants and animals are difficult and sometimes impossible to reverse, we recommend erring on the side of caution to preserve sufficient groundwater conditions to sustain GDEs and ISWs.

4. Biological and Hydrological Monitoring
If sufficient hydrological and biological data in and around GDEs is not available in time for the 2020/2022 plan, data gaps should be identified along with actions to reconcile the gaps in the monitoring network.

Our comments related to Chapter 5 of the 180-400 Foot Aquifer Subbasin Draft GSP and Salinas Valley Integrated Sustainability Plan GSP are provided in detail in Attachment B and are in reference to the numbered items in Attachment A. Attachment D describes six best practices that GSAs and their consultants can apply when using local groundwater data to confirm a connection to groundwater for DWR's Natural Communities Commonly Associated with Groundwater Dataset (https://gis.water.ca.gov/app/NCDatasetViewer/).

Thank you for fully considering our comments as you develop your GSP.

Best Regards,

Sandi Matsumoto
Associate Director, California Water Program
The Nature Conservancy

Attachment A
Considering Nature under SGMA: A Checklist

The Nature Conservancy is neither dispensing legal advice nor warranting any outcome that could result from the use of this checklist. Following this checklist does not guarantee approval of a GSP or compliance with SGMA, both of which will be determined by DWR and the State Water Resources Control Board. The checklist is available online: https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_GDE_Checklist_for_SGMA_Sept2018.pdf

GSP Plan Element*		GDE Inclusion in GSPs: Identification and Consideration Elements		Item Number
Admin Info	2.1.5 Notice & Communication *23 CCR §354.10*	Description of the types of environmental beneficial uses of groundwater that exist within GDEs and a description of how environmental stakeholders were engaged throughout the development of the GSP.		1.
Basin Setting	2.2.2 Current & Historical Groundwater Conditions *23 CCR §354.16*	Interconnected surface waters:		2.
		Interconnected surface water maps for the basin with gaining and losing reaches defined (included as a figure in GSP & submitted as a shapefile on SGMA portal).		3.
		Estimates of current and historical surface water depletions for interconnected surface waters quantified and described by reach, season, and water year type.		4.
		Basin GDE map included (as figure in text & submitted as a shapefile on SGMA Portal).		5.
		If NC Dataset *was* used:	Basin GDE map denotes which polygons were kept, removed, and added from NC Dataset (Worksheet 1, can be attached in GSP section 6.0).	6.
			The basin's GDE shapefile, which is submitted via the SGMA Portal, includes two new fields in its attribute table denoting: 1) which polygons were kept/removed/added, and 2) the change reason (e.g., why polygons were removed).	7.
			GDEs polygons are consolidated into larger units and named for easier identification throughout GSP.	8.
		If NC Dataset *was not* used:	Description of why NC dataset was not used, and how an alternative dataset and/or mapping approach used is best available information.	9.
		Description of GDEs included:		10.
		Historical and current groundwater conditions described in each GDE unit.		11.
		Ecological condition described in each GDE unit.		12.
		Each GDE unit has been characterized as having high, moderate, or low ecological value.		13.
		Inventory of species, habitats, and protected lands for each GDE unit with ecological importance (Worksheet 2, can be attached in GSP section 6.0).		14.

	2.2.3 Water Budget *23 CCR §354.18*	Groundwater inputs and outputs (e.g., evapotranspiration) of native vegetation and managed wetlands are included in the basin's historical and current water budget.		15.
		Potential impacts to groundwater conditions due to land use changes, climate change, and population growth to GDEs and aquatic ecosystems are considered in the projected water budget.		16.
Sustainable Management Criteria	3.1 Sustainability Goal *23 CCR §354.24*	Environmental stakeholders/representatives were consulted.		17.
		Sustainability goal mentions GDEs or species and habitats that are of particular concern or interest.		18.
		Sustainability goal mentions whether the intention is to address pre-SGMA impacts, maintain or improve conditions within GDEs or species and habitats that are of particular concern or interest.		19.
	3.2 Measurable Objectives *23 CCR §354.30*	Description of how GDEs were considered and whether the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment.		20.
	3.3 Minimum Thresholds *23 CCR §354.28*	Description of how GDEs and environmental uses of surface water were considered when setting minimum thresholds for relevant sustainability indicators:		21.
		Will adverse impacts to GDEs and/or aquatic ecosystems dependent on interconnected surface waters (beneficial user of surface water) be avoided with the selected minimum thresholds?		22.
		Are there any differences between the selected minimum threshold and state, federal, or local standards relevant to the species or habitats residing in GDEs or aquatic ecosystems dependent on interconnected surface waters?		23.
	3.4 Undesirable Results *23 CCR §354.26*	For GDEs, hydrological data are compiled and synthesized for each GDE unit:		24.
		If hydrological data *are available* within/nearby the GDE	Hydrological datasets are plotted and provided for each GDE unit (Worksheet 3, can be attached in GSP Section 6.0).	25.
			Baseline period in the hydrologic data is defined.	26.
			GDE unit is classified as having high, moderate, or low susceptibility to changes in groundwater.	27.
			Cause-and-effect relationships between groundwater changes and GDEs are explored.	28.
		If hydrological data *are not available* within/nearby the GDE	Data gaps/insufficiencies are described.	29.
			Plans to reconcile data gaps in the monitoring network are stated.	30.
		For GDEs, biological data are compiled and synthesized for each GDE unit:		31.
		Biological datasets are plotted and provided for each GDE unit.		32.
		Data gaps/insufficiencies are described.		33.
		Plans to reconcile data gaps in the monitoring network are stated.		34.
		Description of potential effects on GDEs, land uses and property interests:		35.

		Cause-and-effect relationships between GDE and groundwater conditions are described.	36.
		Impacts to GDEs that are considered to be "significant and unreasonable" are described.	37.
		Known hydrological thresholds or triggers (e.g., instream flow criteria, groundwater depths, water quality parameters) for relevant species or ecological communities are reported.	38.
		Land uses include and consider recreational uses (e.g., fishing/hunting, hiking, boating).	39.
		Property interests include and consider privately and publicly protected conservation lands and opens spaces, including wildlife refuges, parks, and natural preserves.	40.
Sustainable Management Criteria	3.5 Monitoring Network *23 CCR §354.34*	Description of whether hydrological data are spatially and temporally sufficient to monitor groundwater conditions for each GDE unit.	41.
		Description of how hydrological data gaps and insufficiencies will be reconciled in the monitoring network.	42.
		Description of how impacts to GDEs and environmental surface water users, as detected by biological responses, will be monitored and which monitoring methods will be used in conjunction with hydrologic data to evaluate cause-and-effect relationships with groundwater conditions.	43.
Projects & Mgmt Actions	4.0. Projects & Mgmt Actions to Achieve Sustainability Goal *23 CCR §354.44*	Description of how GDEs will benefit from relevant project or management actions.	44.
		Description of how projects and management actions will be evaluated to assess whether adverse impacts to the GDE will be mitigated or prevented.	45.

* In reference to DWR's GSP annotated outline guidance document, available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/GD_GSP_Outline_Final_2016-12-23.pdf

Attachment B

TNC Evaluation of Chapter 5 of the 180-400 Foot Aquifer Subbasin GSP Draft and Salinas Valley Basin Integrated Sustainability Plan (ISP)

Although none of the items on the Environmental User Checklist (Attachment A) were relevant to Section 5.2., we have the following suggestions:

5.5 Interconnected Surface Water (p.39)

- [Paragraph 1] While groundwater in the 180- and 400-foot Aquifers is generally not considered to be hydraulically connected to the Salinas River or its tributaries, the Shallow Aquifer (which resides above the Salinas Valley Aquitard) likely does. In chapter 4, the following aquitards and aquifers have been identified in the 180/400-Foot aquifer and Monterey Subbasins: 1) Shallow Aquifer; 2) Salinas Valley Aquitard; 3) 180-Foot Aquifer; 4) 180/400-Foot Aquitard; 5) 400-Foot Aquifer; 6) 400-Foot/Deep Aquitard; 7) Deep Aquifers (Chapter 4 ISP; p. 19). We recommend that interconnections of surface water with groundwater in the Shallow Aquifer be evaluated in this section of the GSP, since the Shallow Aquifer is within the 180/400-Foot Aquifer Subbasin. Groundwater in the shallow aquifer is also likely to be supporting groundwater dependent ecosystems and interacting with the Salinas River in this part of the basin. Basins with a stacked series of aquifers may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. If pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, that can support springs, surface water, and groundwater dependent ecosystems. This is because the goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits, and while groundwater pumping may not be currently occurring in a shallow aquifer, it could be in the future.
- [Paragraph 2] The 180-Foot Aquifer and the 400-Foot Aquifers are confined units, thus comparing groundwater levels of <20 feet below the ground surface with wells screened within a confined aquifer is an incorrect approach. This is because the potentiometric surface of a confined aquifer cannot reflect the position of the true water table. Comparing groundwater levels from the shallow (unconfined) aquifer (that exists above the Salinas Valley Aquitard) with the ground surface is a more appropriate approach for identifying ISW in the basin.
- [Paragraph 3] We would like to see groundwater conditions evaluated across the range of seasonal and interannual time frames. Relying solely on any single point in time (in this case Fall 2013) to characterize groundwater conditions (e.g., depth to groundwater) is inadequate because data from one time point fails to capture the seasonal and interannual variability (i.e., wet, average, dry, and drought years) that is characteristic of California's climate.

Environmental User Checklist (Attachment A) Items 2-4:

Interconnected surface waters (ISW) are defined in the GSP Regulations as "surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted" [23 CCR §351(o)]. California's Mediterranean-like climate is characterized by large seasonal variations (dry summers and wet winters) and interannual variability in water year types (drought, dry, average, wet years), which can result in the groundwater regime to have varying levels of interconnections with surface water in time and space. For this reason, we highly recommend the following:

- Mapping ISW locations would be best done using contours of depth to groundwater measured from multiple points in time (different seasons and water year types) rather than only from Fall 2013. If data gaps exist in groundwater level contour data over time, these data gaps should be discussed in the GSP section 5.5.1 (Salinas Valley Basin ISP) and section 5.5 (180-400 Foot Aquifer GSP Draft) and reconciled in the Monitoring Network section, so that ISW maps can be improved in future GSPs.
- The use of piezometric head from confined aquifers should be eliminated from these ISW mapping efforts, since they do not adequately reflect the position of the true water table (see last paragraph on p. 38 of Salinas Valley Basin ISP)
- It is unclear on Figure 5-19 (Salinas Valley Basin ISP) and Figure 5-22 (180-400 Foot Aquifer GSP Draft), whether missing groundwater levels along certain reaches of the Salinas River are due to groundwater levels >20 feet bgs or due to data gaps in groundwater levels. Mapping the position of wells used for the interpolation of groundwater elevation data used to map groundwater level contours near surface water would help provide further clarification.
- Please elaborate on how depth to groundwater contours were developed after the first sentence in GSP section 5.5.1 (Salinas Valley Basin ISP) and third paragraph (p.39) of the 180-400 Foot Aquifer GSP Draft section 5.5. More accurate depth to groundwater maps around surface water features can be obtained by first interpolating groundwater elevations around surface water features and then subtracting groundwater elevations from land surface elevation data (obtained via digital elevation maps (DEM)[1]) for more accurate ISW mapping.
- We recommend mapping the gaining and losing reaches onto Figure 5-19 (Salinas Valley Basin ISP) using the data from Figure 5-23 (Salinas Valley Basin ISP). If this is not possible due to insufficient data, then as with the first bullet above, we would like the data gaps to be addressed by the Monitoring Network.

Environmental User Checklist (Attachment A) Items 5-14:

- The identification of GDEs is a required element of the Basin Setting Section under the description of Current & Historical Groundwater Conditions (23 CCR §354.16). Recognizing natural points of discharge (seeps & springs) as GDEs is consistent with

[1] Available at: https://catalog.data.gov/dataset/usgs-national-elevation-dataset-ned-1-meter-downloadable-data-collection-from-the-national-map-

the SGMA definition of GDEs[2], however, we recommend the identification of GDEs (GDE map Figure 4-11; Chapter 4) for the 180-400 Foot Aquifer be moved to Chapter 5: Groundwater Conditions and elaborated upon with a description of current and historical groundwater conditions in the GDE areas. Chapter 5 is a more appropriate place for the identification of GDEs, since groundwater conditions (e.g., depth to groundwater, interconnected surface water maps, groundwater quality) are necessary local information and data from the GSP in assessing whether polygons in the NC dataset are connected to groundwater in a principal aquifer. Appendix 4A (Page 27, Chapter 4) was referenced as describing methods used to determine the extent and type of potential GDEs, but that document was not available on the SVBGSA website for us to review.

- Decisions to remove, keep, or add polygons from the NC dataset into a basin GDE map should be based on best available science in a manner that promotes transparency and accountability with stakeholders. Any polygons that are removed, added, or kept should be inventoried in the submitted shapefile to DWR, and mapped in the plan. We recommend revising Figure 4-11 and including it in Chapter 5 to reflect this change.
- Best practices for identifying GDEs in GSPs are outlined in detail in Step 1 of The Nature Conservancy's Guidance Document[3]. Here are some highlights:
    - The NC dataset is a starting point for GSAs, and needs to be groundtruthed with aerial photography to screen for changes in land use that many not be reflected in the NC dataset (e.g., recent development, cultivated agricultural land, obvious human-made features).
    - Grouping multiple GDE polygons into larger units by location (proximity to each other) and principal aquifer will simplify the process of evaluating potential effects on GDE due to groundwater conditions under GSP Chapter 7: Sustainable Management Criteria.
    - Groundwater conditions within GDEs should be briefly described within the portion of the Basin Setting Section where GDEs are being identified.
    - When using groundwater levels to confirm that a connection to groundwater in a principal aquifer exists.
    - Not all GDEs are created equal. Some GDEs may contain legally protected species or ecologically rich communities, whereas other GDEs may be highly degraded with little conservation value. Including a description of the types of species (protected status, native versus non-native), habitat, and environmental beneficial uses (see Worksheet 2, p.74 of GDE Guidance Document) can be helpful in assigning an ecological value to the GDEs. Identifying an ecological value of each GDE can help prioritize limited resources when considering GDEs as well as prioritizing legally protected species or habitat that may need special consideration when setting sustainable management criteria.
- Are any of the wells from the MCWRA program (described in GSP section 5.1.1 of the Salinas Valley Basin ISP) close enough (<1 km) to GDEs and screened in the shallow portions of the aquifer to characterize historical and current groundwater conditions for each GDE? If data gaps exist, they should be discussed in Chapter 5.

[2] Groundwater dependent ecosystem refer to ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. [23 CCR §351 (m)]

[3] "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans" is available at https://groundwaterresourcehub.org/gde-tools/gsp-guidance-document/

Attachment C

Freshwater Species Located in the 180-400 Foot Aquifer

To assist in identifying the beneficial users of surface water necessary to assess the undesirable result "depletion of interconnected surface waters", Attachment C provides a list of freshwater species located in the 180-400 Foot Aquifer. To produce the freshwater species list, we used ArcGIS to select features within the California Freshwater Species Database version 2.0.9 within the 180-400 Foot Aquifer groundwater basin boundary. This database contains information on ~4,000 vertebrates, macroinvertebrates and vascular plants that depend on fresh water for at least one stage of their life cycle. The methods used to compile the California Freshwater Species Database can be found in Howard et al. 2015[4]. The spatial database contains locality observations and/or distribution information from ~400 data sources. The database is housed in the California Department of Fish and Wildlife's BIOS[5] as well as on The Nature Conservancy's science website[6].

Scientific Name	Common Name	Legally Protected Status		
		Federal	State	Other
BIRD				
Actitis macularius	Spotted Sandpiper			
Aechmophorus clarkii	Clark's Grebe			
Aechmophorus occidentalis	Western Grebe			
Agelaius tricolor	Tricolored Blackbird	Bird of Conservation Concern	Special Concern	BSSC - First priority
Aix sponsa	Wood Duck			
Anas acuta	Northern Pintail			
Anas americana	American Wigeon			
Anas clypeata	Northern Shoveler			
Anas crecca	Green-winged Teal			
Anas cyanoptera	Cinnamon Teal			
Anas discors	Blue-winged Teal			
Anas platyrhynchos	Mallard			
Anas strepera	Gadwall			
Anser albifrons	Greater White-fronted Goose			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Aythya affinis	Lesser Scaup			
Aythya americana	Redhead		Special Concern	BSSC - Third priority
Aythya collaris	Ring-necked Duck			

[4] Howard, J.K. et al. 2015. Patterns of Freshwater Species Richness, Endemism, and Vulnerability in California. PLoSONE, 11(7). Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0130710
[5] California Department of Fish and Wildlife BIOS: https://www.wildlife.ca.gov/data/BIOS
[6] Science for Conservation: https://www.scienceforconservation.org/products/california-freshwater-species-database

Aythya marila	Greater Scaup			
Aythya valisineria	Canvasback		Special	
Botaurus lentiginosus	American Bittern			
Bucephala albeola	Bufflehead			
Bucephala clangula	Common Goldeneye			
Butorides virescens	Green Heron			
Calidris alpina	Dunlin			
Calidris mauri	Western Sandpiper			
Calidris minutilla	Least Sandpiper			
Chen caerulescens	Snow Goose			
Chen rossii	Ross's Goose			
Chlidonias niger	Black Tern		Special Concern	BSSC - Second priority
Chroicocephalus philadelphia	Bonaparte's Gull			
Cistothorus palustris palustris	Marsh Wren			
Cygnus columbianus	Tundra Swan			
Egretta thula	Snowy Egret			
Empidonax traillii	Willow Flycatcher	Bird of Conservation Concern	Endangered	
Fulica americana	American Coot			
Gallinago delicata	Wilson's Snipe			
Geothlypis trichas trichas	Common Yellowthroat			
Grus canadensis	Sandhill Crane			
Haliaeetus leucocephalus	Bald Eagle	Bird of Conservation Concern	Endangered	
Himantopus mexicanus	Black-necked Stilt			
Histrionicus histrionicus	Harlequin Duck		Special Concern	BSSC - Second priority
Icteria virens	Yellow-breasted Chat		Special Concern	BSSC - Third priority
Limnodromus scolopaceus	Long-billed Dowitcher			
Lophodytes cucullatus	Hooded Merganser			
Megaceryle alcyon	Belted Kingfisher			
Mergus merganser	Common Merganser			
Mergus serrator	Red-breasted Merganser			
Numenius americanus	Long-billed Curlew			
Numenius phaeopus	Whimbrel			

Nycticorax nycticorax	Black-crowned Night-Heron			
Oxyura jamaicensis	Ruddy Duck			
Pelecanus erythrorhynchos	American White Pelican		Special Concern	BSSC - First priority
Phalacrocorax auritus	Double-crested Cormorant			
Phalaropus tricolor	Wilson's Phalarope			
Plegadis chihi	White-faced Ibis		Watch list	
Pluvialis squatarola	Black-bellied Plover			
Podiceps nigricollis	Eared Grebe			
Podilymbus podiceps	Pied-billed Grebe			
Porzana carolina	Sora			
Rallus limicola	Virginia Rail			
Recurvirostra americana	American Avocet			
Riparia riparia	Bank Swallow		Threatened	
Rynchops niger	Black Skimmer			
Setophaga petechia	Yellow Warbler			BSSC - Second priority
Tachycineta bicolor	Tree Swallow			
Tringa melanoleuca	Greater Yellowlegs			
Tringa semipalmata	Willet			
Tringa solitaria	Solitary Sandpiper			
Xanthocephalus xanthocephalus	Yellow-headed Blackbird		Special Concern	BSSC - Third priority
CRUSTACEAN				
Americorophium spp.	Americorophium spp.			
Cambaridae fam.	Cambaridae fam.			
Cyprididae fam.	Cyprididae fam.			
Gammarus spp.	Gammarus spp.			
Gnorimosphaeroma spp.	Gnorimosphaerom a spp.			
Hyalella spp.	Hyalella spp.			
Neomysis mercedis				Not on any status lists
HERP				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Ambystoma californiense californiense	California Tiger Salamander	Threatened	Threatened	ARSSC
Ambystoma macrodactylum	Long-toed salamander			
Ambystoma macrodactylum croceum	Santa Cruz Long-toed Salamander	Endangered	Endangered	

Anaxyrus boreas boreas	Boreal Toad			
Anaxyrus boreas halophilus	California Toad			ARSSC
Pseudacris regilla	Northern Pacific Chorus Frog			
Pseudacris sierra	Sierran Treefrog			
Rana boylii	Foothill Yellow-legged Frog	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
Rana draytonii	California Red-legged Frog	Threatened	Special Concern	ARSSC
Spea hammondii	Western Spadefoot	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
Taricha torosa	Coast Range Newt		Special Concern	ARSSC
Thamnophis elegans elegans	Mountain Gartersnake			Not on any status lists
Thamnophis elegans terrestris	Coast Gartersnake			Not on any status lists
Thamnophis hammondii hammondii	Two-striped Gartersnake		Special Concern	ARSSC
Thamnophis sirtalis infernalis	California Red-sided Gartersnake			Not on any status lists
Thamnophis sirtalis sirtalis	Common Gartersnake			
INSECT & OTHER INVERT				
Abedus spp.	Abedus spp.			
Ablabesmyia spp.	Ablabesmyia spp.			
Acentrella spp.	Acentrella spp.			
Aeshna interrupta interna				
Aeshna palmata	Paddle-tailed Darner			
Aeshnidae fam.	Aeshnidae fam.			
Agabus spp.	Agabus spp.			
Ameletus spp.	Ameletus spp.			
Argia spp.	Argia spp.			
Baetidae fam.	Baetidae fam.			
Baetis spp.	Baetis spp.			
Belostomatidae fam.	Belostomatidae fam.			
Berosus spp.	Berosus spp.			
Bisancora spp.	Bisancora spp.			
Brachycentrus spp.	Brachycentrus spp.			
Brillia spp.	Brillia spp.			

Calineuria californica	Western Stone			
Callibaetis spp.	Callibaetis spp.			
Centroptilum spp.	Centroptilum spp.			
Chaetocladius spp.	Chaetocladius spp.			
Cheumatopsyche spp.	Cheumatopsyche spp.			
Chironomidae fam.	Chironomidae fam.			
Chironomus spp.	Chironomus spp.			
Chloroperlidae fam.	Chloroperlidae fam.			
Choroterpes spp.	Choroterpes spp.			
Cladotanytarsus spp.	Cladotanytarsus spp.			
Coenagrionidae fam.	Coenagrionidae fam.			
Corisella decolor				Not on any status lists
Corisella spp.	Corisella spp.			
Corixidae fam.	Corixidae fam.			
Cricotopus spp.	Cricotopus spp.			
Cryptotendipes spp.	Cryptotendipes spp.			
Cymbiodyta spp.	Cymbiodyta spp.			
Dicrotendipes spp.	Dicrotendipes spp.			
Diphetor hageni	Hagen's Small Minnow Mayfly			
Drunella spp.	Drunella spp.			
Dytiscidae fam.	Dytiscidae fam.			
Enallagma carunculatum	Tule Bluet			
Enallagma spp.	Enallagma spp.			
Epeorus spp.	Epeorus spp.			
Ephydridae fam.	Ephydridae fam.			
Fallceon quilleri	A Mayfly			
Fallceon spp.	Fallceon spp.			
Gomphidae fam.	Gomphidae fam.			
Gumaga spp.	Gumaga spp.			
Gyrinus spp.	Gyrinus spp.			
Heptageniidae fam.	Heptageniidae fam.			
Hydrophilidae fam.	Hydrophilidae fam.			
Hydroporus spp.	Hydroporus spp.			
Hydropsyche spp.	Hydropsyche spp.			
Hydroptila spp.	Hydroptila spp.			
Hydroptilidae fam.	Hydroptilidae fam.			
Ischnura spp.	Ischnura spp.			
Isoperla spp.	Isoperla spp.			
Laccobius spp.	Laccobius spp.			
Laccophilus spp.	Laccophilus spp.			
Lepidostoma spp.	Lepidostoma spp.			
Leptoceridae fam.	Leptoceridae fam.			

Leucrocuta spp.	Leucrocuta spp.			
Limnophyes spp.	Limnophyes spp.			
Liodessus obscurellus				Not on any status lists
Malenka spp.	Malenka spp.			
Micropsectra spp.	Micropsectra spp.			
Microtendipes spp.	Microtendipes spp.			
Mystacides spp.	Mystacides spp.			
Nanocladius spp.	Nanocladius spp.			
Nectopsyche spp.	Nectopsyche spp.			
Ochthebius spp.	Ochthebius spp.			
Onocosmoecus spp.	Onocosmoecus spp.			
Optioservus spp.	Optioservus spp.			
Oreodytes spp.	Oreodytes spp.			
Pantala hymenaea	Spot-winged Glider			
Paracladopelma spp.	Paracladopelma spp.			
Paracymus spp.	Paracymus spp.			
Parakiefferiella spp.	Parakiefferiella spp.			
Paraleptophlebia spp.	Paraleptophlebia spp.			
Paratanytarsus spp.	Paratanytarsus spp.			
Paratendipes spp.	Paratendipes spp.			
Peltodytes spp.	Peltodytes spp.			
Phaenopsectra spp.	Phaenopsectra spp.			
Polypedilum spp.	Polypedilum spp.			
Procladius spp.	Procladius spp.			
Psephenus falli				Not on any status lists
Pseudosmittia spp.	Pseudosmittia spp.			
Psychodidae fam.	Psychodidae fam.			
Rhagovelia distincta				Not on any status lists
Rhagovelia spp.	Rhagovelia spp.			
Rheotanytarsus spp.	Rheotanytarsus spp.			
Rhionaeschna multicolor	Blue-eyed Darner			
Rhionaeshna spp.	Rhionaeshna spp.			
Rhithrogena spp.	Rhithrogena spp.			
Rhyacophila spp.	Rhyacophila spp.			
Serratella spp.	Serratella spp.			
Sigara spp.	Sigara spp.			
Simulium spp.	Simulium spp.			
Sperchon spp.	Sperchon spp.			
Sperchontidae fam.	Sperchontidae fam.			
Stylurus spp.	Stylurus spp.			

Sweltsa spp.	Sweltsa spp.			
Sympetrum corruptum	Variegated Meadowhawk			
Tanytarsus spp.	Tanytarsus spp.			
Tipulidae fam.	Tipulidae fam.			
Trichocorixa calva				Not on any status lists
Trichocorixa spp.	Trichocorixa spp.			
Tricorythodes spp.	Tricorythodes spp.			
Tropisternus spp.	Tropisternus spp.			
Uvarus subtilis				Not on any status lists
Zaitzevia spp.	Zaitzevia spp.			
MAMMAL				
Lontra canadensis canadensis	North American River Otter			Not on any status lists
MOLLUSK				
Anodonta californiensis	California Floater		Special	
Ferrissia rivularis	Creeping Ancylid			CS
Ferrissia spp.	Ferrissia spp.			
Helisoma spp.	Helisoma spp.			
Hydrobiidae fam.	Hydrobiidae fam.			
Lymnaea spp.	Lymnaea spp.			
Menetus opercularis	Button Sprite			CS
Physa spp.	Physa spp.			
Pisidium spp.	Pisidium spp.			
Planorbidae fam.	Planorbidae fam.			
Pomatiopsis spp.	Pomatiopsis spp.			
Sphaeriidae fam.	Sphaeriidae fam.			
PLANT				
Arundo donax	NA			
Azolla filiculoides	NA			
Calochortus uniflorus	Shortstem Mariposa Lily		Special	CRPR - 4.2
Carex densa	Dense Sedge			
Carex harfordii	Harford's Sedge			
Carex obnupta	Slough Sedge			
Cotula coronopifolia	NA			
Eleocharis macrostachya	Creeping Spikerush			
Euthamia occidentalis	Western Fragrant Goldenrod			
Helenium puberulum	Rosilla			
Hypericum anagalloides	Tinker's-penny			
Jaumea carnosa	Fleshy Jaumea			
Juncus effusus pacificus				

Juncus phaeocephalus phaeocephalus	Brown-head Rush			
Juncus xiphioides	Iris-leaf Rush			
Lemna minor	Lesser Duckweed			
Lepidium oxycarpum	Sharp-pod Pepper-grass			
Limonium californicum	California Sea-lavender			
Mimulus guttatus	Common Large Monkeyflower			
Navarretia intertexta	Needleleaf Navarretia			
Oenanthe sarmentosa	Water-parsley			
Perideridia gairdneri gairdneri	Gairdner's Yampah		Special	CRPR - 4.2
Phacelia distans	NA			
Phragmites australis australis	Common Reed			
Plantago elongata elongata	Slender Plantain			
Populus trichocarpa	NA			Not on any status lists
Potentilla anserina pacifica				Not on any status lists
Psilocarphus tenellus	NA			
Rorippa curvisiliqua curvisiliqua	Curve-pod Yellowcress			
Rumex conglomeratus	NA			
Rumex occidentalis				Not on any status lists
Rumex salicifolius salicifolius	Willow Dock			
Rumex stenophyllus	NA			
Salix babylonica	NA			
Salix exigua exigua	Narrowleaf Willow			
Salix laevigata	Polished Willow			
Salix lasiandra lasiandra				Not on any status lists
Salix lasiolepis lasiolepis	Arroyo Willow			
Sequoia sempervirens				
Sparganium eurycarpum eurycarpum				
Stachys ajugoides	Bugle Hedge-nettle			
Stachys chamissonis chamissonis	Coast Hedge-nettle			
Stellaria littoralis	Beach Starwort		Special	CRPR - 4.2
Triglochin maritima	Common Bog Arrow-grass			
Typha latifolia	Broadleaf Cattail			

Veronica anagallis-aquatica	NA			
FISH				
Catostomus occidentalis mnioltiltus	Monterey sucker			Least Concern - Moyle 2013
Cottus aleuticus	Coastrange sculpin			Least Concern - Moyle 2013
Cottus asper ssp. 1	Prickly sculpin			Least Concern - Moyle 2013
Entosphenus tridentata ssp. 1	Pacific lamprey		Special	Near-Threatened - Moyle 2013
Eucyclogobius newberryi	Tidewater goby	Endangered	Special Concern	Vulnerable - Moyle 2013
Gasterosteus aculeatus aculeatus	Coastal threespine stickleback			Least Concern - Moyle 2013
Gasterosteus aculeatus microcephalus	Inland threespine stickleback		Special	Least Concern - Moyle 2013
Lavinia exilicauda harengeus	Monterey hitch		Special	Vulnerable - Moyle 2013
Lavinia symmetricus subditus	Monterey roach		Special Concern	Near-Threatened - Moyle 2013
Oncorhynchus gorbuscha	Pink salmon		Special Concern	Endangered - Moyle 2013
Oncorhynchus mykiss - SCCC	South Central California coast steelhead	Threatened	Special Concern	Vulnerable - Moyle 2013
Oncorhynchus mykiss irideus	Coastal rainbow trout			Least Concern - Moyle 2013
Orthodon microlepidotus	Sacramento blackfish			Least Concern - Moyle 2013
Ptychocheilus grandis	Sacramento pikeminnow			Least Concern - Moyle 2013
Rhinichthys osculus ssp. 1	Sacramento speckled dace			Least Concern - Moyle 2013
Spirinchus thaleichthys	Longfin smelt	Candidate	Threatened	Vulnerable - Moyle 2013

Attachment D

IDENTIFYING GDEs UNDER SGMA
Best Practices for using the NC Dataset

The Sustainable Groundwater Management Act (SGMA) requires that groundwater dependent ecosystems (GDEs) be identified in Groundwater Sustainability Plans (GSPs). The California Department of Water Resources (DWR) has provided the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) online (https://gis.water.ca.gov/app/NCDatasetViewer/) to help Groundwater Sustainability Agencies (GSAs) identify GDEs within a groundwater basin. The NC Dataset is a compilation of 48 publicly available State and Federal agency datasets that map vegetation, wetlands, springs, and seeps commonly associated with groundwater in California[7].

The NC Dataset indicates the vegetation and wetland features that are good indicators of a GDE. The NC dataset is a starting point, and it is the responsibility of GSAs to utilize best available science and local knowledge on the hydrology, geology, and groundwater levels to verify its presence or absence, as well as whether a connection to groundwater in an aquifer exists (Figure 1)[8]. Detailed guidance on identifying GDEs within a groundwater basin from the NC dataset is available[9]. This document highlights six best practices that GSAs and their consultants can apply when using local groundwater data to confirm a connection to groundwater for the NC Dataset.

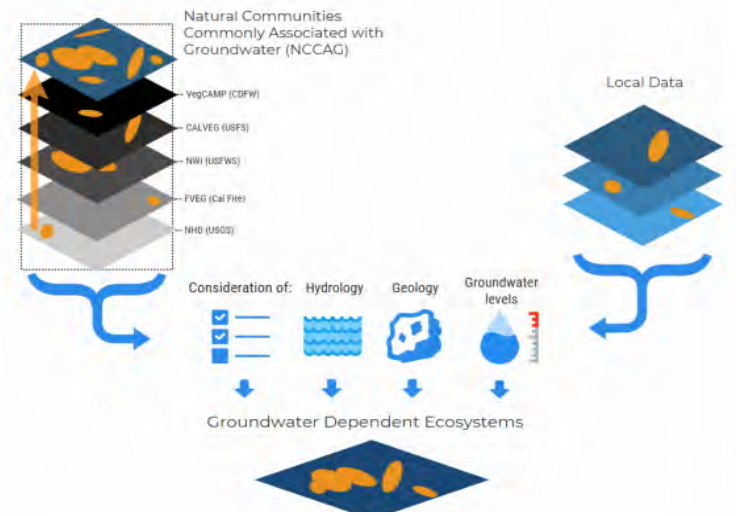


Figure 1. Considerations for GDE identification.
Source: DWR[2]

[7] For more details on the mapping methods, refer to: Klausmeyer, K., J. Howard, T. Keeler-Wolf, K. Davis-Fadtke, R. Hull, A. Lyons. 2018. Mapping Indicators of Groundwater Dependent Ecosystems in California: Methods Report. San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE_data_paper_20180423.pdf

[8] *California Department of Water Resources (DWR). 2018. Summary of the "Natural Communities Commonly Associated with Groundwater" Dataset and Online Web Viewer. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Statewide-Reports/Natural-Communities-Dataset-Summary-Document.pdf*

[9] "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans" is available at https://groundwaterresourcehub.org/gde-tools/gsp-guidance-document/

BEST PRACTICE #1. Connection to an Aquifer

Groundwater basins can be comprised of one continuous aquifer or multiple aquifers stacked on top of each other. Basins with a stacked series of aquifers may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. If pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, such as perched aquifers, that support springs, surface water, and groundwater dependent ecosystems (Figure 2). This is because the goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits, and while groundwater pumping may not be currently occurring in a shallower aquifer, it could be in the future. For example, if a shallow perched aquifer is currently not being pumped due to poor water quality resulting from irrigation return flow, producing this water will become more appealing and economically viable in future years as pumping restrictions are placed on the deeper production aquifers in the basin to meet the sustainable yield and criteria. Thus, identifying GDEs in the basin should done irrespective to the amount of current pumping occurring in a particular aquifer, so that future impacts on GDEs due to new production can be avoided and a GSA's legal risk be minimized. A good rule of thumb to follow is: *if groundwater can be pumped from a well - it's an aquifer*.

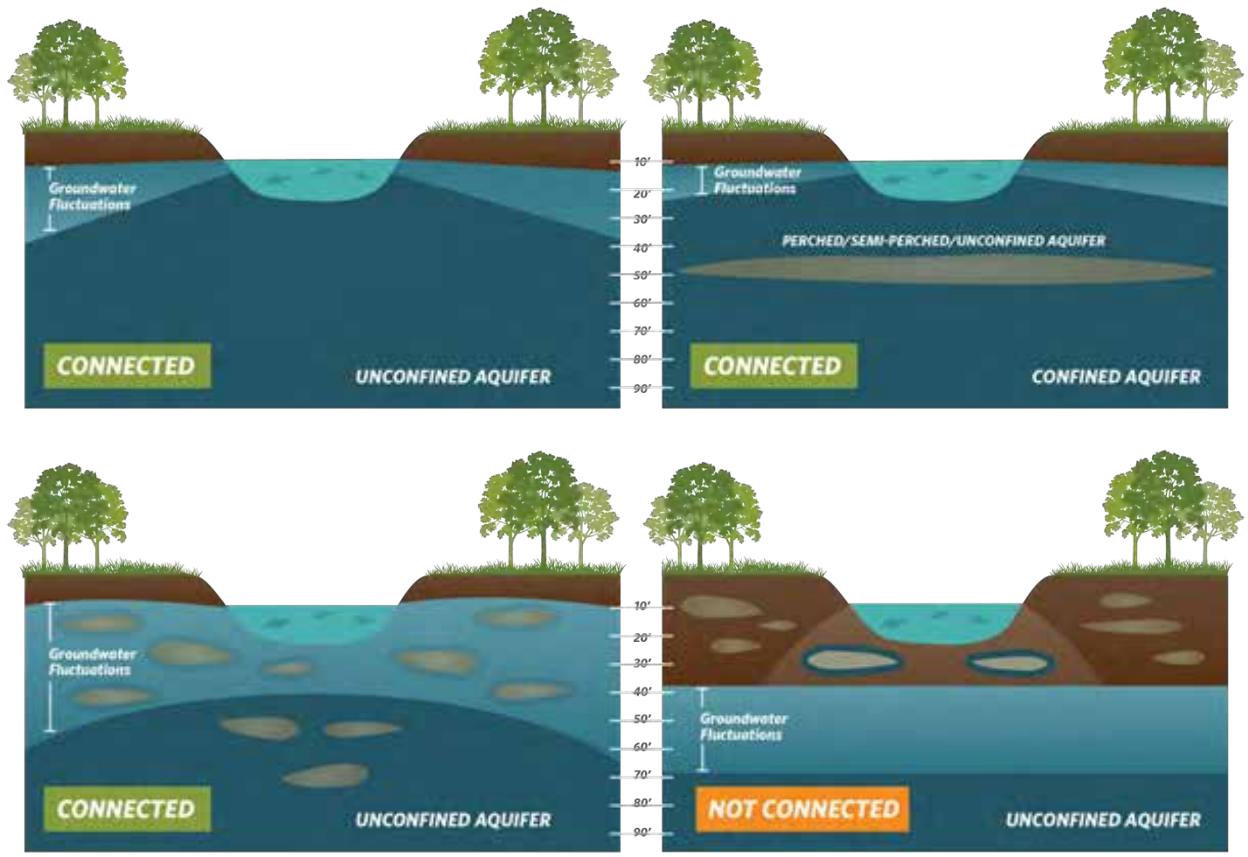


Figure 2. Confirming whether an ecosystem is connected to groundwater in a principal aquifer. Top: (Left) Depth to Groundwater in the aquifer under the ecosystem is an unconfined aquifer with depth to groundwater fluctuating seasonally and interannually within 30 feet from land surface. (Right) Depth to Groundwater in the *shallow* aquifer is connected to overlying ecosystem. Pumping predominately occurs in the confined aquifer, but pumping is possible in the *shallow* aquifer. Bottom: (Left) Depth to groundwater fluctuations are seasonally and interannually large, however, clay layers in the near surface prolong the ecosystems connection to groundwater. (Right) Groundwater is disconnected from surface water, and any water in the vadose (unsaturated) zone is *due to* direct recharge from precipitation and indirect recharge under surface water feature.

BEST PRACTICE #2. Characterize Groundwater Conditions

SGMA requires GSAs to describe current and historical groundwater conditions when identifying GDEs [23 CCR §354.16(g)]. Relying solely on the SGMA benchmark date (January 1, 2015) or any other single point in time to characterize groundwater conditions (e.g., depth to groundwater) is inadequate because managing groundwater conditions with data from one time point fails to capture the seasonal and interannual variability (i.e., wet, average, dry, and drought years) that is characteristic of California's climate. DWR's Best Management Practices document on water budgets[10] recommends using 10 years of water supply and water budget information to describe how historical conditions have impacted the operation of the basin within sustainable yield, implying that a baseline[11] could be determined based on data between 2005 and 2015.

GDEs existing on the earth's surface depend on groundwater levels being close enough to the land surface to interconnect with surface water systems or plant rooting networks. The most practical approach[12] for a GSA to assess whether polygons in the NC dataset are connected to groundwater is to rely on groundwater elevation data. As detailed in the GDE guidance document[2], one of the key factors to consider when mapping GDEs is to contour depth to groundwater in the aquifer that is in direct contact with the ecosystem.

Groundwater levels fluctuate over time and space due to California's Mediterranean climate (dry summers and wet winters), climate change (flood and drought years), and subsurface heterogeneity in the subsurface (Figure 3). Many of California's GDEs have adapted to dealing with intermittent periods of water stress, however, if these groundwater conditions are prolonged adverse impacts to GDEs can result. While depth to groundwater levels within 30 feet[2] are generally accepted as being a proxy for confirming that polygons in the NC dataset are connected to groundwater, it is highly advised that fluctuations in the groundwater regime are taken into consideration and to characterize the seasonal and interannual groundwater variability in GDEs. Utilizing groundwater data from one point in time can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Time series data on groundwater elevations and depths are available on the SGMA Data Viewer[13]. However, if insufficient data are available to describe groundwater conditions within polygons from the NC dataset, it is highly advised that they be included in the GSP until data gaps are reconciled in the monitoring network (See Best Practice #6).

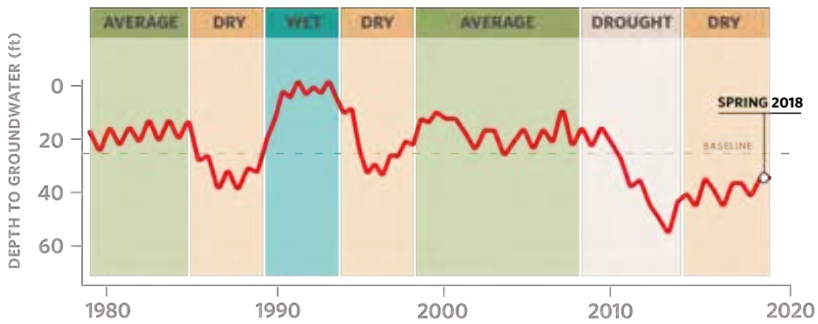


Figure 3. Example seasonality and interannual variability in depth to groundwater over time. Selecting one point in time, such as Spring 2018, to characterize groundwater conditions in GDEs fails to capture what groundwater conditions are necessary to maintain the ecosystem status into the future so adverse impacts are avoided.

[10] DWR. 2016. Water Budget Best Management Practice. Available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_Water_Budget_Final_2016-12-23.pdf

[11] *Baseline is defined under the GSP regulations as "historic information used to project future conditions for hydrology, water demand, and availability of surface water and to evaluate potential sustainable management practices of a basin." [23 CCR §351(e)]*

[12] Groundwater reliance can also be confirmed via stable isotope analysis and geophysical surveys. For more information see The GDE Assessment Toolbox (Appendix IV, GDE Guidance Document for GSPs - link in footnote above).

[13] *SGMA Data Viewer: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer*

BEST PRACTICE #3. Ecosystems Can Rely on Both Surface and Groundwater

GDEs can rely on groundwater for all or some of its requirements, using multiple water sources simultaneously and at different temporal or spatial scales. The presence of non-groundwater sources (e.g., surface water, soil moisture in the vadose zone, applied water, treated wastewater effluent, urban stormwater, irrigated return flow) within and around NC polygons does not preclude the possibility that a connection to groundwater exists. SGMA defines GDEs as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" [23 CCR §351(m)]. Hence, depth to groundwater data should be used to identify whether NC polygons are connected to groundwater and should be considered GDEs.

GSAs are only responsible for impacts to GDEs resulting from groundwater conditions in the basin, so if adverse impacts to GDEs result from the diversion of applied water, treated wastewater, or irrigation return flow away from the GDE, then those impacts will be evaluated by other permitting requirements (e.g., CEQA) and would not be the responsibility of the GSA. However, if adverse impacts occur to the GDE due to changing groundwater conditions resulting from pumping or groundwater management activities, then the GSA would be responsible (Figure 4).

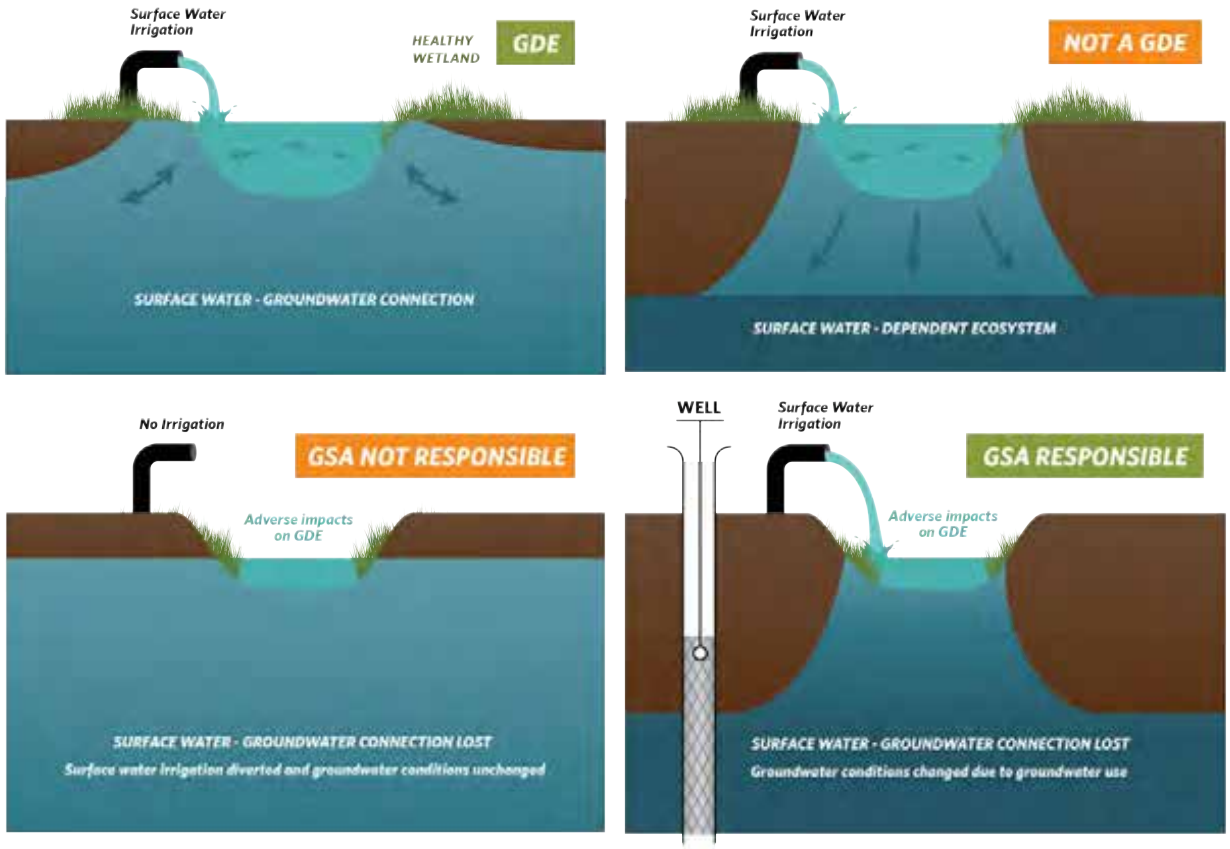


Figure 4. Ecosystems can depend on multiple sources of water. Top: (Left) Surface water and groundwater are interconnected, such that a connection to groundwater exists for the ecosystem. (Right) Ecosystems that are only reliant on non-groundwater sources are not groundwater-dependent. Bottom: (Left) An ecosystem that was once dependent on an interconnected surface water and groundwater connection, but then loses this connection due to surface water diversions would not be the GSA's responsibility. (Right) Groundwater dependent ecosystems in places where a surface water – groundwater connection existed, but then loose that connection due to groundwater pumping would be the GSA's responsibility.

BEST PRACTICE #4. Select Representative Groundwater Wells

Identifying GDEs in a basin require that groundwater conditions are characterized to confirm whether polygons in the NC dataset are connected to an underlying aquifer. Once an aquifer has been identified, representative groundwater wells are necessary to characterize groundwater conditions (Figure 5). It is particularly important to consider the subsurface heterogeneity around NC polygons, especially near surface water features where groundwater and surface water interactions occur around heterogeneous stratigraphic units or aquitards formed by fluvial deposits. The following selection criteria can help ensure groundwater levels are representative of conditions within the GDE area:

- Choose wells that are within 5 kilometers (3.1 miles) of the NC Dataset polygons, and more likely to reflect the local conditions relevant to the ecosystem. NC dataset polygons that are farther than 5 km from a well should not be excluded because of interpolated groundwater depth conditions, as there is insufficient information to make that determination. Instead, they should be retained as potential GDEs until there is sufficient data to determine whether or not the NC Dataset polygon is connected to groundwater and is a GDE.

- Choose wells that are screened within the surficial unconfined aquifer and capable of measuring the true water table.

- Avoid relying on wells that have insufficient well information on the screened well depth interval for excluding GDEs because they could be providing data on the wrong aquifer.

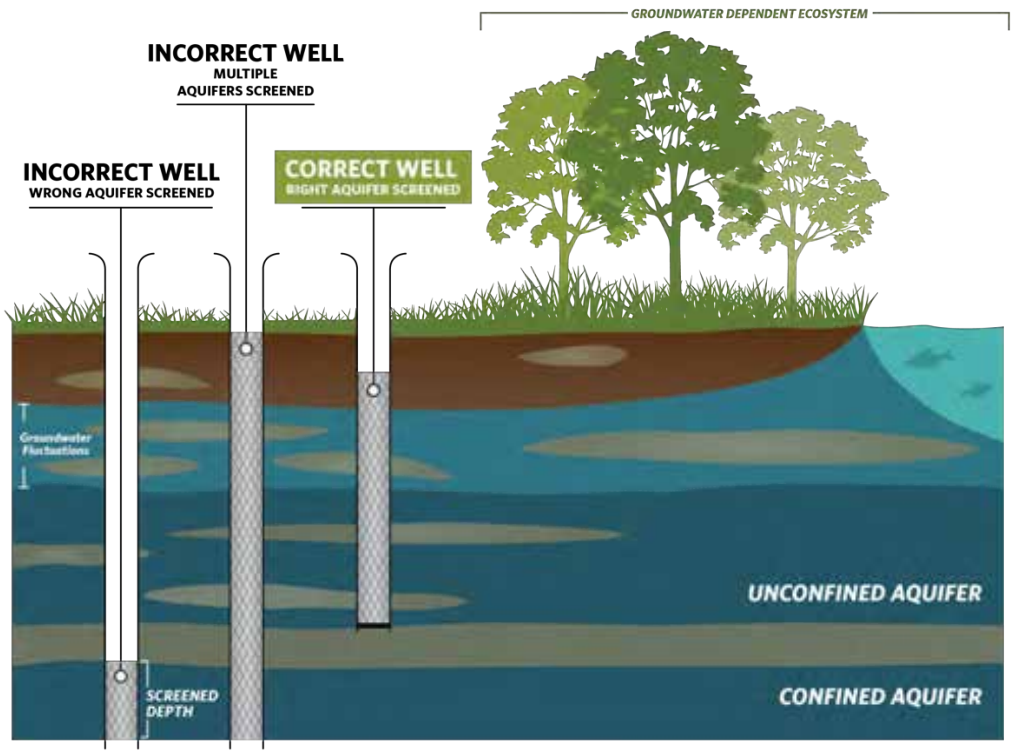


Figure 5. Selecting representative wells to characterize groundwater conditions in the aquifers directly connected with GDEs.

BEST PRACTICE #5. Contouring Groundwater Elevations

A common, but error prone practice, to contour depth to groundwater over a large area is to interpolate depth to groundwater measurements at monitoring wells. This practice causes errors when the land surface contains features like streams and wetlands depressions because it assumes the land surface is constant across the landscape and depth to groundwater is constant below these low-lying areas (Figure 6). A more accurate approach is to interpolate groundwater elevations at monitoring wells to get an estimate of groundwater elevation across the landscape. This layer can then be subtracted from the land surface elevation from a Digital Elevation Model (DEM)[14] to estimate depth to groundwater contours across the landscape (Figure 7). This will provide a much more accurate contours of depth to groundwater along streams and other land surface depressions where GDEs are commonly found.

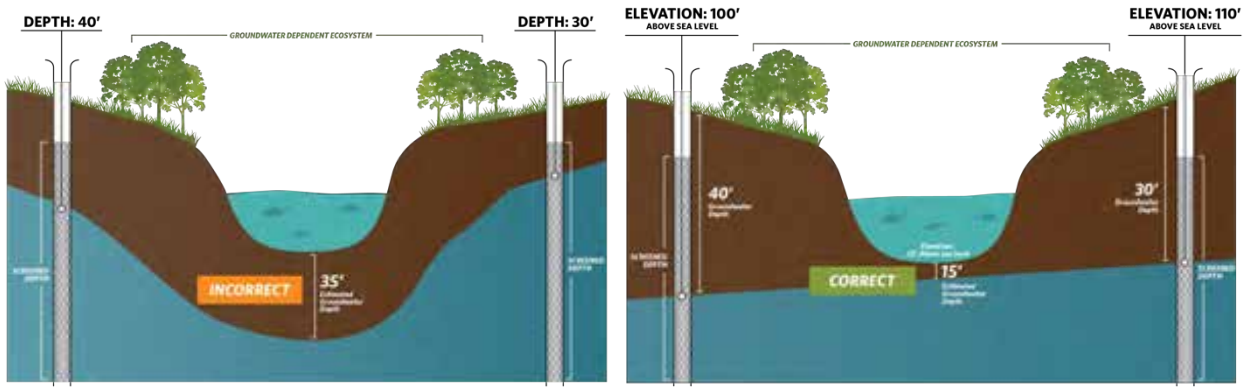


Figure 6. Contouring depth to groundwater around surface water features and GDEs. (Left) Groundwater level interpolation using depth to groundwater data from monitoring wells. (Right) Groundwater level interpolation using groundwater elevation data from monitoring wells and DEM data.

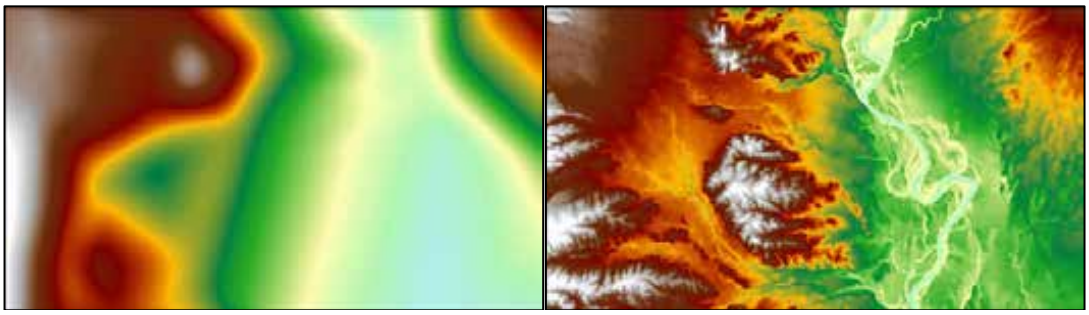


Figure 7. Depth to Groundwater Contours in Northern California. (Left) Contours were interpolated using depth to groundwater measurements determined at each well. (Right) Contours were determined by interpolating groundwater elevation measurements at each well and superimposing ground surface elevation from DEM spatial data to generate depth to groundwater contours. The image on the right shows a more accurate depth to groundwater estimate because it takes the local topography and elevation changes into account.

[14] *Digital Elevation Model data is available at: https://catalog.data.gov/dataset/usgs-national-elevation-dataset-ned-1-meter-downloadable-data-collection-from-the-national-map-*

BEST PRACTICE #6. Best Available Science

Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decisions, and using the data collected through monitoring to revise decisions in the future. In many situations, the hydrologic connection of NC dataset polygons will not initially be clearly understood if site-specific groundwater monitoring data are not available. If sufficient data are not available in time for the 2020/2022 plan, The Nature Conservancy strongly advises that questionable polygons from the NC dataset be included in the GSP until data gaps are reconciled in the monitoring network. Erring on the side of caution will help minimize inadvertent impacts to GDEs as a result of groundwater use and management actions during SGMA implementation.

KEY DEFINITIONS

Groundwater basin is an aquifer or stacked series of aquifers with reasonably well-defined boundaries in a lateral direction, based on features that significantly impede groundwater flow, and a definable bottom. *23 CCR §341(g)(1)*

Groundwater dependent ecosystem (GDE) are ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. *23 CCR §351(m)*

Interconnected surface water (ISW) surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted. *23 CCR §351(o)*

Principal aquifers are aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems. *23 CCR §351(aa)*

ABOUT US

The Nature Conservancy is a science-based nonprofit organization whose mission is *to conserve the lands and waters on which all life depends*. To support successful SGMA implementation that meets the future needs of people, the economy, and the environment, TNC has developed tools and resources (www.groundwaterresourcehub.org) intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

18 April 2019

MEMORANDUM

To: Gary Peterson, Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA)
Derrik Williams, P.G., C.Hg., Montgomery & Associates

From: Keith Van Der Maaten, P.E., Marina Coast Water District (MCWD)
Patrick Breen, MCWD
Vera Nelson, P.E., EKI Environment and Water, Inc. (EKI)
Tina Wang, P.E., EKI

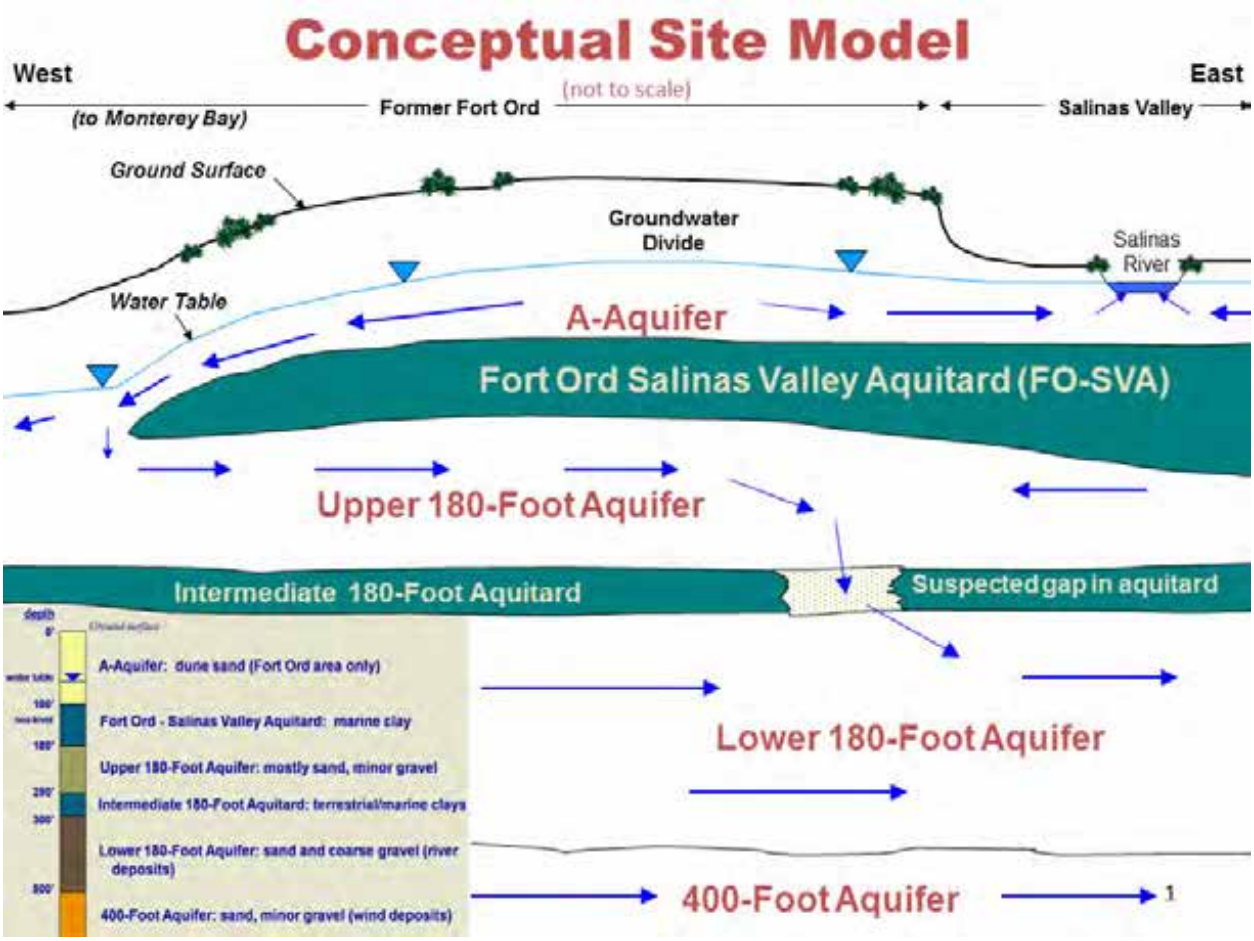
Subject: Preliminary Comments Regarding Salinas Valley Basin Groundwater Sustainability Agency Draft Groundwater Sustainability Plan Chapter 5 (EKI B60094.03)

On behalf of the Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA), EKI has reviewed and prepared preliminary comments on the SVBGSA draft 180/400 Foot Aquifer Subbasin and Salinas Valley Integrated Groundwater Sustainability Plans (GSPs) Chapter 5, released January 2019 and updated February 2019.

1. General Comment

We understand that SVBGSA has solicitated input during its February 7 Planning Committee regarding the inclusion of the Dune Sand Aquifer in its GSPs. Although the Dune Sand Aquifer exists only south of the river and thus encompasses a small portion of the 180/400 Foot Aquifer Subbasin, we request that the 180/400 Foot Aquifer Subbasin GSP characterize the Dune Sand Aquifer for the following reasons.

(1) The Dune Sand Aquifer is an important source of freshwater and recharge to deeper aquifers south of the Salinas River.
   - Groundwater level data and groundwater quality data obtained from Fort Ord indicate that groundwater with low TDS concentrations from the Dune Sand Aquifer seeps down into the upper portion of the 180-Foot Aquifer, upgradient of the coast and then "U-turns" and flows back into the basin. This process is illustrated in figures presented on Fort Ord's website:



Source: http://fortordcleanup.com/programs/groundwater

- Recent airborne electromagnetic (AEM) data collected in the northern Salinas Valley (see Attachment A) has confirmed that freshwater exists in the Dune Sand Aquifer and underlying portions of the Upper 180-Foot Aquifer in 180/400-Foot Aquifer Subbasin.

(2) The Dune Sand Aquifer is likely a water source for shallow wells in the Corral de Tierra area in the adjacent Monterey Subbasin, which should be further confirmed by SVBGSA in its preparation of GSP components of the Corral de Tierra area.

(3) Chemical impacts exist within the Dune Sand Aquifer, which could impact other underlying aquifers.
   - Volatile organic compounds (VOCs) and other constituents have been detected in groundwater within the Dune Sand Aquifer at the Monterey Peninsula Landfill (Geotracker ID L10005501051).

- Groundwater quality data obtained from Monterey Peninsula Water Supply Project (MPWSP) shallow monitoring wells suggest that nitrate impacts may exist in the Dune Sand Aquifer.

(4) Multiple Projects have been proposed within the Dune Sand Aquifer in the 180/400-Foot Aquifer Subbasin.
- Several studies have been completed by MCWD and Fort Ord Reuse Authority (FORA) to evaluate the potential infiltration and storage of Advanced Treated wastewater or excess surface water from the Salinas River within the Dune Sand Aquifer at Armstrong Ranch.
- MPWSP slant wells are screened across and will draw water from the Dune Sand Aquifer.

Therefore, the 180/400 Foot Aquifer Subbasin GSP should characterize the Dune Sand Aquifer and develop a plan to manage current as well as planned groundwater activities in the Dune Sand Aquifer. Moreover, MCWD will coordinate with SVBGSA to develop Sustainable Management Criteria (SMCs) for Dune Sand Aquifer in the Monterey Subbasin GSP, given the Dune Sand Aquifer's importance in water source and groundwater recharge. It is important that the Dune Sand Aquifer is properly characterized in both the 180/400 Foot Aquifer Subbasin GSP and the Monterey Subbasin GSP, so that a coordinated set of SMCs are developed for the Dune Sand Aquifer in both GSPs.

2. <u>Section 5.1 – Groundwater Elevations</u>

Draft chapter 5 of the 180/400 Foot Aquifer Subbasin GSP states that "Insufficient data currently exist to map flow directions and groundwater elevations in the deep aquifer" (Page 17) and "Hydrographs are not available for wells completed in the Deep Aquifer" (Page 18). However, MCWRA's 2017 *Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin* states that there are 32 active productions wells and eight monitoring wells screened in the deep aquifers, and that MCWRA monitors groundwater levels at thirteen locations in the Deep Aquifers "with varying frequency", a majority of which are located in the 180/400 Foot Aquifer Subbasin. Figure 21 of the document showed average groundwater level changes in the deep aquifers from 1986 to 2016. We suggest that the SVBGSA obtain this information from MCWRA and provide groundwater elevation and/or elevation trend information in the Deep Aquifer.

3. <u>Section 5.2 – Seawater Intrusion</u>

Per GSP Regulations Section 354.16 (c), a GSP should provide "seawater intrusion conditions in the basin, including maps and cross sections of the seawater intrusion front for each

principal aquifer". The GSPs should address this requirement and provide cross-sections. AEM data collected by MCWD should be incorporated into these cross-sections[1].

Attachments

Attachment A. Selected Figures from Gottschalk et al. Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA, dated 15 March 2018.

[1] Gottschalk et al. Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA, dated 15 March 2018.

Attachment A

Selected Figures from Gottschalk et al. Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA, dated 15 March 2018.

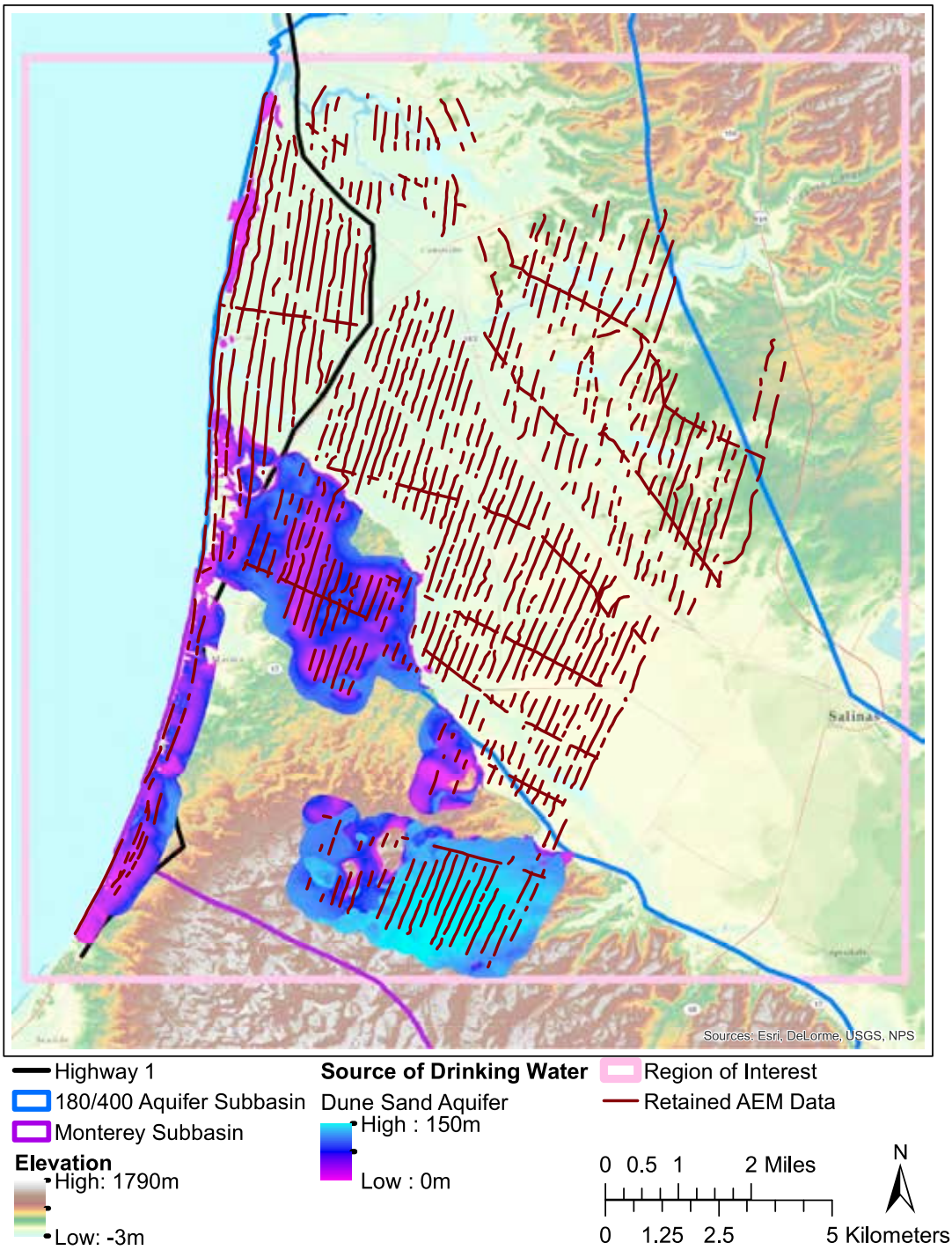


Figure 22: Interpreted thickness of the subsurface containing sources of drinking water within the Dune Sand Aquifer in the region of interest, shown in a color scale ranging from purple to light blue, representing 0 m to 150 integrated meters of the source drinking water, respectively. Overlaying the thickness of sources of drinking water are the locations where AEM data were collected and retained for processing, shown as red lines. The Dune Sand Aquifer lies south of the Salinas River, aside from the dune sand deposits along the coast within the Salinas Valley basin, which are also treated as part of the Dune Sand Aquifer here. The boundaries used in calculating the regions containing sources of drinking water, Highway 1, the 180/400 Aquifer Subbasin, and the Monterey Subbasin, are shown as black, blue, and purple lines, respectively.

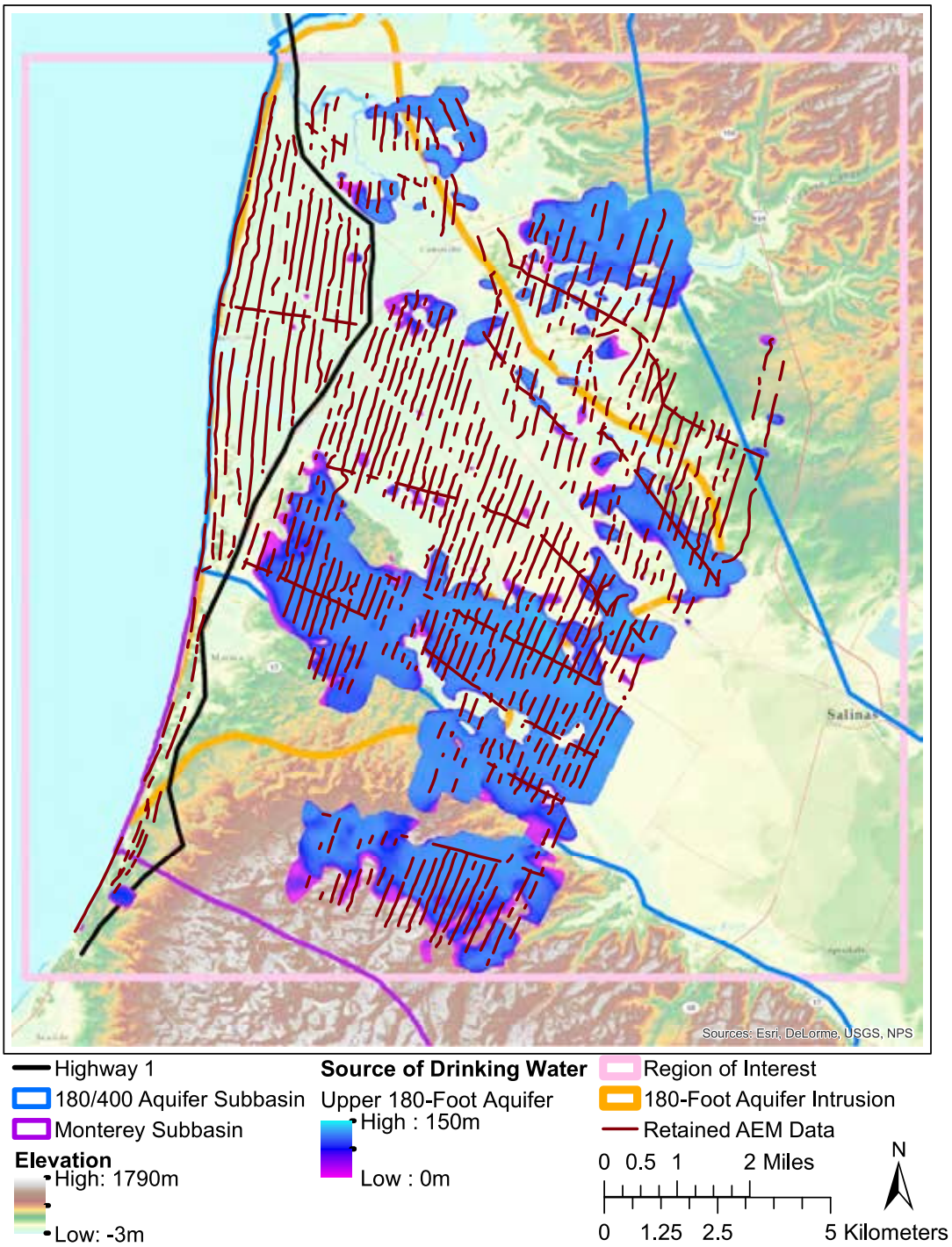


Figure 23: Interpreted thickness of the subsurface containing sources of drinking water within the Upper 180-Foot Aquifer in the region of interest, shown in a color scale ranging from purple to light blue, representing 0 m to 150 integrated meters of the source of drinking water, respectively. Overlaying the thickness of sources of drinking water are the locations where AEM data were collected and retained for processing, shown as red lines. The extent of saltwater intrusion in the 400-Foot Aquifer, as measured by the Monterey County Water Resources Agency, is shown as an orange line. The boundaries used in calculating the regions containing sources of drinking water, Highway 1, the 180/400 Aquifer Subbasin, and the Monterey Subbasin, are shown as black, blue, and purple lines, respectively.

April 12, 2019

Gary Petersen
General Manager
Salinas Valley Basin Groundwater Sustainability Agency
peterseng@svbgsa.org

Dear Mr. Petersen:

CENTRAL COAST WATER BOARD COMMENTS ON THE SALINAS VALLEY BASIN INTEGRATED GROUNDWATER SUSTAINABILITY PLAN DRAFT: CHAPTER 5, GROUNDWATER CONDITIONS

The Central Coast Regional Water Quality Control Board (Central Coast Water Board) is a state agency that implements state and federal water quality laws within the Central Coast region. The Salinas Valley groundwater basin falls within the jurisdictional area of the Central Coast region and as such, the Central Coast Water Board has an interest in monitoring, preserving, and restoring water quality within the basin. The Central Coast Water Board has reviewed the draft Chapter 5 of the Salinas Valley Basin Integrated Groundwater Sustainability Plan (GSP) on *Groundwater Conditions* and would like to provide comments on the groundwater quality-related portions of this draft chapter.

Nitrate

Item 8 in our May 2018 Central Coast Water Board Meeting agenda package included a staff report[1] that summarized nitrate concentrations throughout the Central Coast Region, including the Salinas Valley. This staff report includes more recent data (2008 – 2018) and data from a greater number of wells (2,235 wells) in the Salinas Valley than the 2015 Central Coast Groundwater Coalition report that is referenced in your Chapter 5. Our May 2018 staff report provides summary statistics for each of the subbasins within the Salinas Valley. Central Coast Water Board staff recommends that this report be utilized as an additional source for assessing current groundwater conditions. In addition, the staff report includes analysis of nitrate concentration trends through time in individual wells, which provides information on the rates at which groundwater is being degraded by nitrate in the Salinas Valley. This supports characterization of groundwater conditions and potentially informs development of the

[1] Central Coast Water Board staff report on groundwater quality conditions in Central Coast Groundwater basins: https://www.waterboards.ca.gov/centralcoast/board_info/agendas/2018/may/item8/item8_stfrpt.pdf

monitoring network that will be evaluating groundwater quality trends. We recommend this additional information be included in the groundwater conditions chapter.

The extent and rate of nitrate migration into the deeper parts of the Salinas Valley basin is a data gap that is not acknowledged by this draft chapter. Because nitrate pollution in the Salinas Valley basin is among the worst in the state[2], the Central Coast Water Board recommends establishing current groundwater quality conditions for different depth-discrete zones in the subbasins of the Salinas Valley. Establishing this "baseline" will allow the Salinas Valley Basin Groundwater Sustainability Agency (GSA) to assess vertical nitrate migration through time and the rate at which that migration is occurring. In addition, characterizing baseline vertical water quality conditions will be useful for assessing if the substantial pumping-induced vertical hydraulic gradients in the Salinas Valley subbasins contribute to water quality degradation. This information would be useful for implementing GSA management decisions (i.e., groundwater pumping scenarios) that accommodate sustainable water resources without negatively impacting water quality.

On page 60 of the draft report, it says that Luhdorf and Scalmanini Engineers (LSCE) mapped nitrate distributions using 758 domestic wells in the Salinas Valley. The 758 wells were not necessarily domestic wells; they were any type of well less than 400 feet deep. The Central Coast Water Board therefore recommends removing the *domestic* qualifier from this sentence and making it clear than all well types were included.

Salinity

The draft chapter has little discussion of salinity problems unrelated to seawater intrusion in the Salinas Valley. Mean total dissolved solids (TDS) concentrations in the Salinas Valley Upper Valley, East Side, and Forebay subbasins, where seawater intrusion is not occurring, exceed levels at which salt-sensitive crops begin to experience a decrease in yield. The Central Coast Water Board recommends including a discussion and characterization of groundwater salinity that is unrelated to seawater intrusion in the draft chapter, as it affects numerous users of groundwater, including agricultural and domestic needs. Staff at the Central Coast Water Board can provide further consultation or data on this issue if needed.

Hexavalent Chromium

Page 63 of the draft chapter says that hexavalent chromium does not pose a health risk and is only an aesthetic concern. On the contrary, numerous studies have demonstrated that hexavalent chromium poses a health risk. The San Francisco Bay Water Board's Environmental Screening Level (ESL) for hexavalent chromium is 0.02 micrograms per liter (µg/L) and based on the human health risk it poses. The Central Coast Water Board recommends removing all language that indicates that hexavalent chromium poses "only aesthetic concerns."

[2] Harter et al., 2012. Addressing nitrate in California's Drinking Water with a Focus on Tulare Lake Basin and Salinas Valley Groundwater. http://groundwaternitrate.ucdavis.edu/files/138956.pdf

Major Dissolved Ions

The Central Coast Water Board recommends that analysis of major dissolved ions be added to the GSP or its implementation. Major dissolved cation and anion composition in groundwater reflects the source of recharge water, lithological and hydrological properties of the aquifer, groundwater residence time, and chemical processes within the aquifer. As such, major dissolved ions are valuable for identifying different groundwater types (via Piper or Stiff diagrams) and for "fingerprinting" source water from individual wells. In addition, ionic charge balance provides quality assurance that all the major ions are included in the analysis and that TDS concentrations are accurate. These considerations are important to developing a hydrogeologic conceptual model and describing groundwater conditions.

Groundwater Quality Monitoring Constituents

Regional groundwater quality monitoring is currently being discussed with the Board, and to the extent practicable, the Central Coast Water Board staff would like to coordinate agriculture-related monitoring with SGMA monitoring requirements in order to minimize duplication, maximize resources, and provide mutually beneficial data. This will benefit everyone within the Salinas Valley basin, particularly agricultural operators. The Central Coast Water Board would like to provide comments on the draft sections outlining monitoring program details and is happy to share information during preparation of those sections to help coordinate monitoring programs.

The Central Coast Water Board thanks the GSA for the work being done to sustainably manage groundwater resources in the Salinas Valley and appreciates this opportunity to provide comments. If you have questions or would like to discuss these comments in greater detail, please feel free to reach out to James Bishop, Daniel Pelikan, or Diane Kukol at the Central Coast Water Board:

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Sincerely,

for John M. Robertson
Executive Officer

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April 8, 2019

MEMORANDUM

To: Curtis Weeks, Arroyo Seco Groundwater Management Agency

From: Gus Yates, Senior Hydrologist

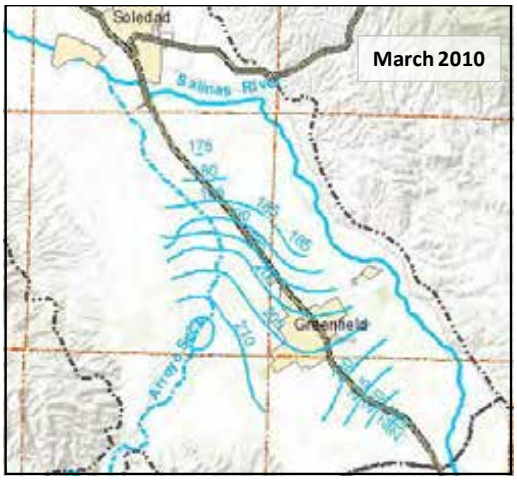
Re: Comments on SVBGSA's draft Chapter 5 "Groundwater Conditions" of Salinas Valley Integrated Water Management Plan

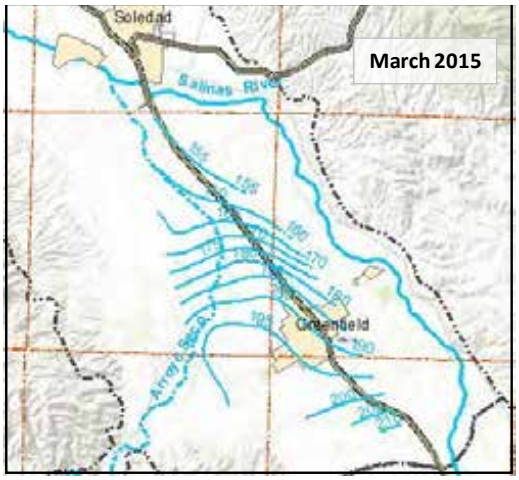
I have reviewed the draft of Chapter 5 "Groundwater Conditions" of the Salinas Valley Integrated Water Management Plan released by the Salinas Valley Basin Groundwater Sustainability Agency on March 14, 2019. Overall, the chapter is a good start toward characterizing groundwater conditions. In a number of instances, important local variations to the generalized patterns described in the chapter are overlooked. In other cases, the information presented is misleading or not correct, or editorial changes would improve the presentation. And finally, two important topics are not included in the chapter.

The specific comments below identify areas where improvements are needed. They are organized from beginning to end of the chapter. They are followed by a few comments on topics that were not covered in the report but should be.

COMMENTS ON ITEMS IN CHAPTER 5

Page 9 and Figure 5-4. December 1995 groundwater contours. How was 1995 selected to represent the full spectrum of historical groundwater contours? Especially considering the last 24 years and the variation in climate we have seen over that period. These climate changes will affect the future sustainability planning of the groundwater basin in the Salinas Valley. At a minimum, high and low conditions for wet and dry years, respectively, should be shown, and also seasonal high and low water levels. Seasonal variations are important because they reveal sources of recharge that are not apparent in the December water levels. Shown below, for example, are contours of March water levels in 2010 and 2015 in the southern half of the Forebay Subbasin.

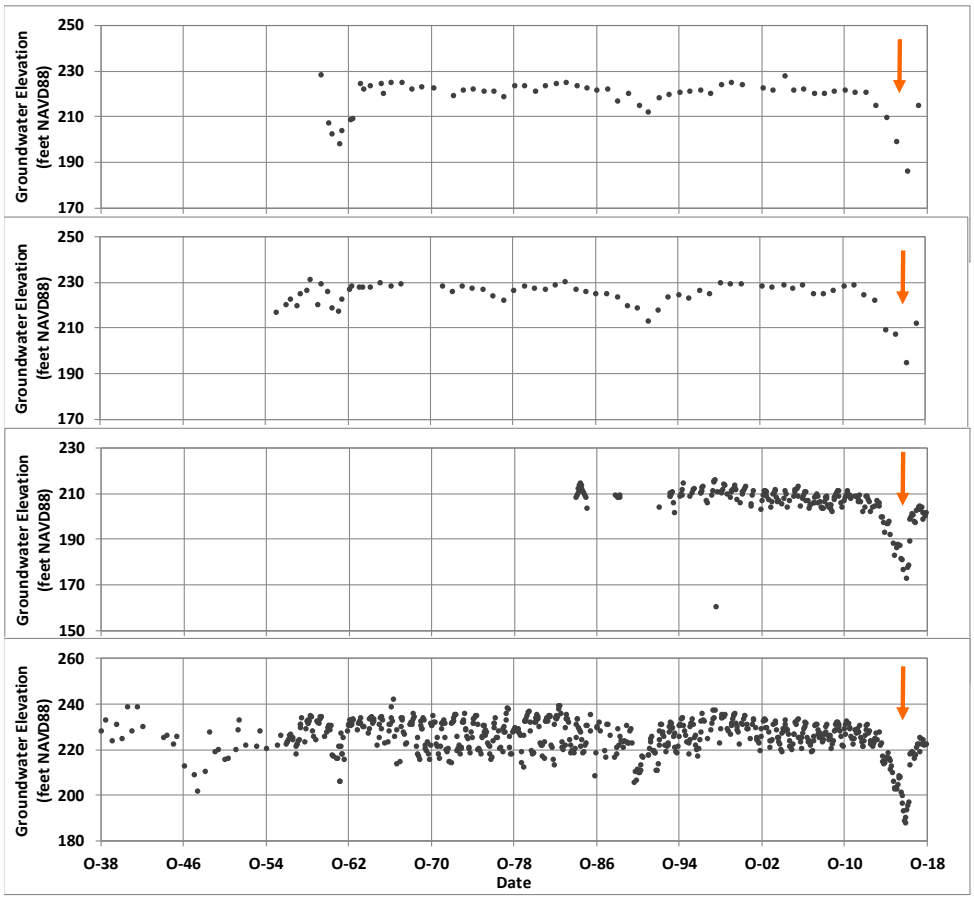




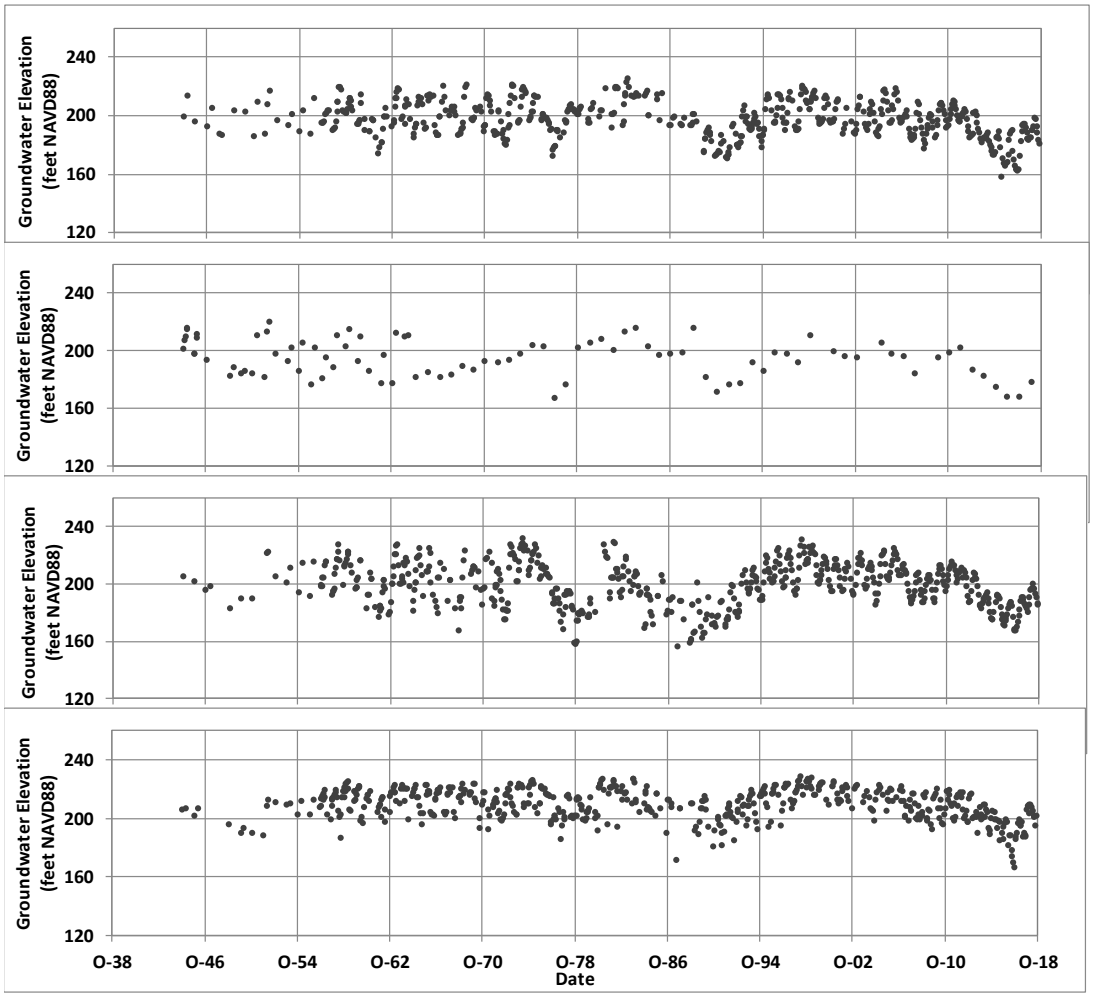
In these spring contours, the effect of Arroyo Seco recharge is prominent. This is particularly noteworthy in spring 2015 when Nacimiento and San Antonio Reservoir releases had been withheld for over two years and Arroyo Seco recharge was critical to sustaining local beneficial uses of groundwater.

Page 14, Figure 5-6, Figure 5-11 and Appendix 5A: hydrograph confidentiality.
Confidentiality does not preclude presenting hydrographs in reports, provided the well is not exactly identified. By limiting the presentation of data and discussion to only eight wells (Figure 5-6) or 55 wells (Figure 5-11 and Appendix 5-A) out of the 760 locations where MCWRA has collected water levels is unnecessarily selective excluding the data. In particular, the Forebay and Upper Valley Subbasins are underrepresented in the figures and discussion. Groundwater conditions in the Forebay Subbasin cannot be represented by a single hydrograph, as Figure 5-6 implies. By selectively excluding the data, the report fails to identify and disclose local variations in hydrograph patterns that provide important understanding of the relative influence of various recharge sources and, hence, which variables are important for groundwater management. In general terms, the report does not provide adequate granularity of data analysis, and hence may not correctly reflect groundwater conditions in these subbasins.

Groundwater conditions in the Forebay Subbasin are not homogeneous, as the draft chapter implies. Wells close to the Salinas River have hydrographs with pronounced declines during 2013-2016, as illustrated by these four hydrographs:



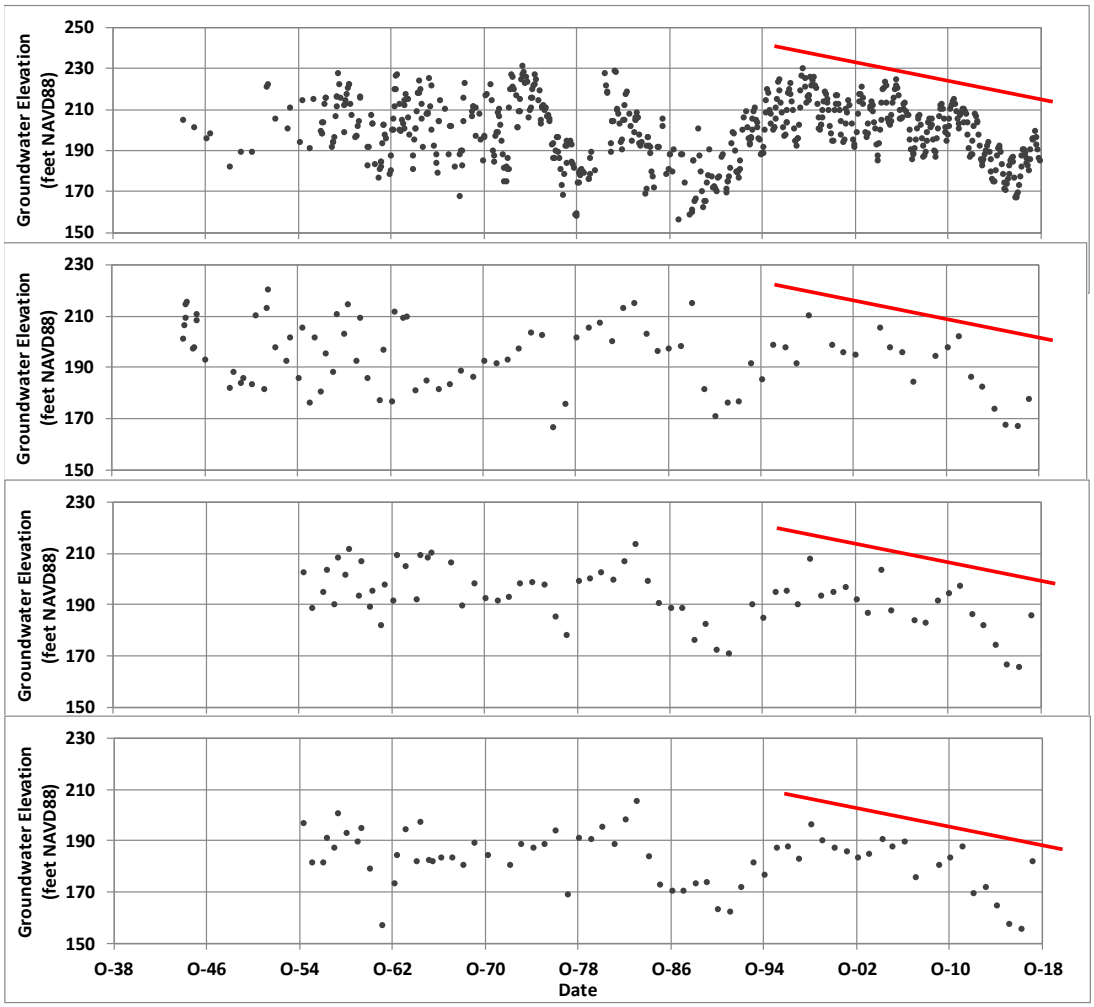
In contrast, water levels in the following set of four wells higher up on the Arroyo Seco Cone show greater seasonal variability but little cumulative decline during 2013-2016:



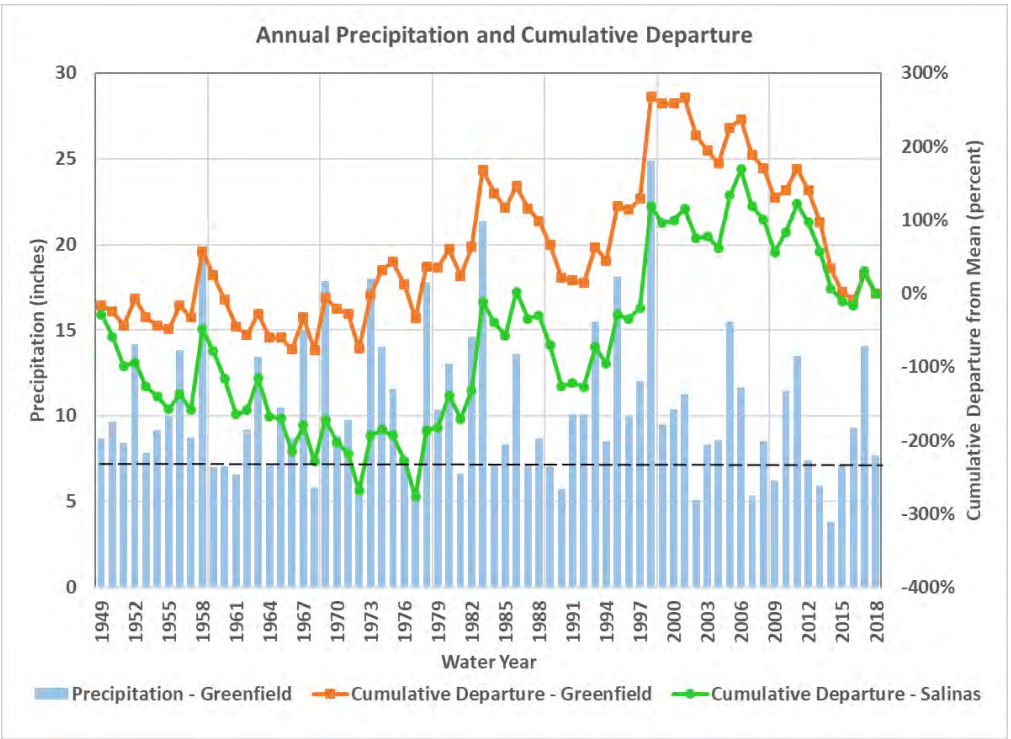
Finally, several wells on the northwestern flank of the Arroyo Seco Cone have declining trends since 1990 that are probably related to intensified local pumping to supply new vineyards in the hills to the west where well yields are poor (see hydrographs, below).

These details matter. The broad brush presentation of water levels in the draft chapter conceals local variability that is relevant to sustainability and management actions.

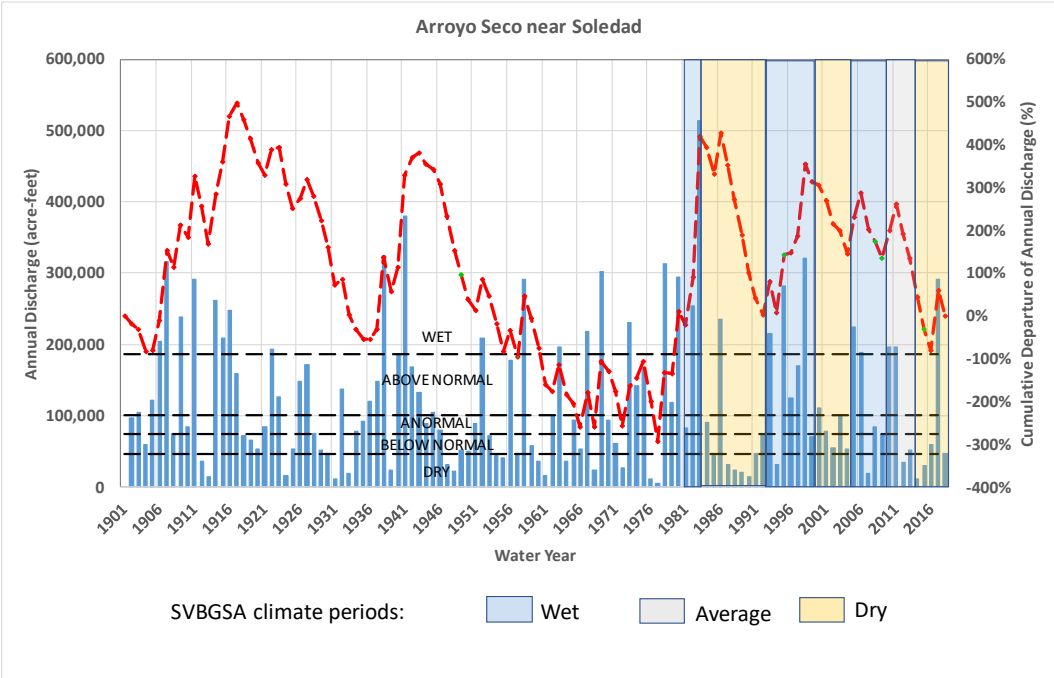
Figures 5-8 through 5-10. Hydrographs of selected wells. These hydrographs are duplicates of the ones shown on Figure 5-6. The repetition is unnecessary.



Page 21, 1st paragraph. Water year types. The water year types shown as background in Figures 5-7 through 5-10 are based on a Standardized Precipitation Index methodology that this report does not document but that is described in the 180/400 Foot Aquifer and Paso Robles Subbasin draft GSPs. The SPI method using a 5-year backward average of annual precipitation does not adequately represent wet and dry periods related to groundwater for two reasons. First, groundwater levels correlate more closely with runoff than with rainfall. The standard practice for hydrologic analysis in California is to identify wet and dry periods on the basis of cumulative departure plots. The SPI method is seldom, if ever, used. For example, cumulative departure of annual rainfall at Greenfield and Salinas are shown in the graph below. For both stations, missing data were filled by correlation with nearby gauges to ensure a complete record. Both stations show that the wet period culminating in 1998 was a larger event than the wet period culminating in 1983.



However, groundwater levels in almost all Forebay wells were higher in 1983 than in 1998. This suggests that recharge was greater during the earlier event. A cumulative departure of annual discharge in Arroyo Seco—which is unregulated—reveals that with respect to streamflow the 1983 event was bigger than the 1998 event, as shown in the plot below.



The stronger correlation between runoff and groundwater levels means that cumulative departure of annual Arroyo Seco discharge represents climatic periods better than cumulative departure of rainfall and should therefore be preferred for use in groundwater analysis and planning.

The second weakness of the SPI method is that the 5-year averaging method misses the correct starting and ending years of wet and dry periods. To illustrate, the wet, dry and average (or fluctuating) periods shown in Figures 5-7 through 5-10 of draft Chapter 5 are transcribed onto the cumulative departure of Arroyo Seco discharge, above. The 1984-1992 dry period starts two years too early (1987 was the first dry year of that drought). Similarly, the first two years and the last year of 1993-1999 were not wet. The wet period would more accurately be identified as 1995-1998. 2005 and 2006 were wet, but they did not amount to a large wet period. It might be more useful to simply classify 2005-2011 as variable. The Arroyo Seco cumulative departure plot shows the recent drought as comprised of 2012-2016. The SPI approach adds 2011 and omits 2014-2016 from that sequence, thereby significantly underrepresenting the actual duration and severity of dry conditions.

Page 21, 2nd bullet. Forebay water-level declines. The statement "Since 1983, groundwater levels in the Forebay have slowly declined, punctuated by two significant declines during the 1989 to 1991 drought and the 2012 to 2016 drought" over-generalizes hydrograph trends in the Forebay Subbasin and needs to be revised. Many hydrographs in the southern half of the Forebay Subbasin (in and near the ASGSA area) do not exhibit a declining trend. In one small area identified above, declining trends can specifically be linked to an increase in local pumping (see third set of hydrographs, above). At the northern end of the Forebay Subbasin, wells would also likely exhibit declines due to the spread of declining trends in the adjacent 180/400 Foot Aquifer and East Side Subbasins. Finally, there is an optical illusion in many hydrographs related to the "since 1983" period, because that period began at the peak of one of the wettest periods on record and ended shortly after a major drought. Thus, the apparent decline from 1983 water levels to 2017 water levels does not represent average annual conditions. Looking at net change from, say, 1986 to 2011 would be more representative of long-term average conditions. During that period, almost no wells in the southern part of the Forebay Subbasin show signs of a declining trend.

Page 22, 1st bullet. 180/400 and East Side drought declines. Smaller storage coefficients due to confined conditions would also tend to increase water-level declines during droughts. Some analysis would be needed to differentiate the effects of recharge and storage coefficient on the magnitude and duration of drought declines.

Figure 5-14. Vertical gradients. The well pair at the southern end of the Upper Valley area is not representative of the generally unconfined conditions in that area. The text acknowledges that the very large gradient is "unusual". While there may be some value in illustrating local variability, it would be better to show a more typical gradient for the purpose of this summary figure.

Page 27, Section 5.2, 1st paragraph. Seawater intrusion. Describing seawater intrusion as a "threat" suggests that it hasn't yet occurred. Rewording such as: "Although those actions

have managed to slow the advance of intrusion and reduce its impacts, seawater intrusion continues to advance" would better characterize reality.

Page 28 and Figure 5-15. Closed contour. The description of the figure states that the closed contour at the inland edge of the intruded area in the 180 Foot Aquifer is a local pumping trough. As labeled in the figure (-20 ft msl), it is a local mound, not a trough. Please check whether that is actually a -30 foot contour. Otherwise, the mechanism of repulsion might be due to mounding rather than a trough.

Page 33, 3rd paragraph. Intrusion and pumping depressions. The text states that intrusion will slow down and stop when it reaches a pumping depression. This presumes that the well owners will continue to pump when saltwater arrives. Given that as little as 10 percent seawater in a well will render it unusable for irrigation, it is unlikely that the wells that created the water-level depression will continue to operate.

Figure 5-19 and page 37, 2nd bullet. Forebay storage trends. Please see the above comments regarding the discussion of water level trends on page 21, 2nd bullet. The same issue is repeated here in the discussion of storage. First, the large declines during the 2012-2016 drought occurred primarily at wells near the Salinas River. Wells on the Arroyo Seco Cone showed much smaller declines. Second, the supposed declining trend from 1983-2017 may be an illusory result of selecting a period that began very wet and ended very dry. A more representative period should be selected for trend analysis. Finally, the storage declines during 1944-1950 were likely due in part to the exceptionally dry runoff conditions that prevailed during those years (see Arroyo Seco cumulative departure graph, above) rather than to the presence or absence of reservoirs.

Page 38, 3rd sub-bullet. Storage declines 1998-2017. Again, the selection of an analysis period that starts very wet and ends just after a major drought exaggerates the amount of storage decline. The estimate of 460,000 AF of storage decline is not representative of current average annual conditions.

Page 39, Section 5.4, 1st sentence. Subsidence monitoring. Stating that subsidence "is not closely monitored" conflicts with the subsequent material describing two ongoing monitoring programs: InSar and UNAVCO. The former provides detailed spatial coverage (although it excludes the 180/400 Foot Aquifer area and most of the East Side Area—which can be viewed as a data gap), and the UNAVCO stations provide detailed temporal coverage. The two sources of information are being combined to evaluate subsidence in the southern part of the Forebay Subbasin for the ASGSA GSP.

Also, the subsidence discussion would be improved by differentiating elastic subsidence—which is very evident in the UNAVCO data—from inelastic subsidence, because only the latter is of significant concern.

Page 43, 1st paragraph. Recharge through the Salinas Valley Aquiclude. The text perpetuates the out-of-date and oversimplified hypothesis that no recharge to the 180-Foot Aquifer occurs from percolation through the Salinas Valley Aquiclude. More recent evidence

from hydrostratigraphy, geochemistry and groundwater modeling have de-bunked that myth. The following analysis of those data were presented in a technical memorandum to support environmental analysis of percolation from the Salinas Industrial Wastewater Treatment Facility (Todd Groundwater, February 2015; accessible on-line as Appendix N in Volume 2 of the Pure Water Monterey Consolidated Final EIR at http://purewatermonterey.org/reports-docs/cfeir/):

> "To reach the 180-Foot aquifer, groundwater in the shallow aquifer must flow downward through the Salinas Valley Aquitard (SVA). The SVA is a shallow fine-grained layer that has traditionally been viewed as an extensive, continuous, impermeable clay cap that restricts direct downward recharge to the 180-Foot aquifer. Water levels in the 180-Foot aquifer are much lower than shallow groundwater levels, which suggests that overall vertical permeability is low but not necessarily zero. In 2011, groundwater elevation in the 180-Foot aquifer near Salinas Treatment Facility was -18 ft (i.e., below sea level), while water levels in shallow wells near the ponds were 12-33 ft above sea level. This substantial downward gradient will induce downward flow if permeable pathways are present.
>
> Evidence that recharge occurs through the SVA comes from detailed stratigraphic analyses and groundwater model calibration. One of the most detailed evaluations of aquifer stratigraphy in the vicinity of the Salinas Treatment Facility focused on the area encompassed by Alisal Slough, Highway 68 and the Salinas River, which includes the Salinas Treatment Facility (Heard, 1992). Texture descriptions from 117 cable-tool driller's logs were classified into coarse and fine categories and mapped at 20-foot depth intervals from the ground surface down to 340 feet. Overlaying these maps reveals vertical continuity of coarse deposits through all but one of the top seven layers (a total vertical interval of 140 feet) in several locations, each covering about 1 square mile:
>
> - Near the Salinas Treatment Facility across South Davis Road
> - Near the intersection of Blanco Road and Highway 68, about 2.5 miles east of the Salinas Treatment Facility
> - Along Davis Road between Blanco Road and Castroville Road, about 2.5 miles northeast of the Salinas Treatment Facility
>
> A small amount of horizontal flow within the remaining depth interval would allow groundwater flow to link up gaps between clay lenses and continue moving downward.
>
> Heard also evaluated groundwater quality patterns and discovered that groundwater in the 180-Foot aquifer in the study area was slightly enriched in sulfur relative to other dissolved minerals. The only geochemically plausible source of the enrichment was determined to be gypsum, which is commonly applied to heavy soils in the area to maintain soil texture. To arrive

at the 180-Foot aquifer, the dissolved gypsum would have had to percolate downward through the SVA. Nitrate is also elevated in some 180-Foot aquifer wells in the area and also derives from fertilizers applied at the land surface.

Another detailed stratigraphic study of the region between Spreckels and the coast included cross sections showing the SVA missing at various locations (Kennedy/Jenks Consultants, 2004). The cross sections were developed from geologic logs prepared by well drillers, and most of the logs were from irrigation wells. Although often close to other wells where the SVA is present, wells that show gaps in the SVA include several near the Salinas Treatment Facility in the region between Salinas and the Salinas River (at wells APN-414021010, 15S/03E-04T50, 15S/03E-17B3, and 15S/03E-17M1). The description of SVA hydrogeology in the Monterey County Groundwater Management Plan reiterates the concept of local discontinuity (MCWRA 2006).

A groundwater flow model of the Salinas Valley, called the Salinas Valley Integrated Surface and Groundwater Model (SVISGM), has been used extensively by Monterey County Water Resources Agency (MCWRA) for water planning studies over nearly 20 years. The calibrated model includes recharge from the ground surface to the 180-Foot aquifer. The 180-Foot aquifer is present only in the Pressure Area, which occupies the southwestern half of Salinas Valley between Gonzales and Monterey Bay. In most parts of the Pressure Area, recharge to the 180-Foot aquifer from the ground surface would have to pass through the SVA (MWH, 1997). The shallow aquifer and SVA are not explicitly represented in the model, but their effects are reflected in the amount of downward recharge that accrues to the 180-Foot aquifer. During the 1970-1994 calibration period, there was an average of 54,000 AFY of recharge to the 180-Foot aquifer in the Pressure Area from deep percolation of rainfall and applied irrigation water and 60,000 AFY of recharge from Salinas River infiltration, some of which must also pass through the SVA. Together, these recharge sources accounted for 79% of total recharge to the 180-Foot aquifer in the Pressure Area. However, much of the downward recharge to the 180-Foot aquifer in the model could have been in the southern part of the Pressure Area (between Gonzales and Chualar), where the SVA is known to be discontinuous or absent.

The above lines of evidence lead to a conclusion that Salinas Treatment Facility percolation that does not seep into the river very likely becomes recharge to the 180-Foot aquifer. During 2013, this recharge amounted to 550 AF, or 20% of total Salinas Treatment Facility percolation."

Page 43, 1st paragraph. SFEI reference. The list of references at the end of the chapter does not include the 2009 San Francisco Estuary Institute report.

Page 43, 4th paragraph. GW/SW hydraulic connection. Mapping places where groundwater levels in wells are within 20 feet of the land surface is a reasonable first-cut screening tool for identifying locations where surface water and groundwater might be hydraulically coupled, but a depth to water of 20 feet is insufficient to demonstrate that coupling is present. Unless groundwater levels are **above** the river elevation—in which case coupling is very likely—the presence of coupling depends on the amount of mounding of the water table beneath the river and on vertical gradients within the aquifer system between the well screen and the true water table. In addition, few of MCWRA's water-level monitoring wells are next to the Salinas River channel, so there is additional uncertainty related to horizontal gradients between the well location and the river. This uncertainty in the local three-dimensional head pattern must be treated as a data gap that needs to be filled by measuring water levels in shallow piezometers in or adjacent to the river channel.

Two studies by Martin Feeney in 1994 specifically address water table mounding and surface water/groundwater hydraulic coupling (Feeney, 1994a and 1994b). The first study focused on the Arroyo Seco and found that in the relatively coarse-grained sediments beneath the river channel the water table beneath the river was 4-5 feet higher than the water level in wells 2,000 feet away during periods of active river recharge. At that location (Hudson Road), the seasonal high water table was still 20 feet below the river bed and there was no hydraulic coupling. The second study attempted to confirm and measure hydraulic connection between the Salinas River and groundwater at a location downstream of the Arroyo Seco confluence by means of an aquifer test. Interpretation of the data proved to be more difficult than expected. The report concluded "insufficient data currently exist documenting the nature of the hydraulic connection between the river and aquifer system….Water level data will be required to assess the nature of the hydraulic connection of the river and aquifer, both seasonally and areally….. Water level data near the river are considered essential for understanding the interaction between the river and aquifer."

Based on those studies, the mere presence of water levels in wells somewhat close to the Salinas River that are 20 feet below the river bed is insufficient evidence to conclude that hydraulic connection is present. Furthermore, flow losses simulated by groundwater models are also not confirmation of hydraulic connection. The surface water routing packages in those models (MODFLOW, IGSM, FEMFLOW3D) simulate percolation as coupled or uncoupled, depending on whether the groundwater level at the river node is above or below the river bed elevation, but none of the models had data to confirm whether unsaturated decoupling is present nor the fine-scale vertical and horizontal discretization that would be needed to accurately simulated the local mounding and vertical gradients involved. The models could have obtained good results for simulated stream flow losses and groundwater levels with coupled or decoupled river percolation.

The lack of shallow water level data along rivers is an important data gap, as Feeney emphasized back in 1994. The presence or absence of hydraulic connection has significant implications for groundwater management and protection of riparian and aquatic habitats. If river percolation becomes decoupled as groundwater levels decline, for example, then further decreases in groundwater levels have no additional impact on percolation losses,

and the habitats are then almost entirely dependent on surface flow supplied by reservoir releases.

Page 43-44. Recharge to 180 Foot Aquifer through SVA. Please see the previous comment on this topic. The statement that the A aquifer above the Salinas Valley Aquiclude "is not an important water-supply source" incorrectly characterizes the situation, and dismissing that source of recharge from further discussion is unjustified.

Page 44, 1st full paragraph. Vertical water level differences. The differences in water levels between wells and an overlying river does not necessarily prove hydraulic decoupling. In coarse-grained materials (such as described along the Arroyo Seco in a previous comment), a well water level 20 feet below the river might be associated with decoupling. In fine-grained sediments that are more common near the coast, a water-level difference that was uncoupled at the Arroyo Seco might be accommodated within a fully saturated flow system. For example, the fall 2017 water levels in the 180 Foot Aquifer as contoured by MCWRA (see Figure 5-2) are at lowest 10 feet below sea level. The Salinas River bed elevation at the same location is perhaps 20 feet above sea level. Dividing this water level difference of 30 feet into a vertical distance of 180 feet produces a gradient of 0.17, which is easily plausible for a fully saturated system (gradients of up to 1.00 can be present under saturated conditions). Large vertical gradients certainly demonstrate resistance to vertical flow, but do not necessarily demonstrate decoupling.

Figure 5-23 and page 43 Section 5.5.1 1st paragraph. Depth to water contours. The detail shown in this figure is misleading. Depth to water was not measured at that level of detail, as the text implies. Instead, high-resolution ground elevation data were combined with very poor depth to water data (interpolated between sparse wells far from the river using measurements that are not the true water table). This limitation needs to be communicated in the text.

Page 47, Section 5.5.2. "Surface Water Depletion Rates". The word "depletion" in the heading should be replaced with "percolation". The stream flow data presented in the discussion do not demonstrate hydraulic connection, which is a prerequisite for active depletion of surface water by pumping from a nearby well. All of the observed losses could have occurred under decoupled conditions. The report needs to be accurate and precise in all discussions of river percolation and state whether we know for certain that it is coupled or decoupled. That difference has important implications for the potential impacts of pumping on groundwater dependent ecosystems.

Page 51, 4th bullet. Vertical recharge to 180/400 Foot Aquifer. The wording here is much better than in prior passages on this topic. Stating that "the presence of aquitards restricts the vertical migration of groundwater downward into the more productive 180/400 Foot Aquifers" describes the situation well.

Page 53, Table 5-4. River infiltration losses. It seems counterintuitive that the average flow loss for Salinas River flows of 5,000-10,000 cfs is larger than the average loss when flows are 10,000 – 100,000 cfs. Please explain.

Page 53, 2nd bullet. Arundo donax ET. Arundo is an aggressive invader, but studies of its ET rate have produced highly variable results. It may or may not be greater than cottonwood/willow ET. A study of Mojave River riparian vegetation found that cottonwood/willow consistently had highr ET rates than Arundo, saltcedar and several other vegetation categories (Mojave Water Agency, 2011). However, a recently released review of scientific literature on Arundo water use by The Nature Conservancy (2019) found widely disparate results (1 ft/yr to 48 ft/yr of ET) that correlated strongly with the method used for measurement.

Figure 5-27. Salinas River flow loss. Is the lower bound of the Y axis clipped in this plot, or are all data points visible? This graph shows that the net change in flow along the Salinas River is sometimes positive and sometimes negative. However, its usefulness is greatly limited by the lack of data on tributary inflows other than from the Arroyo Seco. Are flow gains up to 500 cfs from groundwater discharge realistic?

Figure 5-28 and Table 5-5. Active cleanup sites. The list of sites should be pared down to include only ones where groundwater has been contaminated. Geotracker lists many sites where only soil is contaminated and the likelihood of subsequent groundwater contamination is negligible. For example, the site in Greenfield identified as "Reconstrution of Mary Chapa and El Camino Real School Sites" involves slight soil contamination from old land uses (more than 25 years ago). The contamination may be an issue with respect to direct exposure of school children to the soil, but not with respect to groundwater.

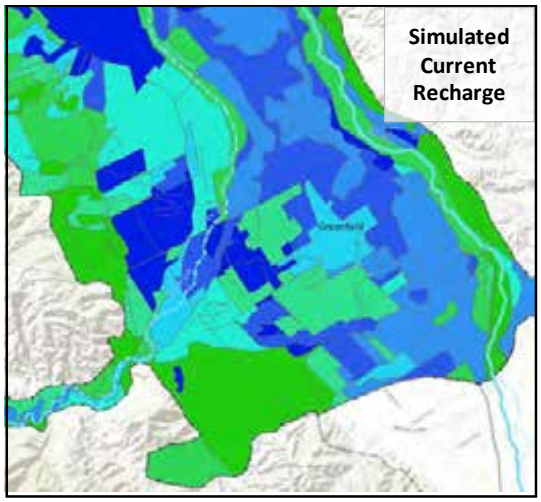
Figure 5-30. Historical nitrate maps. These maps are great but quite grainy. Is it possible to obtain higher-quality images?

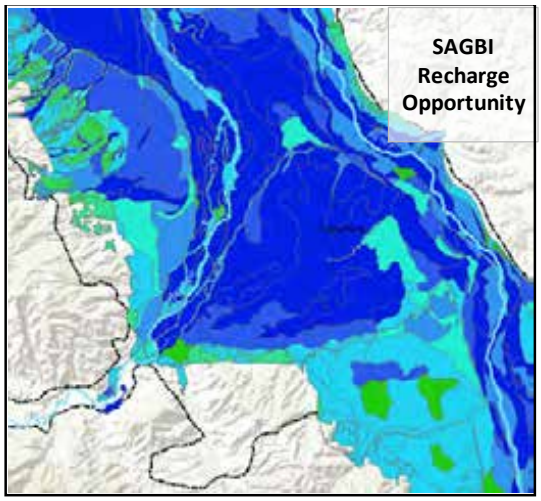
Page 65, Section 5.6.3. List of monitoring constituents. Iron, manganese molybdenum, NDMA, sulfate and TDS are all listed twice.

COMMENTS ON TOPICS THAT SHOULD BE INCLUDED IN CHAPTER 5

Locations of Recharge. GSPs are required to include maps of recharge locations, and such a map should also be included in the Valleywide Plan. Based on draft materials for the Paso Robles and 180/400 Foot Aquifer GSPs (prepared by the same consultant team), it is likely that the SAGBI map of recharge opportunity would be used for that purpose. However, the SAGBI map is not a map of where recharge currently occurs. It is a map of favorable locations for percolating water at high rates through the soil zone only. The two are not the same. Dispersed recharge through soils typically occurs at rates well below soil permeability and is determined more by the water balance of the root zone than by permeability. If infiltration of rainfall or applied irrigation water raise the water content in the root zone to above its storage capacity (root depth x available water capacity), then excess water will percolate downward and eventually reach the water table. Thus, dispersed recharge occurs wherever rainfall or irrigation occur, which is essentially the entire land surface overlying the Basin. The maps below compare current recharge in the southern part of the Forebay Subbasin simulated using a recharge-runoff-rainfall model (continuous, daily soil moisture budget simulation averaged over 1997-2008) with the SAGBI recharge opportunity map.

Both maps are color scaled so that green is low and dark blue is high. The simulation of current conditions shows the large differences between non-irrigated vegetation, truck crops, vineyards and urban areas. The SAGBI map reflects primarily soil characteristics. The two are very different.





Role of Reservoir Operation on Groundwater Conditions. The Valleywide Plan must include a thorough discussion of the conjunctive linkage between reservoir operation and groundwater conditions. Any effort to manage groundwater must start with that knowledge. The most important aspect of the system is that Nacimiento and San Antonio Reservoirs delay the impacts of groundwater pumping to droughts. Under current operation, conservation releases from the reservoirs are managed primarily to achieve a target flow at the Salinas River Diversion Facility near the downstream end of the Valley. Releases are adjusted to overcome whatever percolation losses occur en route. If groundwater pumping goes up and induces additional percolation, the release rate is increased to overcome the additional losses. By the same token, the river percolation prevents groundwater levels from declining in spite of the increased pumping. However, the compensatory increase in release rate depletes reservoir storage at a faster rate and hastens the date at which storage is so depleted that conservation releases simply cannot be made. Releases are then curtailed until the next wet year arrives to replenish reservoir storage. Curtailment of releases—particularly for multiple years in a row—causes sharp declines in groundwater levels and mortality of riparian vegetation.

Current reservoir operating rules do not appear to manage carry-over storage as a means of delaying and possibly shortening periods of curtailed releases. The February 2018 Nacimiento Dam Operation Policy expresses an intent to develop a Drought Contingency Plan (which would presumably address carry-over storage needs), but 60 years after the reservoir was built there still is no such plan.

The accumulation of groundwater pumping effects in reservoir storage can also be viewed as an indirect “depletion of surface water”. Even if percolation along the river were

hydraulically decoupled, the amount of depleted groundwater storage space that needs to be filled would depend on the amount of prior groundwater pumping. Thus, the reservoirs can serve to shift the depletion to a later date.

The impacts of reservoir flow curtailment are not just on groundwater levels, but also on riparian vegetation. In normal and wet years, the Salinas River channel functions as an irrigation furrow supplying water to riparian vegetation nearly continuously throughout the dry season. The vegetation thrives regardless of groundwater levels. When releases are curtailed, groundwater levels also drop and vegetation loses access to both sources of water. There was widespread mortality of mature cottonwood trees along the river as a result of the 3-year flow curtailment during 2013-2015, for example. The relative importance of surface flow and water table depth for survival of the vegetation is unknown and is a notable data gap.

These aspects of interrelationship between groundwater conditions and reservoir operation should be included in Chapter 5.

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July 10, 2019

Salinas Valley Basin Groundwater Sustainability Agency
Attn: Gary Peterson, General Manager
peterseng@svbgsa.org
VIA ELECTRONIC MAIL

Re: Comments on Draft Chapter 6 ("Water Budgets") for the 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan

Dear Salinas Valley Groundwater Sustainability Agency Board Directors, General Manager Peterson, and Advisory Committee:

We thank you for the opportunity to comment on draft chapters of the Groundwater Sustainability Plan ("GSP") for the 180/400-Foot Aquifer Subbasin of the Salinas Valley Basin.

Recommendation 1: For both practical and legal reasons, we strongly encourage you to revise your calculations of sustainable yield to include and abate all six undesirable results enumerated in the Sustainable Groundwater Management Act (SGMA).

As currently written, Chapter 6's definition of sustainable yield fails to comport with the statutory definition. SGMA defines sustainable yield as "the maximum quantity of water . . . that can be withdrawn annually from a groundwater supply without causing an undesirable result." Water Code § 10721(w). SGMA explicitly requires that groundwater be managed in a way that avoids negative impacts to beneficial users *and* all six undesirable results. Those undesirable results include: (1) chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon; (2) significant and unreasonable reduction of groundwater storage; (3) significant and unreasonable seawater intrusion; (4) significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies; (5) significant and unreasonable land subsidence that substantially interferes with surface land uses; and (6) depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of that surface water. *Id.* § 10721(x). The undesirable results are cumulative, not disjunctive. GSPs must evaluate all six undesirable results, and any interactions between those results, to satisfy SGMA.

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Despite SGMA's clear definition of sustainable yield and sustainable groundwater management, the current draft of Chapter 6 relies on only one indicator of sustainability and one undesirable result. The proposed draft defines sustainable yield as "an estimate of the quantity of groundwater that can be pumped on a long-term average annual basis without causing a net decrease in storage." *See* Draft Chapter 6 180/400-Foot Aquifer Subbasin GSP page 24, section 6.8.4 (June 17, 2019, included in advisory committee meeting packet). There is no legal or scientific basis for that definition of sustainable yield.

We are concerned that the current sustainable yield calculation fails to inform the public and GSA of the actual net amount of water that can be extracted from the subbasin while avoiding all six undesirable results. Establishing a sustainable yield that adequately takes into consideration all undesirable results is a foundational step for developing appropriate sustainable management criteria and for accurately planning for the management actions and projects necessary to meet sustainable management criteria. For example, during the project development phase, the GSA will need to understand the scale and size of recharge or other projects required to stop seawater intrusion. At a minimum, the sustainable yield calculation must adequately consider all undesirable results in order to provide a reliable foundation for setting and meeting minimum thresholds and measurable objectives, determining extraction and recharge levels, and monitoring.

The Department of Water Resources' (DWR) Draft Best Management Practices for Sustainable Management Criteria ("Draft BMP")[1] states that "[s]ustainable yield can only be reached if the basin is not experiencing undesirable results . . . [u]ndesirable results must be eliminated through the implementation of projects and management actions, and progress toward their elimination will be demonstrated with empirical data (e.g., measurements of groundwater levels or subsidence)." From a practical perspective, the 180/400-foot aquifer subbasin GSP already faces several undesirable results, and it will need to develop projects and regulations that rely on the sustainable yield measure to avoid exacerbating all six undesirable results. As currently drafted, the sustainable yield calculation does not provide the GSA with the information it needs to be able to prevent or improve groundwater conditions that cause those undesirable results.

Moreover, the Groundwater Sustainability Plan Regulations ("Regulations") do not recognize change in storage as an acceptable proxy for the other sustainability indicators or undesirable results. The Regulations clearly state that only groundwater elevation may be used as a proxy

[1]https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT.pdf

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metric for the sustainability indicators for minimum thresholds and measurable objectives. 23 CCR §§ 354.28(d) & 354.30(d). Groundwater elevation can only be used as a proxy metric if both of the following conditions are met:

> (1) Significant correlation exists between groundwater elevations and the sustainability indicators for which groundwater elevation measurements serve as a proxy. (2) Measurable objectives established for groundwater elevation shall include a reasonable margin of operational flexibility taking into consideration the basin setting to avoid undesirable results for the sustainability indicators for which groundwater elevation measurements serve as a proxy. 23 CCR § 354.36(b)).

By focusing solely on groundwater storage, draft Chapter 6 fails to identify the relationship between the water budget, current undesirable results, and the possibility of worsening all six undesirable results if the water budget is improperly calculated. As a result, the draft water budget reinforces current unsustainable groundwater uses, risks further degradation of groundwater supplies, and fails to adequately prioritize beneficial uses and protect groundwater stakeholders' interests.

The calculation of sustainable yield is at the heart of all Groundwater Sustainability Plans, and those Plans derive all other components from this important determination. Because the draft GSP ties sustainable yield to an improper metric that is not recognized by statute or regulation as acceptable, it is likely that DWR will find the draft 180/400-Foot Aquifer Subbasin GSP to be inadequate, creating the risk that the Basin will fall under probationary status.

Recommendation 2: We request that you release the data and assumptions underlying Chapter 6's sustainable yield calculations, water budget calculations, and groundwater model. We encourage the GSA to ensure compliance with SGMA and California administrative law by releasing the data, methodologies, technical appendices, model assumptions, model inputs/outputs, sources, and all other relevant model parameters when draft chapters are released to the public for review and comment. We request that the GSA ensure that all relevant data is released concurrently with draft chapters for all future draft chapters.

SGMA, California administrative law, and the Brown Act require GSAs to release to the public all data, research, sources, assumptions and inputs, outputs, the formulae applied to those inputs, and the ultimate results of a formula or model as part of the public comment process.

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23 CCR §§ 352.4(f) & 354.14. DWR's Draft BMP also encourages transparency in the use and disclosure of models used to support SGMA's requirements.

In the context of GSPs, the purpose of public comment is to allow the public to engage meaningfully in the public decision making process, which in turn will strengthen the reliability and accuracy of GSPs. That data must be publicly accessible and is a critical factor in gaining consensus on groundwater projects, groundwater pumping restrictions, potential groundwater fees, prioritization of beneficial uses, and other groundwater regulations. Draft Chapter 6 currently fails to provide the GSA and the public with sufficient background information to support the chapter's sustainable yield calculations and the groundwater model itself.

Timely disclosing source material and key assumptions is necessary to ensure the GSP is accurate and that the public is able to ground truth those assumptions. For example, during the June 20, 2019, advisory committee meeting, the GSA's consultant informed the public that the proposed "sustainable yield" calculation assumes that the Castroville Seawater Intrusion Project (CSIP) will function "perfectly." Many of those in attendance questioned that assumption, as it is impossible to ensure a project will operate perfectly. Failure to account for the reality that the project will not always operate "perfectly" introduces unquantified uncertainty into the sustainable yield calculation. As a result, the proposed calculation may be inaccurate, which may exacerbate undesirable results—including seawater intrusion—in the subbasin. At a minimum, the GSP must consider alternative calculations that account for the reasonable and foreseeable possibility that the project may operate below "perfect" performance in order to create an accurate accounting of sustainable yield. In fact, in its Draft BMP, DWR explicitly notes that GSPs must acknowledge uncertainty and address how the plan will address that uncertainty. By failing to disclose to the public the assumptions incorporated in draft Chapter 6, the GSP may rely on any number of faulty assumptions that undermine the reliability, reality, and accuracy of the sustainable yield calculation and groundwater model.

We are asking the GSA to make all assumptions transparent and clear in the plan itself, to engage stakeholders and the public in discussion of those parameters and assumptions, and to make decisions with knowledge of the limitations of whatever formulae or models are adopted. When DWR reviews plans, it will assess "[w]hether the projects and management actions are feasible and likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield." 23 CCR § 355.4(b)(5). Failure to account for and disclose the assumptions in the sustainable yield calculation places the basin at substantial risk of failing to pass DWR's evaluation or to ensure sustainable yield is met.

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It is challenging to provide feedback regarding Chapter 6's models and its sustainable yield calculation without publicly available supporting documentation on how calculations have been made. We request that the GSA immediately:

1. Disclose the technical appendix, supporting documentation and research, groundwater model,, sustainable yield formula, methodologies for the groundwater model and sustainable yield formula, and model assumptions and limitations at the time it releases draft Chapter 6 for public review and comment. Disclosure should be made by posting this information to the GSA website and contacting all interested parties.
2. Update its timeline to ensure technical appendices, supporting data and research, and all related information are released when public comment opens for each draft chapter and the final draft GSP;
3. Distribute a revised draft Chapter 6 that includes the Advisory Committee and stakeholders' requested changes.

We look forward to working with the Salinas Valley Basin GSA to ensure that the GSP complies with its legal obligations, that the GSP adequately addresses drinking water needs, and that stakeholders and the public have access to the information necessary to be able to engage in this process.

Sincerely,

Heather Lukacs
Community Water Center

Camille Pannu
Founding Director, UC Davis Aoki Water Justice Clinic

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Thomas S.
Virsik
ATTORNEY AT LAW

10 July 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Board of Directors

Re: July 11, 2019 meeting

Agenda Item 4.a
ASGSA coordination

Agenda Item 4.b
Chapter 6 of 180/400 GSP

ASGSA Coordination

On behalf of the Orradre and Scheid interests -- both of which have interests and/or lands in or near the Arroyo Seco area, a coordination agreement for a management area under the jurisdiction of the Arroyo Seco GSA (ASGSA) appears premature. Any concern is borne of ignorance, not animosity. Several maps exist of the current, projected, and other configuration of the lands that may be the management area of the ASGSA, e.g., at the DWR portal and in ASGSA public documents. The maps tend to appear "ragged" or riddled with "holes." Such maps may not pass the "straight face" test with the public or DWR irrespective of whose/which lands constitute the holes or peculiar edges. If the "holes" or "ragged edges" impact a client, then there may be further reasons for concern around inconsistent approaches to overall management.

The public discussions and materials -- mostly from the ASGSA -- reflect that the ASGSA desires the input of the landowners that may be affected and would seek it out. "The Subcommittee suggested meetings be held with property owners that have not been included in the set of properties presented to DWR." ASGSA Advisory Committee minutes (draft) for June 2019. While (1) I have had discussions to set a time/place for meetings and (2) informal, i.e., not subject to public disclosure or verification, overtures have been made to my clients by individuals, the ASGSA has yet to present its proposal(s) to my clients. On behalf of my clients, I urge the SVBGSA to take no action on the ASGSA coordination agreement and allow further time for the ASGSA[1] to initiate and conclude discussion or negotiation with landowners with whom it chooses to

[1] I am aware of the subcommittees and staff at both the ASGSA and GSA that are working on coordination. Those subcommittees are the obvious vector for discussions, at least initially, rather than the full Boards of either entity.

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engage. As the ASGSA and/or GSA Plan for (parts of) the Forebay is not due until 2022, there appears is ample time for a thorough process.

Chapter 6 draft

Many commenters have provided input on the iterations of Chapter 6 that were before the Planning Committee and the Advisory Committee. The agenda packet contains a matrix of such comments. Pages 58-59. I have included my prior two letters for the sake of transparency and consistency, but also provide the below comments on (1) what has changed in the draft and (2) what should have changed, but has not.

NOTE ON REFERENCES
For ease of tracking (given the content will eventually be in other agenda packets), the following format is used: xx/yy, in which xx is the page of the Chapter and yy is the page of the paginated packet. Both numbers are found on the right-hand corner of the page.

CHAPTER STILL LACKS CURRENT SUSTAINABLE YIELD CALCULATION
The current sustainable yield calculation is still absent. That has not changed in any iteration to date. At 6.8.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. Table 6-20 at 25/42. (Note that the text right above the table uses a different figure of 97,300 AFY.)

The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. 25/42[2]. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values Table 6-19 (23/40), the current sustainable yield appears to be 40,600 AFY for the 180/400 (109,300 - 68,700 = 40,600). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is over 50%. While sustainable yield is not "sustainability" itself, the omission of the current sustainable yield is troubling, pointing to a failure to meet a core regulatory requirement. Emergency GSP Reg. 354.18(b)(5) (the historic, current, and projected water budgets must include quantification of overdraft when basin deemed in overdraft per Bulletin 118).[3]

Also, whether the historical sustainable yield is itself accurate is undermined by the text which recites a total pumping figure of 86,5500 AFY but uses 108,300 in Tables 6-20 and 6-31. Cf 25/42 with 37/54 and 38/55.

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[2] Seawater intrusion and groundwater level changes are apparently lumped together as "change in storage" when calculating historical sustainable yield in Table 6-20 on 25/42.
[3] That "overdraft" may be calculated from the figures and values presented does not obviate the GSP regulatory requirement of quantifying "overdraft" for the several water budgets.

FUTURE SUSTAINABLE YIELD STILL BASED ON QUESTIONABLE ASSUMPTIONS

The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 37/54 and 18/35. Consultant Williams explained that the difference arose from the CSIP projects coming online, i.e., the projects were built and started performing during the historical period while the future projections assumed the projects were preforming at full capacity. My follow-up comment after the explanation was that it was unrealistic to assume the projects would perform perfectly (now and) in the future and not founded on the "best available" data. I and others noted that the Monterey County Resources Agency (MCWRA) has substantial data on the real-world efficiency/performance of the projects. The GSA can obtain that data, (1) disclose and (2) use it in its future projections of water needs. As it stands, the future projections of Chapter 6 are at best aspirational, when ready data exists that could support realistic projections.

On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft.

> If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 sub basin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP.

March 2017 letter, pages 6-7. The current iterations of Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential "management action" in SGMA nomenclature).

SURFACE WATER EXTRACTIONS STILL UNRELIABLE

"Surface" water reports to the State are public, unlike "groundwater" reports to the MCWRA. Total surface water diversions are quantified but have not been cross-checked to eliminate double-counting. My letter of June 4, 2019 provided a real-world example of a state report from the 180/400 area that the GSA -- but not the public -- can check against the MCWRA data to find out if there is double-counting. Appendix 6A contains the data used to calculate the surface water diversions in draft Chapter 6, but the data is a mere aggregation. There is

no reason for the GSA to withhold the public data it obtained from the state database, eWRIMS, that it then aggregated.

The order of magnitude of surface pumping reported is not trivial, being around 7,900 AFY on average. 10/27. Changes of similar orders of magnitude have occurred between the initial version of Chapter 6 seen by the Planning Committee to the one before the Board. Updating the draft Chapter because of better data and analyses is good, but it begs the question of why those data command renewed attention while others, e.g., the real-world performance of the CSIP projects and the double-counting of surface/groundwater, do not. By way of example, Table 6-19 is set forth below as it appeared in the initial draft and as it appears now, with highlighting added to illustrate changes.

Table 6-19: Summary of Current Groundwater Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Net Percolation of Streamflow to Groundwater	31,100	3,300	80,000
	Precipitation Percolation to Groundwater	11,600	5,000	6
	Irrigation Percolation to Groundwater	4,500	-9,500	15,500
	Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
TOTAL INFLOW		67,200	43,800	105,700
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Pumping -Total Subbasin	109,300	108,400	111,000
	Agricultural	91,900	89,000	97,700
	Urban	17,000	12,900	19,000
	Rural Domestic	400	400	400
	Riparian Evapotranspiration	12,000	12,000	12,000
	Subsurface Outflows to Adjacent Subbasins/Basin	3,200	-9,500	9,500
TOTAL OUTFLOW		124,400	110,900	132,500
Storage		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Change in Storage	-57,300	-88,700	-5,200

Table 6-19: Summary of Current Groundwater Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Net Percolation of Streamflow to Groundwater	31,100	3,300	80,000
	Precipitation Percolation to Groundwater	6,500	0	10,800
	Irrigation Percolation to Groundwater	4,500	-94001	15,500
	Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
TOTAL INFLOW		62,100	38,700	101,400
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Pumping -Total Subbasin	109,300	108,400	111,000
	Agricultural	91,900	89,000	97,700
	Urban	17,000	12,900	19,000
	Rural Domestic	400	400	400
	Riparian Evapotranspiration	12,000	12,000	12,000
	Subsurface Outflows to Adjacent Subbasins/Basin	9,500	9,500	9,500
TOTAL OUTFLOW		130,800	129,900	132,600
Storage		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Change in Storage	-68,700	-28,500	-93,800

Similar order of magnitude of changes or corrections can be seen in other data, e.g., Tables 6-18 and 6-29 (of questionable addition). But no similar updates exist about the surface/groundwater double-counting risk or the actual performance/efficiency of the CSIP projects.

CONCLUSION

Iterating the data and analyses is good in general, but not when the effort is selectively applied. In its third iteration, draft Chapter 6 still fails (1) to address a key regulatory requirement (explicitly calculating and disclosing overdraft and the current sustainable yield), (2) report and use MCWRA data about the CSIP projects' on-the-ground efficiency and performance, and (3) address double-counting from surface and groundwater reports.

Very truly yours,

Thomas S. Virsik

Thomas S. Virsik

Encl.

6 June 2019 comment letter to GSA Planning Committee
18 June 2019 comment letter to GSA Advisory Committee

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4 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Planning Committee

Re: Agenda Item 4.b
Chapter 6 of 180/400 GSP

The below are comments and suggestions for the draft Chapter 6 of the 180/400 GSP. As presented, the draft Chapter fails to meet the minimum requirements of SGMA, lacking literally the word "overdraft" in its text. Emergency GSP Reg. 354.18(b)(5) (the historic, current, and projected water budgets must include quantification of overdraft when basin deemed in overdraft per Bulletin 118).[1]

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CHAPTER SKIRTS AROUND IMPORTANT SUSTAINABLE YIELD CALCULATION
Chapter 8 revealed that the future sustainable yield of the entire Valley is estimated at 494,000 AFY. Chapter 8 19/196 (at Planning Committee). What is the current sustainable yield for the 180/400? That specific query does not appear addressed in draft Chapter 6. At 8.6.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. 22/41. The text equates that to a 10% reduction in pumping from the historical average.

The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. Those values come from the chart for the historical groundwater budget. 19/38[2]. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values in the parallel summary chart (20/39), the current sustainable yield appears to be 52,000 AFY for the 180/400. I.e., delta between inflows and outflows at Tables 6-18, 6-19, and 6-20 (109,300 - 57,300 = 52,000). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is near 50%. While sustainable yield is not "sustainability" itself, the

[1] That "overdraft" may be calculated from the figures and values presented does not obviate the GSP regulatory requirement of quantifying "overdraft" for the several water budgets. Whether the next Chapter revision is one of editing (e.g., a change of terminology) or of arithmetic (e.g., add an extra calculation labelled "overdraft" in certain tables) is a matter for the GSA and its consultant.
[2] Seawater intrusion and groundwater level changes are apparently lumped together as "change in storage" in the charts on 19/38 and 20/39 (last entry in both).

omission of the current sustainable yield is troubling, pointing to a failure to meet a core regulatory requirement. Reg. 354.18(b)(5).

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS
The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 34/53 and 15/34. How that significant reduction occurs while projected pumping increases beyond historical levels is not explained. 34/53 (pumping of 86,500 AFY for historical sustainable yield v. pumping of 115,300 to 120,600 AFY for projected). Moreover, the calculated historical sustainable yield in Chapter 6 did not use a total pumping value of 86,500 AFY, but 108,300. Table 6-20 at 22/41. Clearly the two halves of Chapter 6 have not been checked against each other.

The "black box" quality of the SVIHM -- at least in its current state when it cannot be publicly peer reviewed by third parties -- undermines the credibility of the 180/400 GSP. A GSP based on assuming seawater intrusion radically decreases while pumping increases strains credulity. It is possible that the model is "correct" per its myriad assumptions and interconnections used to project results, if only one could review and reality test all of them. But at least as recited in draft Chapter 6, its calculation of a 7% reduction in pumping to balance the 180/400 comes across as far-fetched and unrealistic.

On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft.

> If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 sub basin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP.

March 2017 letter, pages 6-7. Lacking specific quantification of overdraft in the several water budgets, draft Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential "management action" in SGMA nomenclature).

DATA REFERENCES CONFUSING
Draft Chapter 6 states that the 180/400 basin accounts for 7% of the surface water extractions per eWRIMS. 7/26 The data relied upon is listed in Appendix 6-A. ??/58, 62. Data on eWRIMS has always been public and in the current era can be downloaded. 7/26 Yet, the Appendix does not contain the public information on who, where, and

when the diversions are occurring. If the omission is due to convenience or time pressures, the next iteration of the chapter should make such data available in the sprit (if not requirement) of transparency. The relevance of the data from eWRIMS is less "who," but where (the intruded area?) and when (winter rains or parched river?), which may impact the mandatory demand reduction analysis, i.e., assuming a 7% reduction, when and in what areas of the 180/400 does one curtail pumping?

CONCLUSION
As noted above, prior to any further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality.

Very truly yours,

Thomas S. Virsik
Thomas S. Virsik

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Alameda, CA 94501

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18 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Advisory Committee

Re: Agenda Item 4.c
Chapter 6 of 180/400 GSP

Enclosed are: (1) the June 4, 2019 letter to the Planning Committee on Chapter 6 and (2) a copy of an email to the SVBGSA of June 11, 2019, including its enclosures. This letter supplements the prior comment letter based on comments and feedback from the consultant and others at the June 6 and June 10 Planning and Board of Directors meetings, respectively. *Page references are to the internal numbering of the Chapter as posted on June 17, 2019 [a different version of the Chapter was posted on June 14, 2019]*.

EWRIMS (SURFACE WATER DIVERSION) DATA NOT VETTED

The enclosed email explains the simple process the GSA has available to it to determine if the surface water diversions used in the water budgets are "double counting" water. To put it starkly, the publically available statements of water diversion near Speckles sent along with the email claims that the surface water diversion reported to the State is -- in the view of the filer -- actually groundwater. See response to "Additional Remarks" of the State form (enclosed with email). Presumably, the filer (an affiliate/proxy for the well-regarded local ag interest Tanimura & Antle) is also following local requirements and providing the exact same water extraction numbers to the MCWRA per local Ordinance.

Unless the GSA compares the (limited) set of eWRIMS data for the 180/400 with the MCWRA groundwater pumping reports for the nearly identical zone (the "Pressure"), the water budget numbers will erroneously assume water users in the 180/400 draw from two separate sources and hence their reduction to meet "sustainable yield" may be inaccurate. SGMA requires the "best available" data and transparency, which would not be met and the Plan may fail at DWR if the GSA continues to ignore the data and simple analytical approach[1] at its fingertips.

[1] The MCWRA reports are tied to wells while the State reports are tied to land, but both require monthly extraction numbers, which can be directly compared. For example, a diversion for water use near Speckles that reports surface water diversions in succeeding calendar months of 115.2, 229.4, and 425.7 AF and a MCWRA report for a well near Speckles that reports groundwater extractions in succeeding calendar months of 115.2, 229.4, and 425.7 AF must be the same water. It should not be included twice in the water budget analyses.

The historical water budget reports surface water diversions on the order of nearly 10,000 AFY, which is a magnitude material to projecting a reliable sustainable yield. Chapter 6 at Tables 6-5 and 6-16, pages 10 and 18.

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS ABOUT CURRENT PROJECTS

The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15, pages 36 and 17. Consultant Williams explained that the delta is due (1) to the seawater intrusion projects (CSIP, SRDF) coming online during the historical period and (2) an assumed current and future "100%" level of performance of the. Again, what does the "best available" data show about the efficiency or performance of the MCWRA projects? If the data compiled by the MCWRA for its projects reflect a 50% or a 25% level of efficiency, then the model should use that metric instead of assuming the projects will magically perform far better than they have to date.

CONCLUSION

As noted in my prior letter and email and above, prior to further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality such as surface water diversions and project performance reality. The real danger for the Salinas Valley lies not in whether DWR accepts or approves the GSP, but in intelligently considering and selecting programs and management actions (a later chapter of the GSP) based on factious assumptions and projections about current project efficiency and wet water use/availability (whether labeled ground or surface). It is preferable to proceed with care than risk committing to projects or management actions that will either not lead to or perhaps even make the attainment of sustainability less likely.

Very truly yours,

Thomas S. Virsik

Thomas S. Virsik

Encl.
June 4, 2019 letter to GSA Planning Committee
June 11, 2019 email to GSA re eWRIMS and MCWRA

Thomas S. Virsik
ATTORNEY AT LAW
510-508-1530 | thomasvirsiklaw@gmail.com

4 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Planning Committee

Re: Agenda Item 4.b
Chapter 6 of 180/400 GSP

The below are comments and suggestions for the draft Chapter 6 of the 180/400 GSP. As presented, the draft Chapter fails to meet the minimum requirements of SGMA, lacking literally the word "overdraft" in its text. Emergency GSP Reg. 354.18(b)(5) (the historic, current, and projected water budgets must include quantification of overdraft when basin deemed in overdraft per Bulletin 118).[1]

NOTE ON REFERENCES
For ease of tracking (given the content will eventually be in other agenda packets), the following format is used: xx/yy, in which xx is the page of the Chapter and yy is the page of the paginated packet. Both numbers are found on the right-hand corner of the page.

CHAPTER SKIRTS AROUND IMPORTANT SUSTAINABLE YIELD CALCULATION
Chapter 8 revealed that the future sustainable yield of the entire Valley is estimated at 494,000 AFY. Chapter 8 19/196 (at Planning Committee). What is the current sustainable yield for the 180/400? That specific query does not appear addressed in draft Chapter 6. At 8.6.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. 22/41. The text equates that to a 10% reduction in pumping from the historical average.

The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. Those values come from the chart for the historical groundwater budget. 19/38[2]. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values in the parallel summary chart (20/39), the current sustainable yield appears to be 52,000 AFY for the 180/400. I.e., delta between inflows and outflows at Tables 6-18, 6-19, and 6-20 (109,300 - 57,300 = 52,000). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is near 50%. While sustainable yield is not "sustainability" itself, the

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The "black box" quality of the SVIHM -- at least in its current state when it cannot be publicly peer reviewed by third parties -- undermines the credibility of the 180/400 GSP. A GSP based on assuming seawater intrusion radically decreases while pumping increases strains credulity. It is possible that the model is "correct" per its myriad assumptions and interconnections used to project results, if only one could review and reality test all of them. But at least as recited in draft Chapter 6, its calculation of a 7% reduction in pumping to balance the 180/400 comes across as far-fetched and unrealistic.

On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft.

> If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 sub basin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP.

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CONCLUSION
As noted above, prior to any further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality.

Very truly yours,

Thomas S. Virsik
Thomas S. Virsik

Gmail

Thomas S. Virsik <thomasvirsiklaw@gmail.com>

EWRIMS and MCWRA reports

Thomas S. Virsik <thomasvirsiklaw@gmail.com> Tue, Jun 11, 2019 at 2:10 PM
To: Gary Petersen <peterseng@svbgsa.org>

Gary,

For Williams' attention per his remarks yesterday that the nature of the reporting to (1) eWRIMS and (2) the MCWRA on water extractions was dissimilar (and hence could not be readily cross-checked for double counting). I vehemently disagree.

I have attached a T&A state report (three years, including the map showing location -- all from eWRIMS). I selected it at random. It claims to be using groundwater, by the way, at "Additional Comments." [I think the word "fights" is supposed to be "rights"]

One can make a direct comparison of the monthly amounts reported in the MCWRA and State databases. If any two reports (one from eWRIMS and the other from MCWRA) arguably within the same sub-basin reflect the exact same amounts for 1/17, 2/17, 3/17 etc. then there is double counting that skews (Ms. Isakson's word) the calculation of sustainable yield and pumping reductions. One need not correlate precise APN's or well codes. I can -- for my own clients whose MCWRA reports I possess-- do such a month by month comparison (none of which relate to the 180/400). I have made this comment in public before, but perhaps it was not understood.

Given the GSA has access to the MCWRA records, it can and must do the same comparison for the limited number of 180/400 eWRIMS statements. Chapter 8 draft Table 8-9. It's simple, yet necessary to meet the "best available" standard. And it leads to a better and more reliable real-world outcome based on accurate water use / yield numbers. No part of the comparison involves determining any "water right" or claim thereto.
--
Thomas S. Virsik
Attorney at Law

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4 attachments

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2015.pdf
73K

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2016.pdf
80K

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2017.pdf
80K

Maps from S014885.pdf
85K

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2015

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 05/31/2016

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3-4. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		3.017	0	3.017
February		2.637	0	2.637
March		14.177	0	14.177
April		9.469	0	9.469
May		8.465	0	8.465
June		13.554	0	13.554
July		14.954	0	14.954
August		4.292	0	4.292
September		0	0	0
October		0	0	0
November		0	0	0
December		0	0	0
Total		70.565	0	70.565
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
8e. Water transfered	No
8f. Quantity transfered (Acre-Feet)	
8g. Dates which transfer occurred	/ to /
8h. Transfer approved by	

Water Supply Contracts

8i. Water supply contract	No
8j. Contract with	
8k. Other provider	
8l. Contract number	
8m. Source from which contract water was diverted	
8n. Point of diversion same as identified water right	
8o. Amount (Acre-Feet) authorized to divert under this contract	
8p. Amount (Acre-Feet) authorized to be diverted in 2015	
8q. Amount (Acre-Feet) projected for 2016	
8r. Exchange or settlement of prior rights	
8s. All monthly reported diversion claimed under the prior rights	
8t. Amount (Acre-Feet) of reported diversion solely under contract	

5. Water Diversion Measurement		
a.	Measurement	Water directly diverted and/or diverted to storage was measured
b.	Types of measuring devices used	Propeller Meter
c.	Additional technology used	Flow Totalizer
	Description of additional technology used	
d.	Who installed your measuring device(s)	Representative using manufacturer's recommendations
e.	Make, model number, and last calibration date of your measuring device(s)	Water Specialties, Propeller meter
f.	Why direct measurement using a device listed in Section 1 is "not locally cost effective"	
	Explanation of why use of devices and technologies listed in Section 1 are "not locally cost effective"	
g.	Method(s) used as an alternative to direct measurement	
	Explanation of method(s) used as an alternative to direct measurement	

6. Purpose of Use	
Irrigation	661.90 Acres Vegetables

7. Changes in Method of Diversion

8. Conservation of Water		
a.	Are you now employing water conservation efforts?	Yes

	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates.
b.	Amount of water conserved	Acre-Feet
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

11a. Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Ron
Last Name	Yokota
Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2016

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 08/03/2018

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	**Area Irrigated (Acres)**	**Primary Irrigation Method**
Vegetables	Yes	661.90	Sprinkler

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		0	0	0
February		0	0	0
March		0	0	0
April		5.059	0	5.059
May		11.164	0	11.164
June		19.857	0	19.857
July		25.109	0	25.109
August		23.773	0	23.773
September		19.856	0	19.856
October		16.781	0	16.781
November		0	0	0

December		0	0	0
Total		121.599	0	121.599
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2016	
6p. Amount (Acre-Feet) projected for 2017	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M010336
This Device/Method was used to measure water during the current reporting period	
M1. Briefly describe the measurement device or method	propellor meter
M2. Nickname	
M3. Type of device / method	Flow meter (propeller)
M4. Device make	McCrometer
M5. Serial number	932573-8

M6. Model number	
M7. Approximate date of installation	04/13/2016
M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	11/01/2015
M10. Estimated accuracy of measurement	5%
M11. Description of calibration method	Calibrated to manufaturers specifications before installation manufacturer representative
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	
M14. Phone number	
M15. Email	
M16. Qualifications of the individual	California-licensed contractor authorized by the State License Board for C-57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps
M17. License number and type for the qualified individual above and/or any other relevant explanation	
M18. Type of data recorder device / method	
M19. Data recorder device make	
M20. Data recorder serial number	
M21. Data recorder model number	
M22. Data recorder units of measurement	
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	
M26. I report my diversion or storage date by telemetry to the following website	
M27. I have attached additional information on the method I used to calculate the volume of water	
M28. Describe any documents related to this measurement device or method that are attached to this water use report	

8. Conservation of Water

a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Anthony
Last Name	Duttle

Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2017

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 08/03/2018

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	**Area Irrigated (Acres)**	**Primary Irrigation Method**
Vegetables	Yes	661.90	Sprinkler

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		0	0	0
February		0.476	0	0.476
March		6.191	0	6.191
April		8.05	0	8.05
May		27.526	0	27.526
June		27.296	0	27.296
July		24.129	0	24.129
August		0.762	0	0.762
September		3.002	0	3.002
October		41.776	0	41.776
November		0.003	0	0.003

December		1.233	0	1.233
Total		140.444	0	140.444
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2017	
6p. Amount (Acre-Feet) projected for 2018	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M010336
This Device/Method was used to measure water during the current reporting period	Yes
M1. Briefly describe the measurement device or method	propellor meter
M2. Nickname	
M3. Type of device / method	Flow meter (propeller)
M4. Device make	McCrometer
M5. Serial number	932573-8

M6. Model number	
M7. Approximate date of installation	04/13/2016
M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	11/01/2015
M10. Estimated accuracy of measurement	5%
M11. Description of calibration method	Calibrated to manufaturers specifications before installation manufacturer representative
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	
M14. Phone number	
M15. Email	
M16. Qualifications of the individual	California-licensed contractor authorized by the State License Board for C-57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps
M17. License number and type for the qualified individual above and/or any other relevant explanation	
M18. Type of data recorder device / method	
M19. Data recorder device make	
M20. Data recorder serial number	
M21. Data recorder model number	
M22. Data recorder units of measurement	
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	
M26. I report my diversion or storage date by telemetry to the following website	
M27. I have attached additional information on the method I used to calculate the volume of water	
M28. Describe any documents related to this measurement device or method that are attached to this water use report	

8. Conservation of Water

a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates.
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Anthony
Last Name	Duttle

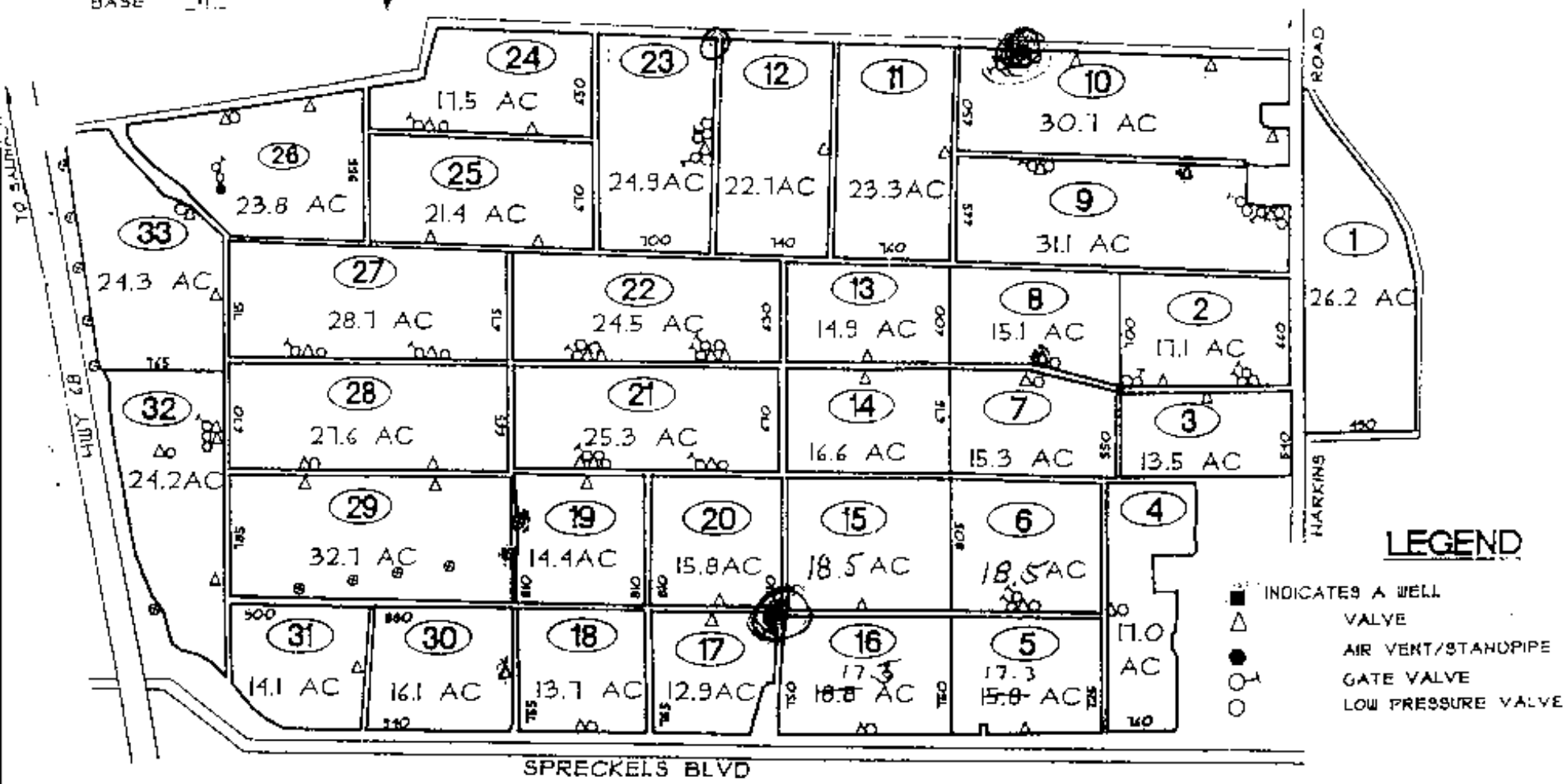
Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

SO14885

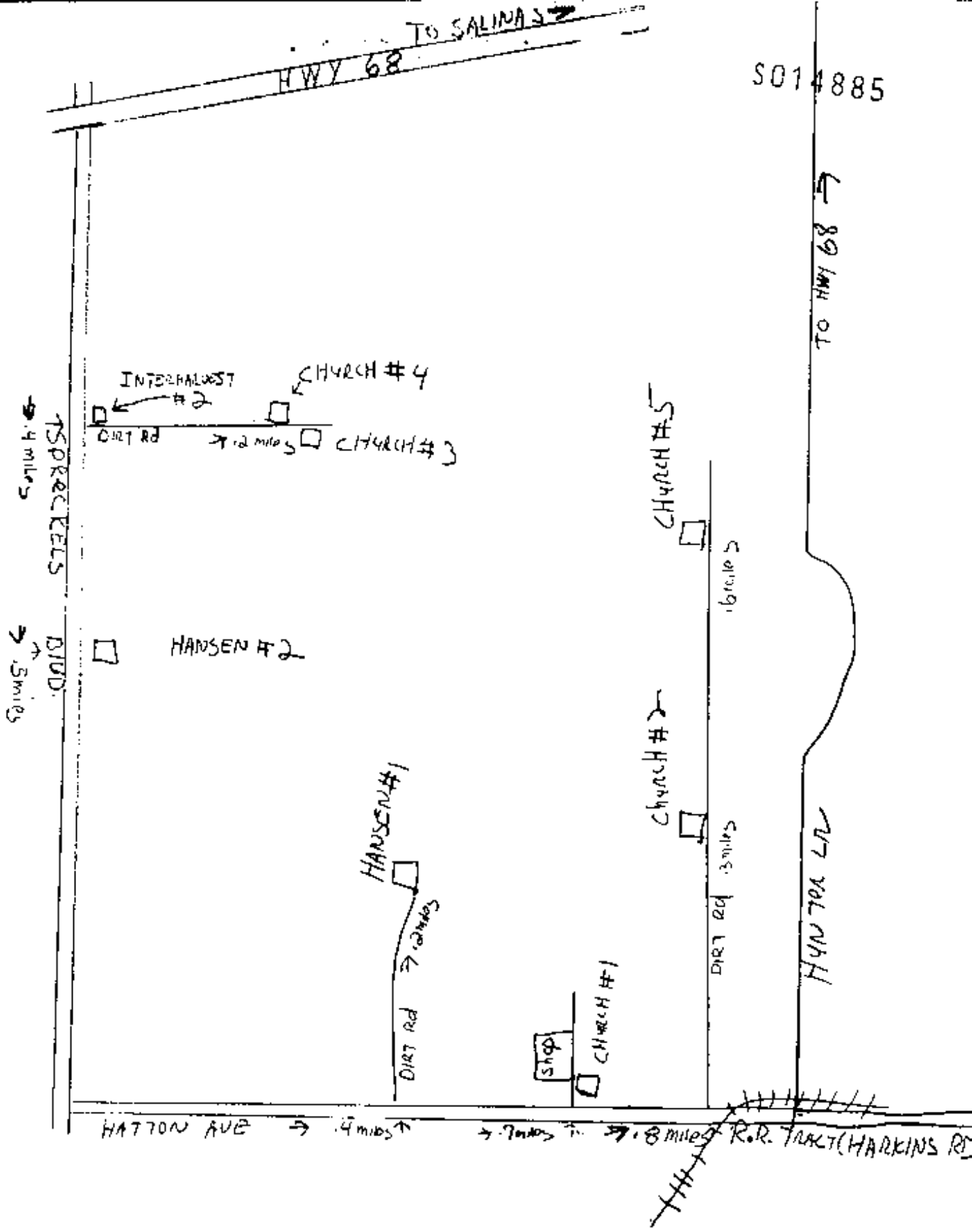
COUNTY 21
TOWNSHIP 15S
RANGE 3E
SECTION 20
BASE M

SPRECKELS RANCH
TANIMURA & ANTLE, INC.

SURVEYED 1982. REVISED 1984 & 1988
MAPPED APRIL 1995
FILE: TASPRECK.DWG 1"=100'



677.2± ACRES NET CROP



TO SALINAS
HWY 68
S014885
TO HWY 68
INTERHARVEST #2
CHURCH #4
DIRT Rd
.2 miles
CHURCH #3
SPRECKELS BLVD
.4 miles
.5 miles
HANSEN #2
CHURCH #5
.6 miles
CHURCH #2
.3 miles
DIRT Rd
HUNTER LN
HANSEN #1
.2 miles
DIRT Rd
CHURCH #1
shop
HATTON AVE
.4 miles
.7 miles
.8 miles
R.R. TRACT (HARKINS RD

MARINA COAST WATER DISTRICT

11 RESERVATION ROAD, MARINA, CA 93933-2099
Home Page: www.mcwd.org
TEL: (831) 384-6131 FAX: (831) 883-5995

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2 July 2019

Mr. Gary Peterson
General Manager
Salinas Valley Basin Groundwater Sustainability Agency
1441 Shilling Place
Salinas, CA 93901

Mr. Derrik Williams
Montgomery & Associates
1232 Park Street, Suite 201B
Paso Robles, CA 93446

Dear Mr. Peterson and Mr. Williams,

Thank you for taking the time to meet with us and our SGMA consultant EKI Environment & Water Inc. regarding Draft Chapter 6 (Water Budgets) of the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (180/400 Subbasin GSP) on June 19, 2019. This letter provides a written summary of our comments on Draft Chapter 6. These comments incorporate information discussed during our meeting and provide suggested draft language for inclusion in Chapter 6, based upon our discussions.

MAJOR COMMENTS

1. **Estimated Sustainable Yield Inconsistent with Sustainable Groundwater Management Act ('SGMA")**

The term "sustainable yield" is defined under Sustainable Groundwater Management Act (SGMA) as "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply <u>without causing an undesirable result.</u>"

Additionally, on Page 24 of Department of Water Resources' Best Management Practices for the Sustainable Management of Groundwater states the following:

> "[w]ater budget accounting information should directly support the estimate of sustainable yield for the basin and include an explanation of how the estimate of sustainable yield will allow the basin to be operated to avoid locally defined undesirable results. The explanation should include a discussion of the relationship or linkage between the estimated sustainable yield for the basin and local determination of the sustainable management criteria (sustainability goal, undesirable results, minimum thresholds, and measurable objectives)."

However, as discussed during our meeting, we understand that due to modeling limitations, data gaps, and uncertainties regarding future projects and management actions, the GSP will not attempt to estimate the "sustainable yield" of the 180/400 Subbasin, as defined under SGMA. Rather, the GSP will provide a gross estimate of the total current and future fresh groundwater inflows[1], in the absence of any additional groundwater augmentation project (defined herein as the "GSP Sustainable Yield"). The GSP Sustainable Yield effectively provides an "upper bound" on the sustainable yield of the basin (i.e., assuming no water is added to the basin), but it does not represent the actual amount of groundwater that can be extracted without creating undesirable results within the 180/400 Subbasin. The GSP Sustainable Yield will also not meet all of the sustainable management criteria identified in Chapter 8, and does not address inland gradients that will limit the Monterey Subbasins to achieve sustainability. For example, the information presented in Chapter 6 indicates that seawater intrusion will continue to occur under the identified sustainable yield, the management objective for seawater intrusion identified in Chapter 8 is the 500 milligrams per liter (mg/L) chloride contour at Highway 1.

We understand that SVBGSA intends to propose projects to halt seawater intrusion (e.g., groundwater extraction/injection barriers) and that such projects will affect the Sustainable Yield of the basin. Given that such projects will affect the sustainable yield, we understand that these values cannot be finalized before completing the project and management actions analyses, and selecting which projects will ultimately be implemented. As such we recommend that, the draft water budget chapter include additional language that stresses the difference between the estimated GSP Sustainable Yield and the quantity of groundwater that can be withdrawn without causing undesirable results and meeting sustainable management criteria.

We recommend that the following language be included:

The "sustainable yield estimate" presented in the draft Water Budget chapter does not consider all of the sustainability indicators or sustainable management criteria. As such, it is not equivalent to the quantity of groundwater that can be extracted without causing undesirable results. The plan for achieving sustainability in the basin will be addressed through projects and management actions, where SVBGSA will compare the projected and actual outcomes of project and management actions against sustainable management criteria and ultimately evaluate how much groundwater can be extracted, based upon the projects and management actions that are selected and implemented.

2. The 180/400 Subbasin GSP must not preclude the Monterey Subbasin from Achieving Sustainability

A summary of the historical, current, and future water budget calculations presented in Chapter 6 is included in Attachment A. As shown in Attachment A, net groundwater inflows from the Monterey Subbasin to the 180/400 Subbasin were assumed to be 3,000 acre-feet per year (AFY) in the historical and current water budgets, and estimated to be 5,500 to 6,200 AFY in the projected water budgets. The historical net groundwater inflow estimates appear to be based upon data collected from 1970 to 1994. Review of current data indicates that these values likely underestimate cross-boundary flows from the Monterey Subbasin, and likely do not include flows in the Deep Aquifer where inland gradients exist.

[1] These inflows represent the amount of groundwater that can be withdrawn without decreasing the overall groundwater storage in the basin.

As stated in our comments to draft Chapter 8, the 180/400 Subbasin GSP must address inland gradients and cross-boundary groundwater flows from the Monterey Subbasin into the 180/400 Subbasin. The GSP fails to mention that current and projected increases in groundwater extraction in the 180/400 Subbasin are being sustained, in part, by cross-boundary groundwater flows from the Monterey Subbasin, where seawater intrusion is already occurring. The GSP for the 180/400 Subbasin may not create conditions that preclude the Monterey Subbasin from reaching sustainability.

As stated in our comments to draft Chapter 8, unless alternative water supplies are provided by SVBGSA to the Monterey Subbasin, groundwater inflows to the Monterey Subbasin must be adequate to sustain groundwater extraction by Marina Coast Water District (MCWD) from its water production wells.

We recommend that the following language be added to the GSP*:*

Pursuant to GSP Regulation 350.4 (f), the 180/400 Subbasin GSP will consider the effects of its implementation on the adjacent Monterey Subbasin, and its ability to achieve and maintain sustainability.

> *"A Plan will be evaluated, and its implementation assessed, consistent with the objective that a basin be sustainably managed within 20 years of Plan implementation without adversely affecting the ability of an adjacent basin to implement its Plan or achieve and maintain its sustainability goal over the planning and implementation horizon."*

The Monterey and 180/400 Subbasins are hydraulically connected. Therefore, the sustainable yield and sustainable management criteria for the 180/400 Subbasin and the Monterey Subbasin must consider the effects of cross-boundary groundwater flows between subbasins and/or the provision of alternative water supplies. The Monterey Subbasin GSP will also include projects and management actions that could benefit both subbasins.

In addition, we recommend that the following information/language be added to the GSP regarding:

(a) the 1993 Fort Ord Annexation Agreement[2] and the 1996 Marina Lands Annexation Agreement[3]

(b) groundwater use by MCWD and others within the Monterey Subbasin.

1993 Fort Ord Annexation Agreement

Under the 1993 Fort Ord Annexation Agreement the MCWRA annexed the Fort Ord lands into Zones 2 and 2A and allocated to the Army 6,600 acre-feet per year of potable groundwater from the Salinas Valley Groundwater Basin. The Army paid an annexation fee of $7.4 million to be used by MCWRA to complete the design of the Castroville Seawater Intrusion Project (CSIP). In addition, the Army received a $400,000 credit for money spent on planning and information for the EIR/EIS for CSIP, the Salinas Valley Reclamation Project, and the Fort Ord Annexation. The September 10, 1993 "Annexation Assembly and Evaluation Report for the Annexation of Fort Ord by the Monterey County Water Resources Agency,"

[2] "Agreement between the United States of America and the Monterey County Water Resources Agency concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency, Agreement No. A-06404", dated September 21, 1993,

[3] "Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands" dated March 1996 (1996 Annexation Agreement), among the MCWRA, the Marina Coast Water District, J.G. Armstrong Family Members, RMC Lonestar (now CEMEX), and the City of Marina,

which was incorporated as Appendix D to the 1993 Annexation Agreement, provides the background and justification for the annexation. The Executive Summary to that report states in part the following:

> The purpose of this annexation by [MCWRA] is to provide the basis for a long term, reliable, potable water supply to supply the Army's residual mission at Fort Ord after it is realigned per the Base Closure and Realignment Act of 1990. Annexation will also facilitate the disposal and reuse of the portions of Fort Ord not needed to support the Army's residual mission.

Section 4, Terms and Conditions of the 1993 Annexation Agreement state the following:

> 4.c. After execution of this agreement and until Project Implementation[4], Fort Ord/POM Annex/RC may withdraw a maximum of 6,600 acre-feet of water per year from the Salinas Basin, provided no more than 5,200 acre-feet per year are withdrawn from the 180-foot aquifer and 400-foot aquifer. The 6,600 and 5,200 acre-feet thresholds correspond to the annual peak (1984) and recent average (1988-1992) amounts of potable water Fort Ord has withdrawn from the Salinas Basin (does not-include pumpage-from the-non-potable golf course well in the Seaside Basin). …The MCWRA agrees not to object to any Fort Ord/POM Annex/RC withdrawal under 6,600 acre-feet per year, except in compliance with California Water Code Appendix, Chapter 52, Section 22.
>
> 4.g. Should future litigation, regulation or other unforeseen action diminish the total water supply available to the MCWRA, the MCWRA agrees that it will consult with the Fort Ord/POM Annex Commander. Also, in such an event, the MCWRA agrees to exercise its powers in a manner such that Fort Ord/POM Annex/RC shall be no more severely affected in a proportional sense than the other members of the Zones.
>
> 4.h. If prior to Project Implementation, any Fort Ord/POM Annex well (including any located in the Seaside Basin) becomes contaminated with seawater, or is adversely affected by regulatory or legal action, the MCWRA: shall cooperate with the Government in finding an interim water supply; shall assist the Government in any permit processes necessary to obtain such an interim water supply; and shall provide the same services to the Government as it would to any other municipal water supplier in the Zones under similar circumstances. The Government will bear the costs of obtaining such an interim water supply. Such costs will not include the cost of MCWRA staff time in providing services to the Government hereunder. The MCWRA will continue to monitor the rate of seawater intrusion, and will keep the Fort Ord/POM Annex Commander informed as to: the rate of seawater intrusion; the progress of plans for its Project; and the estimated remaining life of the Fort Ord/POM Annex wells. The MCWRA shall pass to the Fort Ord/POM Annex Commander

---

[4] As defined in paragraphs 2.j. and 2.k. of the Agreement:

> 2.j. Project: A future, long term, reliable, potable water system for the POM Annex/RC and other areas; the Project will provide at least 6,600 acre-feet per year which will permit all Salinas Basin wells on Fort Ord Lands to be shut down except during emergencies; stopping all pumping from the Salinas Basin on Fort Ord Lands is necessary to mitigate seawater intrusion; the MCWRA is currently developing such a Project to supply water to the Fort Ord Lands, Marina, Salinas, Toro Park, and perhaps other areas in north Monterey County; it is also possible that another water agency, district, utility, or purveyor could develop a smaller scale Project to supply water for just the Fort Ord Lands;
>
> 2.k. Project Implementation: The potable water system cited in paragraph 2.j. shall be considered "implemented" upon both the completion of construction and the deli very of potable water to POM Annex/RC from the completed water system;

> any information they may obtain related to the continuing yield of Fort Ord/POM Annex wells located in the Seaside Basin.

1996 Marina Lands Annexation Agreement

Under the 1996 Marina Lands Annexation agreement the MCWRA annexed MCWD's Central Marina service area into Zones 2 and 2A and allocated to MCWD 3,020 AFY from the Salinas Valley Groundwater Basin for use in the Central Marina service area. MCWD paid a net annexation fee of $2,449,410 after receiving a $400,000 credit against the annexation fee. Section 1.1, Purpose, of the 1996 Annexation Agreement states:

> The purpose of this Agreement and Framework is to help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin through voluntary commitments by the Parties to limit, conserve and manage the use of groundwater from the Salinas River groundwater basin, and to provide the terms and conditions for the annexation of certain territory in the Marina area to the [MCWRA's] benefit assessment Zones 2 and 2A as a financing mechanism providing additional revenues to the [MCWRA] to manage and protect the groundwater resource in the Salinas River Groundwater Basin and to reduce seawater intrusion.

Terms and conditions in Sections 5 and 8 of the Agreement states:

> 5.1.1 Commencing on the effective date of this Agreement and Framework and continuing until Mitigation Plan Implementation, MCWD will limit its withdrawal of potable groundwater from the Basin for land in the Marina area and outside the former Fort Ord Military Reservation to 3,020 afy of potable groundwater, and only such additional quantities as are permitted by this paragraph 5.1. MCWRA's groundwater resource planning for the existing MCWD service area will be based on the latest information and projections contained in the MCWD Water Plans, using 3,020 afy as a planning guideline for potable water use.
>
> 5.1.1.1 After Compliance with all applicable requirements of law, including but not limited to CEQA, MCWD may improve the interconnection between the MCWD water system and the water system serving Fort Ord, to provide for join, conjunctive and concurrent use of all system facilities to serve Fort Ord and other areas served by MCWD, and the other Parties will cooperate on MCWD's increased withdrawal of potable groundwater by up to 1,400 afy from the 900-foot aquifer to enable the increased withdrawals from 5200 afy to 6600 afy for use on Fort Ord, as provided in paragraph 4.c. of the September 1993 Agreement between the The United States of America and the MCWRA.
>
> 5.2. No objection by MCWRA to MCWD withdrawals except pursuant to section 22 of Agency Act. The MCWRA shall not object to any withdrawal by MCWD which is mentioned in section 5.1 above, except in compliance with section 22 of the Agency Act. All groundwater withdrawn from the Basin by MCWD may be used only within the Basin.
>
> 8.1. Equal treatment by MCWRA and MCWD. If future litigation, regulation or other unforeseen action diminishes the total water supply available to MCWRA, MCWRA agrees that it will exercise its powers so that MCWD, Armstrong and Lonestar shall be no more severely affected in a proportional sense than other lawful users of water from the Zones, based on the right before the imposition of any uniform and generally applicable restrictions as described in paragraph 8.2 to use

at least the quantities of water from the Basin described in paragraphs 5.1., 6.9., and 7.2. MCWRA shall not at any time seek to impose greater restrictions on water use from the Basin by MCWD, Armstrong or Lonestar than are imposed on users either supplying water for use or using water within the city limits of the City of Salinas. MCWD, Armstrong and Lonestar will comply with any basin-wide or area-wide water allocation plans established by the MCWRA which include MCWD, Armstrong and Lonestar, and which do not impose on use of water on the lands described in Exhibits "B", "C", and "D" restrictions greater than are imposed on users either supplying water for use or using water within the City of Salinas, and which satisfy the requirement of paragraph 5.2 of this Agreement and Framework.

G***roundwater Use by MCWD within the Monterey Subbasin for Fort Ord Lands and Marina Lands***

On October 23, 2001, the U.S. Government through the Secretary of the Army made an economic development conveyance by quitclaiming the following assets to FORA and the next day on October 24, 2001, FORA deeded those very same assets to MCWD: (1) all of Fort Ord's water and sewer infrastructure; (2) under the 1993 Fort Ord Annexation Agreement, 4,871 AFY of the Army's 6,600 AFY of MCWRA groundwater allocation with the Army reserving 1,729 AFY; and (3) 2.22 MGD of the Army's prepaid wastewater treatment capacity under the Army-MRWPCA Agreement. The Army and MCWD have a long-term water supply contract whereby MCWD is authorized to use the Army's reserved groundwater allocation to serve Federal activities within the former Fort Ord. Consequently, MCWD either owns or manages the 9,620 AFY of the MCWRA groundwater allocations for the benefit of both Fort Ord Lands and Marina Lands.

MCWD has produced 4,300 AFY of groundwater, on average, over the 15 years prior to the historic drought of 2014-2017. Approximately, 1,300 AFY has been produced from the lower 180-foot and 400-foot aquifers, and 2,000 AFY has been extracted from the deep aquifers. Total groundwater extraction from the Monterey Subbasin over the 5 years prior to the historical drought is estimated to be approximately 4,500 AFY on average[5]. Annual production by MCWD for the period between 2000 and 2018 are provided in Attachment B.

3. Uncertainty in Water Budget Estimate of Groundwater Inflow Components

As part of the groundwater inflow components of the water budget, three components entail percolation of water from the land surface down to groundwater, including Streamflow Percolation (Section 6.5.1), Deep Percolation of Precipitation (Section 6.5.2), and Deep Percolation of Excess Applied Irrigation (Section 6.5.3). The fourth source of groundwater inflows included in the groundwater budget is Subsurface Inflows from Adjacent Subbasins (Section 6.5.4), which come from the Forebay Subbasin and the Monterey Subbasin.

There appears to be significant uncertainty in the quantity of each of these inflows as evidenced by the variability in the estimate of deep percolation between the Historical (97,300 AFY) and Future Projected (148,000 to 153,000 AFY) water budgets (see Attachment A). Further, the conceptualization of sources of inflow to the groundwater system is at odds with the description of recharge sources in the Draft Chapter 4. Specifically, Chapter 4 (Section 4.4.3) describes recharge in the 180/400 Subbasin as follows:

[5] Estimated based on Public Water Systems Statistic Survey (i.e. Form 38) data obtained from the Department of Water Resources.

> "Although Figure 4-9 shows some areas of good potential recharge in the 180/400-Foot Aquifer Subbasin, recharge to the productive zones of the Subbasin is very limited because of the low permeability Salinas Valley Aquitard. It is unlikely that any significant surficial recharge in the 180/400-Foot Aquifer Subbasin reaches the productive 180-Foot Aquifer or the 400-Foot Aquifer."

The amount of recharge stated to occur from the deep percolation sources (97,300 AFY) far outweighs the amount coming from subsurface inflow (20,000 AFY total), which is inconsistent with the description of the recharge sources in Chapter 4.

We understand that there is insufficient information currently available to accurately assess these inflow components. As such, we recommend that the GSP acknowledge this uncertainty and identify it as a data gap. The GSP should provide a plan to further assess both deep percolation and other basin inflow components. Doing so may reveal significantly different recharge sources for the shallow unconfined aquifer system versus the deeper aquifer system which could have important management implications and be critical for evaluating the effectiveness of potential recharge projects.

4. Water budget Information Should be Developed for each Principal aquifer

Water budget information for each principal aquifer is necessary to verify that proposed future operations of the basin, including implementation of projects and management actions, will not lead to undesirable results in each principal aquifer. Seawater intrusion is occurring in both the 180 Foot Aquifer and the 400 Foot Aquifer, and inland gradients exist within the Deep Aquifer. In order to reach sustainability, hydraulic gradients in each of these aquifers will need to be reversed either through decreasing groundwater extraction and/or future supply augmentation projects. As such, water budgets for each aquifer must be established to verify that undesirable effects do not occur.

We understand that information related to groundwater extraction within individual aquifer zones is currently limited and that water budgets cannot be developed for each principal aquifer zone. As such, we recommend that the GSP acknowledge this uncertainty and identify it as a data gap. The GSP should provide a plan to further assess rates of extraction and inflows within principal aquifer zones so undesirable results, such as seawater intrusion can be mitigated. This information is critical, as achieving sustainability in the basin requires implementation of projects and management actions, which will need to be evaluated against sustainable management criteria in each principal aquifer.

5. Inclusion of "Baseline Condition" Projected Water Budget

Historic and projected water budgets presented in the GSP are summarized in attached Attachment A. As shown on this attachment, there is significant variability between groundwater inflow components estimated on the basis of historical versus projected future conditions. It is our understanding based upon our discussion, that this discrepancy is related to the method of analysis versus actual projected change in climate[6]. As such, we recommend that the GSP include a future water budget assuming historical "baseline hydrologic conditions" in addition to the 2030 and 2070 climate change scenarios. This information is critical to understanding how much climate change uncertainties affect the basin's projected sustainable

[6] Historical conditions are estimated on the basis of an analytical model and projected future water budgets are estimated utilizing the SVIHM Operational Model.

yield, given the significant differences in the methods of analysis and the dramatic increase in estimated deep percolation in future water budget, as discussed above.

Inclusion of this scenario is consistent with GSP Regulations 354.18, (c) (3), which state:

> "Projected water budgets shall be used to estimate future baseline conditions of supply, demand, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components. The projected water budget shall utilize the following methodologies and assumptions to estimate future baseline conditions concerning hydrology, water demand and surface water supply availability or reliability over the planning and implementation horizon:
>
> (A) Projected hydrology shall utilize 50 years of historical precipitation, evapotranspiration, and streamflow information as the baseline condition for estimating future hydrology. The projected hydrology information shall also be applied as the baseline condition used to evaluate future scenarios of hydrologic uncertainty associated with projections of climate change and sea level rise."

6. Qualification of Data Gaps and Uncertainty

It is understandable that a GSP due January 31, 2020, will have data gaps and will be subject to modeling limitations, which create uncertainty. The District understands that SVBGSA intends to prepare this GSP based on the current best available science and information, per the State policy of sustainable, local groundwater management (Water Code § 113). It is important that each data gap, the scope of the resulting uncertainty caused by the data gap specific to the decisions being made in this GSP, and the steps to close the data gap be identified in the GSP. MCWD will work with the SVBGSA to help close the data gaps for adaptive, sustainable management of the 180/400 and Monterey Subbasins.

OTHER COMMENTS AND QUESTIONS

Section 6.2

It appears that in the historical water budget, the surface water budget is limited to just the river channels (i.e., Salinas River, other tributaries, and agricultural drains). It seems that there should be a land surface balance, like there is in the SVIHM-based Projected Water Budget, that estimates precipitation and irrigation percolation based on evapotranspiration (ET) and land use.

Section 6.6.2

Riparian ET rates were described to be 20 AFY/acre per personal communications with Rhode, whose detailed information was not provided in the Chapter's references. The rates were then assumed to be 16 AFY/acre in the water budget calculation without further justification. Riparian ET rates should be better substantiated, especially since the resulting riparian ET values are significant compared to the average change in storage over the historical period.

In addition, it is unclear why riparian ET is considered as an outflow from groundwater, rather than from surface water.

Sections 6.8.4, 6.9, 6.10.5, 6.10.6 and associated tables

Estimated annual seawater water intrusion inflows and annual changes in storage are subtracted from total groundwater pumping to estimate the sustainable yield. This methodology is somewhat confusing to the reader, as it presumes that the change in storage is negative. To avoid confusion, we recommend that changes in storage and seawater intrusion be identified as negative in throughout the chapter, or further clarifying language be included. For example:

- Tables 6-20 and 6-31: We recommend that these tables show the change in storage and seawater intrusion as negative values.
- Table 6-22: A note should be added to Table 6-22 indicating that although seawater intrusion is identified as an inflow to quantify the overall basin water budget, it is not considered part of the sustainable yield.
- Tables 6-27 and 6-28: It is unclear why seawater intrusion is not shown as an inflow component on these tables, given that it is shown as an inflow component in Table 6-25. These tables should be made consistent and clarify that although seawater intrusion is an inflow, it is not considered part of the usable groundwater or sustainable yield.
- Section 6.10.5 and Table 6-30: We suggest clarifying that change in groundwater storage discussed here are decreases in groundwater storage.

Table 6-22

Table 6-22 shows a decrease of only 600 AFY, on average, of groundwater in storage based on water level declines during the "current period" (2015-2017). This implies no real decline in water levels – is that what is seen?

Sincerely,

Keith Van Der Maaten

General Manager, Marina Coast Water District

Attachment A: Summary of SVBGSA 180/400 Foot Aquifer Subbasin Draft Groundwater Budget Calculations

Attachment B: MCWD Groundwater Production by Aquifer, 2000 - 2018

Attachment A. Summary of SVBGSA 180/400 Foot Aquifer Subbasin Draft Groundwater Budget Calculations

Groundwater Budget in Average Years		Historical	Current (a) (Table 6-19)	Current (a) (Table 6-22)	Future	Future
	Budget Period	***1995-2014***	***2015-2017***	***2015-2017***	***2030***	***2070***
Streamflow Deep Percolation	I-1	73,300	31,100	NR	71,541	71,706
Precipitation Deep Percolation	I-2	12,300	11,600	NR	76,333	81,777
Irrigation Deep Percolation	I-3	11,700	4,500	NR	-	-
Subsurface Inflows	I-4	20,000	20,000	NR	30,411	31,706
Total Freshwater Inflow	**I = sum I-1 to I-4**	**117,200**	**67,200**	**67,100**	**178,285**	**185,189**
Pumping	O-1	108,300	109,300	NR	115,349 (b)	120,644 (b)
Riparian Evapotranspiration	O-2	12,000	12,000	NR	-	-
Drain Flows	O-3	-	-	-	7,100	8,024
Flow to Streams	O-4	-	-	-	1,833	1,921
Groundwater ET	O-5	-	-	-	35,127	36,652
Subsurface Outflows	O-6	9,500	3,200	NR	25,440	24,887
Total Freshwater Outflow	**O = sum O-1 to O-5**	**129,800**	**124,400**	**130,800**	**184,849**	**192,128**
Seawater Intrusion	SI	-10,500	-10,500	-10,500	-3,465	-3,852
Change in Storage	DS = DFS - SI	-2,100	-46,800	-53,200	-4,584	-4,653
Change in Freshwater Storage	**DFS = I - O**	**-12,600**	**-57,300**	**-63,700**	**-8,049**	**-8,505**
Sustainable Yield	SY = O-1 + SC	95,700	52,000	NR	107,300	112,139
Error (c)		*1%*	*NR*	*40%*	*1%*	*1%*
Net flow from Monterey (d)		*3,000*	*3,000*	*NR*	*5,502*	*6,208*

Notes:
- = Items not applicable to the specific calculation method
NR = not reported
(a) Values are reported differently on Tables 6-19 and 6-22.
(b) This summary shows values from Table 6-27 and after. Values are reported differently on Table 6-26 .
(c) Calculated as the water budget imbalance as a percentage of outflow. For the current water budget, change in storage estimated from water levels were -600 AFY compared to -53,200 AFY as estimated by balancing the water budget.
(d) Net subsurface flow from the Monterey Subbasin as assumed or estimated in the analyses.

Attachment B. MCWD Groundwater Production by Aquifer, 2000 - 2018

Year	Groundwater Production (AFY)		
	180-Foot and 400-Foot Aquifers	Deep Aquifer	Total
1999	2,396	2,021	4,417
2000	2,371	2,194	4,565
2001	2,228	2,150	4,378
2002	2,137	2,239	4,376
2003	2,144	2,162	4,306
2004	2,423	2,261	4,684
2005	1,994	2,194	4,188
2006	2,509	1,786	4,295
2007	2,941	1,622	4,563
2008	2,269	1,833	4,102
2009	2,076	1,962	4,038
2010	2,389	1,744	4,133
2011	2,348	1,698	4,047
2012	2,345	1,829	4,174
2013	2,420	2,011	4,431
2014	1,658	2,368	4,026
2015	1,258	1,970	3,228
2016	1,195	1,830	3,025
2017	1,159	2,079	3,239
2018	1,129	2,276	3,405
Pre-drought Average, 2000-2014	*2,283*	*2,004*	*4,287*

August 5, 2019

Steve McIntyre, Chair
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Via email peterseng@svbgsa.org, camela@svbgsa.org

Subject: Comments on Groundwater Sustainability Plan (GSP) 180/400 foot
Chapter 6 Water Budget

Dear Chair McIntyre and members of the Board of Directors:

LandWatch appreciates the opportunity to comment on the GSP 180/400-foot Subbasin Chapter 6 Water Budgets.

As noted in the introduction to Chapter 6, many data gaps exist. These gaps include the unavailability of the USGS Historic Groundwater Model, double counting of annual groundwater and surface water pumping, lack of verifiable groundwater pumping data as addressed in our letter on GSP Chapter 7, and lack of data from the deep aquifer. Moreover, assumptions about climate change and average annual rainfall appear especially problematic in light of apparent discrepancies with California's Fourth Climate Change Assessment.

Given these uncertainties, to achieve sustainable yield—whatever that yield turns out to be—it may be necessary to significantly reduce groundwater pumping more than the 7% reduction contemplated in Chapter 6. It is therefore incumbent on the Agency to adopt a robust adaptive management strategy that establishes a conservative baseline reduction in pumping and adjusts pumping limits as data become available.

We offer these further comments:

Substantial uncertainty mandates a conservative estimate of sustainable yield.

The regulations provide that "uncertainty refers to a lack of understanding of the basin setting that significantly affects an Agency's ability to develop sustainable management criteria and appropriate projects and management actions in a Plan, or to evaluate the efficacy of Plan implementation, and therefore may limit the ability to assess whether a basin is being sustainably managed." (23 CCR § 351(ai).) We are concerned that the extensive data gaps and high level of uncertainty are inconsistent with the general principle that "groundwater conditions must be adequately defined and monitored to demonstrate that a Plan is achieving the sustainability goal for the basin." (23 CCR § 350.4(a).)

In light of the uncertainty and data gaps, we urge that the GSA adopt a conservative estimate of the sustainable yield in developing sustainable management criteria, projects, and management actions. For example, as between the two different and currently unreconciled sustainable yield calculations in Chapter 6, one based on the historic water budget (95,700 AFY) and one based on the projected water budget (107,200 AFY in 2030), we recommend that the GSA use the lower estimate of sustainable yield, at least until the historic and projected sustainable yields have been reconciled with a historic groundwater model.

We also recommend that the GSA further reduce that lower estimate with reference to some quantification of its uncertainty. For example, until the effect of double counting has been resolved, the 95,700 AFY historical budget sustainable yield should be reduced by the best estimate of this double counting error.

A conservative estimate of sustainable yield here is mandated by the requirement that "sustainable management criteria and projects and management actions shall be commensurate with the level of understanding of the basin setting, <u>based on the level of uncertainty and data gaps</u>." (23 CCR § 350.4(d).) We note that the minimum thresholds for sustainability indicators must be "<u>qualified by uncertainty</u> in the understanding of the basin setting." (23 CCR § 354.28(b)(1).) Measurable objectives must also "be <u>commensurate with levels of uncertainty</u>." (23 CCR § 354.30(c).) The SVGBGSA must "<u>take into account the level of uncertainty</u> associated with the basin setting when developing projects or management actions." (23 CCR § 354.44(d).) And in deciding whether to approve the Plan, DWR must consider "whether sustainable management criteria and projects and management actions are commensurate with the level of understanding of the basin setting, <u>based on the level of uncertainty</u>, as reflected in the Plan." (23 CCR § 354.4(b)(3).)

Uncertainty must be quantified.

As drafted, Chapter 6 discusses the uncertainty of the historic and current water budgets in section 6.9 and then separately discusses the uncertainty of the projected future water budget in section 6.10.8.

The quantitative discussion of the uncertainty of the historic and current water budgets in section 6.9 only assesses "net uncertainty." The "net uncertainty" concept is in effect limited to a comparison of calculated versus estimated change in storage. The discussion acknowledges that there has been no effort to determine the uncertainty of each historic water budget component. It is not clear that the "net uncertainty" concept adequately reflects the uncertainty that may be caused by data gaps.

For example, Chapter 6 now acknowledges as a data gap some amount of unresolved double counting of extractions caused by the practice of reporting extractions as both groundwater pumping and as surface water diversion. Such duplicate reporting would clearly bias the calculated change in storage, tending to minimize it. If this error also biases the estimated change in storage, then the "net uncertainty" concept is an insufficiently robust assessment of uncertainty because it would not account for the duplicate reporting error.[1] Alternatively, if the

[1] Estimated change in storage is based on groundwater levels and the storage coefficient. (Chap. 6, p. 17.) If the storage coefficient is determined with reference to the historic extraction data, then the double counting would infect both estimated and calculated change in storage.

estimated change in storage is independent of historic extraction data, then the relatively small reported "net uncertainty" of the historic budget masks the fact that the calculated storage change actually differs from the estimated storage. Similar considerations would apply to any water budget components for which there are data gaps, depending on whether and how they bias the change in storage determinations.

In sum, the "net uncertainty" concept in section 6.9 used to evaluate the historical water budge is an inadequate quantitative measure of uncertainty. Accordingly, it is not clear that the "net uncertainty" calculations actually support the conclusion that the historical budget is "reasonably reliable." (Chap. 6, p. 28.)

There is no quantitative assessment of the uncertainty of the projected water budget in Chapter 6. Section 6.10.8 merely offers the truism that models inherently contain some uncertainty.

The projected future water budget cannot be used to manage the basin without some quantitative assessment of its uncertainty. That assessment of uncertainty requires calibration of the model for the projected future water budget based on the historic water budget. In particular, the regulations require that the historical water budget include information that is "sufficient to calibrate and reduce the uncertainty of the tools and methods used to estimate and project future water budget information and future aquifer response to proposed sustainable groundwater management practices over the planning and implementation horizon." (23 CCR § 354.18(c)(2)(B).) However, we understand that because the USGS has not yet completed the historic model, the modeling of a future water budget has not yet been calibrated with reference to historic data.

Chapter 6 acknowledges this fundamental source of uncertainty by explaining that the projected water budget and the historical water budget are not "comparable" because they were developed using different approaches. (Chap. 6, p. 1.) The historical budget is based on compilation of past reports and the projected budget is based on the USGS model. The USGS model is not complete because it still lacks the historic model component. As Table 6-31 shows, there is a substantial variance in the sustainable yield determined with reference to the historical budget (95,700 AFY) and the sustainable yield determined through the projected future water budget (107,200). The difference may be increased to the extent that the historical budget overstates sustainable yield on the basis of double counting.

In sum, the major source of uncertainty is the substantial and unexplained variance between the sustainable yield derived from historical budget and the sustainable yield derived from the future budget. The mere acknowledgement that the historical and future water budgets are not "comparable" is not sufficient to justify any reliance on the projected future water budget. If the basin is to be managed on the basis of any consideration of a projected future water budget, then it is critical that there be some quantitative estimate of the uncertainty of the modeling of that projected water budget.

Assumptions regarding efficacy of future projects and management actions to address seawater intrusion in projected future sustainable yield should be spelled out.

We concur with Thomas Virsik's concerns about the projected future sustainable yield (June 4, 2019 letter from Thomas Virsik to the Planning Committee). In particular, Chapter 6 does not explain its assumption that seawater intrusion will be reduced from 10,500 AFY to 3,500 AFY by 2030, despite an increase in pumping and an increase in the change in storage. If this

assumption is based on the assumed efficacy of existing or future management actions and projects, then Chapter 6 should identify them and the basis for their assumed efficacy.

Future operations of existing projects may in fact be subject to substantial changes. For example, Chapter 6 states that the modeling of the projected future water budget assumes "the current approach to reservoir management taken by MCWRA." (Chap. 6, p. 30.) However, it is not clear that this assumption is warranted in light of the withdrawal of NOAA's Biological Opinion for the SVWP on February 20, 2019. Or for example, it is not clear whether and how the projected future water budget reflected the recent actions by the County to restrict pumping in the Area of Impact within the 180/400 Subbasin. The fact that the model projects that net pumping in 2030 and 2070 will be substantially greater than historical pumping suggests that the model assumes that the County's recent well moratorium in portions of the 180/400 Subbasin will not have any lasting effect on pumping amounts.

The purpose of the water budget is to inform decisions about what projects and management actions the SVGBGSA should implement to control undesirable effects, including seawater intrusion. Assuming a partial solution in the projected future water budget is unjustified unless the projects or management actions responsible for that partial solution are (1) outside the control of the SVGBGSA and (2) certain to be implemented by other parties. If projects or management actions responsible for that partial solution are within the control of the SVGBGSA, then they should be weighed against SVGBGSA's other options rather than being hard-wired into the water budget. If projects or management actions responsible for that partial solution are uncertain, then their uncertainty should be disclosed.

The increased reduction in groundwater levels in the projected future budget, compared to historic conditions, appears inconsistent with the projected lower levels of seawater intrusion.

Chapter 6 explains that "change in groundwater storage has two components in the Subbasin: change in groundwater elevation and seawater intrusion." (Chapter 6, section 6.2.3.) The historic water budget's 12,600 AFY change in storage consists of 2,100 AFY due to falling groundwater levels and 10,500 AFY due to seawater intrusion. (Table 6-20.) The 2030 projected future water budget's 8,100 AFY change in storage consists of 4,600 AFY due to falling groundwater levels and 3,500 AFY due to seawater intrusion. (Tables 6-30 and 6-31.)

Falling groundwater levels cause seawater intrusion.[2] Accordingly, it is difficult to understand how, compared to historic conditions, the future water budget can project reduced seawater intrusion at the same time that it projects greater decreases in groundwater levels. This anomalous result should be explained.

The concept of "net pumping" is unexplained, and the Chapter includes inconsistent statements of historical pumping.

Chapter 6 uses the term "net pumping" in its discussion of the projected future water budget. (Chapter 6, p. 29; p. 30, Table 6-31.) By contrast, the discussion of historical and current pumping uses the term "total pumping." (Chapter 6, pp. 15-16, Table 6-11 and 6-12.) What is being netted out in the discussion of future pumping?

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[2] Geoscience, *Protective Elevations to Control Seawater Intrusion in the Salinas Valley*, 2013, available at https://www.co.monterey.ca.us/home/showdocument?id=19642.

What is the reference intended by the asterisk after “Total Pumping” in Table 6-11 for historical pumping?

We note that despite Mr. Virsik’s June 4, 2019 letter, Chapter 6 still inexplicably reports total pumping for the historic period inconsistently. In the comparison of historic and future pumping assumptions used in sustained yield determination, Chapter 6 reports total pumping used to historical sustained yield as 86,500 AFY. (Chap. 6, p. 37). However, in its actual determination of historical sustained yield, Chapter 6 reports historic pumping as 108,300 AFY. (Chap. 6, Tables 6-11, 6-18, and 6-20.)

Transport of water out of subbasin is unaccounted.

Section 6.2.2 identifies groundwater pumping and subsurface outflows to adjacent subbasins as elements of the groundwater budget outflows. Chapter 6 does not appear to address the transport of water out of the subbasin by overlying landowners. We have seen documentation that suggests very substantial pumping of groundwater for irrigation outside the groundwater basin. If such pumping is occurring, it should be accounted for separately. It should also be determined if pumping groundwater for use that is not on overlying land is consistent with the Agency Act and with principles of groundwater law, and the GSP updated on whether and how to accommodate this pumping in the future.

Surface water inflows from Toro Creek is unaccounted.

No separate inflow is determined from El Toro Creek. Is this because El Tor Creek joins the Salinas River in the Monterey Subbasin? If so, then the model needs to reflect that the Salinas River exits the 180/400 Subbasin north of Highway 68, receives some augmentation from El Toro Creek, and then reenters 180/400 Subbasin. Otherwise there is no accounting for the El Toro Creek inflow.

Double counting of water withdrawals is unresolved.

In a June 18, 2019 letter, Thomas Virsik proposed a relatively straightforward method to identify or at least estimate double counting by identifying identical extraction numbers in the eWRIMS data and the MCWRA groundwater pumping submissions. Resolution of double counting may materially affect the sustainable yield calculation in the historic water budget, and can only tend to reduce it. Conservative management under uncertainty requires that, before the GSA relies on the historic sustainable yield calculation, it at least estimates this potential error and reduce the historic sustainable yield calculation by that estimate.

We note that Chapter 6 states that the modeling of the future water budget does not double count extractions. (Chap. 6, p. 27.) This means that only the historical water budget’s determination of sustainable yield has been overstated by double counting. This is not reassuring because it follows that the actual variance between the projected future sustainable yield determined by the USGS model (107,200 AFY in 2020 per Table 6-31) and the sustainable yield determined historically (95,700 AFY per Table 6-20) is even greater than disclosed by Chapter 6.

Climate change assumptions appear inconsistent with California's Fourth Climate Change Assessment.

Chapter 6 notes that "projections are based on the available climate change data provided by DWR (2018)." (pg. 29). Table 6-1 estimates the average historical (1995-2014) water budget from precipitation at 100,400 AFY (pg. 6). Table 6-23 shows a projected water budget from precipitation of 135,700 AFY in 2030 and 141,200 AFY in 2070, increases of 35% and 41% respectively from historic averages (pg. 33).

The Chapter doesn't explain how DWR's projections reconcile with those in California's Fourth Climate Change Assessment Central Coast Region Report. Table 6 in the Fourth Assessment shows historical average annual precipitation (1961-1990) of 19.3" increasing to 21.1-21.4" or ~20% by 2070 – much less than what DWR projects (pg. 16).

More importantly, the Fourth Assessment also notes:

- Average precipitation is expected to increase by a relatively small amount, but the annual variability increases substantially by the end of the century. (pg. 17)
- Projected future droughts are likely to be a serious challenge to the region's already stressed water supplies. (pg. 6)
- Water supply shortages, already common during drought, will be exacerbated. Higher temperatures may result in increases in water demand for agriculture and landscaping. Reduced surface water will lead to increases in groundwater extractions that may result in increased saltwater intrusion. Lower surface flows will lead to higher pollutant concentrations and will impact aquatic species. (pg. 7)
- Climate change projections of future extreme and prolonged droughts will exacerbate the region's water supply challenges. (pg. 21)

Chapter 6 should reconcile the apparent data discrepancies with the Fourth Assessment and also discuss how uncertainties in future precipitation patterns will impact groundwater budgets.

Finally, it is not clear that climate variability effects have been modeled. Increased peak precipitation years may not proportionately benefit the groundwater basin as much as increased drought years harm the basin. Peak precipitation may occur in large storm events discharged down the river and out to sea without resulting in proportionately higher basin recharge. However, it is clear that drought years do result in falling groundwater levels.

Future updates

Finally, we support updating the water budgets as soon as possible after data become available. Updating this Chapter is critically important to the overall planning effort to achieve groundwater sustainability in the 180/400-foot subbasin.

Thank you for your consideration of our comments.

Sincerely,

Michael DeLapa
Executive Director

7-11-19 public comments MCCOW

Comments: Marla Anderson, Representative of Monterey County Water Systems
Date: July 10, 2019

Problems/ Inconsistencies in Chapter 6

I). The Future Model is unrealistic, based on unsound projections, promotes further expansion of high use water operations (farms) does not encourage responsible water conservation practices, and does not factor in urban growth

A). Precipitation- Future projections show the ave. annual precipitation in the 180/400 basin to be 35% higher in year 2030 **ONLY 13 YEARS AWAY** from the current budget and 41% higher in 2070. These number are not reasonable projections. There is no evidence that average precipitation will ever increase to the projected levels. Historical data should provide the basis for future precipitation projections.

Table 6-1: Runoff from Precipitation	Average for the Current Water Budget (AF/yr.)	Average for the Historical Water Budget (AF/yr.)
Precipitation	100,400	67,800
Runoff from Precipitation	7,400	2,000

Historical

Table 6-23: Average Land Surface Water Budget Inflows (AF/yr.). **Projected Climate Change Timeframe**	2030 (AF/yr.)	2070 (AF/yr.)
Precipitation	135,700	141,200
Recycled Water Deliveries	4,400	4,400
Surface Water Deliveries	8,300	8,500
Agricultural Pumping	94,800	99,500
Evaporation from Groundwater	6,500	6,800
Transpiration from Groundwater	29,600	30,800
Total Inflows	279,300	291,200

Future Projections

TOO HIGH

B). Why does agricultural pumping increase in 2030 and 2070 by 6.5% and 11.8% respectively over historical average pumping amount? **HOW IS THIS CONSISTENT WITH RAISING GROUNDWATER TO 2003 LEVELS, MINIMIZING EXPANSION OF HIGH WATER USING ACTIVITIES LIKE FARMING AND IMPLEMENTATING RESPONSIBLE WATER CONSERVATION PRACTICES?**

Table 6-11: Historical Annual Groundwater Pumping by Water Use Sector Water Use Sector	Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
Agricultural	89,000	76,200	110,800
Urban	19,000	14,000	27,500
Rural-Domestic	400	300	400
Total Pumping*	108,300	93,100	131,000

Historical

Table 6-23: Average Land Surface Water Budget Inflows (AF/yr.). Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Precipitation	135,700	141,200
Recycled Water Deliveries	4,400	4,400
Surface Water Deliveries	8,300	8,500
Agricultural Pumping	94,800	99,500
Evaporation from Groundwater	6,500	6,800
Transpiration from Groundwater	29,600	30,800
Total Inflows	279,300	291,200

Future Projections

C). Why do the models say that land use is assumed to be static and that no urban growth is included in the model simulation? Future urban growth according to LAFCO projections are contained in Chapter 1 of the draft SVBGSA PLAN.

6.10.1.2 SVIHM Assumptions and Modifications to Simulate Future Conditions

The assumptions incorporated into the SVIHM for the projected water budget simulations include:

- Land Use: **The land use is assumed to be static**, aside from a semi-annual change to represent crop seasonality. The annual pattern is repeated every year in the model. Land use in the model reflects the 2014 land use. **THIS IS TOTALLY UNREALISTIC!!**

- **No urban growth is included in this simulation to remain consistent with the USGS assumptions.** If urban growth is infill, this assumption may result in an underestimate of net pumping increases and an underestimate of the Subbasin's future overdraft. If urban growth replaces agricultural irrigation, the impact may be minimal.

USGS ASSUMPTIONS ARE TOTALLY UNREALISTIC. INFILL WILL OCCUR AND IS PROJECTED IN EVERY GENERAL PLAN. REPLACEMENT OF SOME AGRICULTURE ADJACENT TO URBAN BOUNDARIES IS CONTAINED IN GENERAL PLANS FOR SALINAS AND EVERY SOUTH COUNTY CITY.

D). If no urban growth is included in the model, why does the model project a 7.9% to 11% increase in pumping for urban purposes?

Table 6-11: Historical Annual Groundwater Pumping by Water Use Sector Water Use Sector	Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
Agricultural	89,000	76,200	110,800
Urban	19,000	14,000	27,500
Rural-Domestic	400	300	400
Total Pumping*	108,300	93,100	131,000

Historical

Table 6-29: Projected Annual Groundwater Pumping by Water Use Sector Water Use Sector	2030 Average	2070 Average	
Agricultural	94,800	99,500	Future
Urban (total pumping minus agricultural)	20,500	21,100	
Rural-Domestic (not simulated in model, considered minimal)	0	0	
Total Pumping	135,800	141,600	

E). The blue inflow numbers in the table below are unrealistic and based on unreasonable precipitation projections

Table 6-24: Average Land Surface Water Budget Outflows (AF/yr.). **Projected Climate Change Timeframe**	2030 (AF/yr.)	2070 (AF/yr.)
Evaporation from Irrigation	14,100	14,800
Evaporation from Precipitation	38,700	38,600
Evaporation from Groundwater	6,500	6,800
Transpiration from Irrigation	64,300	67,200
Transpiration from Precipitation	32,500	32,300
Transpiration from Groundwater	29,600	30,800
Overland Runoff	25,200	27,500
Deep Percolation	77,000	82,300
Surface Water Returns	500	400
Total Outflows	**288,400**	**300,700**

Table 6-25: Average Groundwater Inflow Components for Projected Climate Change Conditions (acre-ft/year) **Projected Climate Change Timeframe**	2030 (AF/yr.)	2070 (AF/yr.)
Stream leakage	71,500	71,700
Deep Percolation	76,300	81,800
Seawater Intrusion	3,500	3,900
Underflow from Monterey Subbasin	10,900	11,500
Underflow from Eastside Subbasin	9,800	10,400
Underflow from Forebay Subbasin	5,300	5,300
Underflow from Langley Subbasin	1,800	1,800
Mountain front recharge	2,600	2,700
Underflow from Pajaro	100	100
TOTAL	181,800	189,200

F. See Sea Water Intrusion numbers in Table 6-25 above. Why does sea water intrusion increase from 3,500 AF/yr in 2030 to 3,900 in 2070 AF.yr if sustainability is in the process of being achieved during that timeframe?

G). See red colored numbers above. 2030 and 2070 projected outflows are above and beyond the historical outflow of 129,800 AF/yr. by 40% and 46% respectively which is even more than the unrealistic projected increase in rain. Why is this?

H).Why is total pumping (both agricultural and non-agricultural) projected to go up by 25% in 2030 and 31% in 2070 ? <u>HOW WILL THIS ENABLE GROUNDWATER LEVELS TO BE INCREASED TO 2003 LEVELS AND SALT WATER INTRUSION AREAS TO BE PUSHED BACK TO HIGHWAY 1?</u>

Table 6-11: Historical Annual Groundwater Pumping by Water Use Sector **Water Use Sector**	Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
Agricultural	**89,000**	76,200	110,800
Urban	19,000	14,000	27,500
Rural-Domestic	400	300	400
Total Pumping*	**108,300**	93,100	131,000

Historical

Table 6-26: Average Groundwater Outflow Components for Projected Climate Change Conditions (acre-ft/year) **Projected Climate Change Timeframe**	2030 (AF/yr.)	2070 (AF/yr.)
Pumping	**135,800**	**141,600**
Drain Flows	7,100	8,000
Flow to Streams	1,800	1,900
Groundwater ET	35,100	36,700
Underflow to Ocean	800	700
Underflow to Monterey Subbasin	5,400	5,300
Underflow to Eastside Subbasin	17,000	16,600
Underflow to Forebay Subbasin	300	300
Underflow to Langley Subbasin	100	100
Underflow to Upland Areas	900	900
Underflow to Pajaro	1,000	1,000
TOTAL	**205,300**	**213,100**

Future

<u>I. Why are the Groundwater Extraction figures in table 6-27 different from the pumping figures in table 6- 26?</u>

Table 6-27: Average Annual Groundwater Budget for Projected Climate Change Conditions (acre-ft/year) **Projected Climate Change Timeframe**	2030 (AF/yr.)	2070 (AF/yr.)
Net GW Extraction	**-115,000**	**-120,600**

Table 6-26: Average Groundwater Outflow Components for Projected Climate Change Conditions (acre-ft/year) Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Pumping	135,800	141,600

J. The Model projects 588% to 636% increase in deep percolation above historical deep percolation levels

Table 6-8: Deep Percolation from Precipitation for Historical and Current Water Budget Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)	
Total precipitation	100,400	67,800
Runoff	7,400	2,000
Evapotranspiration	81,800	59,300
Deep percolation	11,200	6,500

Historical

Table 6-24: Average Land Surface Water Budget Outflows (AF/yr.). Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Evaporation from Irrigation	14,100	14,800
Evaporation from Precipitation	38,700	38,600
Evaporation from Groundwater	6,500	6,800
Transpiration from Irrigation	64,300	67,200
Transpiration from Precipitation	32,500	32,300
Transpiration from Groundwater	29,600	30,800
Overland Runoff	25,200	27,500
Deep Percolation	77,000	82,300
Surface Water Returns	500	400
Total Outflows	**288,400**	**300,700**

Future - 588%-636% increase??

2). Why is the "Minimum Threshold" in Chapter 8 (Table 8-1) for long-term sustainability of groundwater storage based on the Model's over-inflated 2070 precipitation projection instead of the more realistic historical sustainability projection of 95,700 AF/ yr? 112,000 AF/ yr is 17 % higher than the historical sustainability yield of 95,700 AF/yr. identified in Chapter 6, Table 6-20. **WHY IS THAT??** 112 AF/Yr. based should not be considered the sustainable yield in Chapter 8. Chapter 8 matrix needs to be changed to the yield to 95,700 AF/ yr.

Table 6-20: Estimated Historical Sustainable Yield for the 180/400-Foot Aquifer Subbasin Average

(AF/yr.)	
Total Subbasin Pumping	108,300
Change in Storage (Groundwater Levels)	2,100
Seawater Intrusion	10,500
Estimated Historical Sustainable Yield	**95,700**

Table 8-1: Sustainable Management Criteria Summary

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result	Interim Milestones
Chronic lowering of groundwater levels	Water level minimum thresholds set to 1 foot above 2015 groundwater elevations. See Table 8-2for wells in the 180- and 400- Foot aquifers	Measured through monitoring well network.	Water level measurable objectives set to 2003 groundwater elevations	Over the course of any one year, no more than 15% of groundwater elevation minimum thresholds shall be exceeded in any single aquifer and no one well shall exceed its minimum threshold for more than two consecutive years. Allows two exceedances in the 180-Foot aquifer and two exceedances in the 400-Foot aquifer	To be developed
Reduction in groundwater storage	Minimum threshold set to the estimated long-term future sustainable yield of 112,000 acre-feet/year for the entire 180/400-Foot Aquifer Subbasin	Mi[illegible] groundwater extractions. Municipal users and small systems report groundwater extractions to the state. Agricultural pumping will either be collected by MCWRA, or estimated based on crop data	[illegible]tive is Identical to the minimum threshold. Set to the estimated long-term future sustainable yield of 112,000 acre-feet/year for the entire 180/400-Foot Aquifer Subbasin	During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the total groundwater pumping shall not exceed the minimum threshold.	Set to 112,000 acre-feet per year
Seawater intrusion	Minimum threshold is the 2017 extent of 500 mg/L chloride isocontour is developed by MCWRA for the 180- and 400- Foot aquifers. The minimum threshold is the line defined by Highway one for the deep aquifer.	Seawater intrusion maps developed by MCWRA	Measurable objective is the line defined by Highway 1 for the 180-Foot, 400-Foot, and Deep aquifers	On average in any one year there shall be no mapped seawater intrusion beyond the 2017 extent of the 500 mg/L chloride isocontour.	To be developed
Degraded groundwater quality	Minimum threshold is zero additional exceedances of groundwater quality	Groundwater quality data downloaded annually from state and local sources.	Meesurable objective is Identical to the minimum threshold.	On average during any one year, no groundwater quality minimum threshold shall be exceeded as a	Identical to current conditions

Should 95,700 AF/yr

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18 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Advisory Committee

Re: Agenda Item 4.c
Chapter 6 of 180/400 GSP

Enclosed are: (1) the June 4, 2019 letter to the Planning Committee on Chapter 6 and (2) a copy of an email to the SVBGSA of June 11, 2019, including its enclosures. This letter supplements the prior comment letter based on comments and feedback from the consultant and others at the June 6 and June 10 Planning and Board of Directors meetings, respectively. *Page references are to the internal numbering of the Chapter as posted on June 17, 2019 [a different version of the Chapter was posted on June 14, 2019]*.

EWRIMS (SURFACE WATER DIVERSION) DATA NOT VETTED

The enclosed email explains the simple process the GSA has available to it to determine if the surface water diversions used in the water budgets are "double counting" water. To put it starkly, the publically available statements of water diversion near Speckles sent along with the email claims that the surface water diversion reported to the State is -- in the view of the filer -- actually groundwater. See response to "Additional Remarks" of the State form (enclosed with email). Presumably, the filer (an affiliate/proxy for the well-regarded local ag interest Tanimura & Antle) is also following local requirements and providing the exact same water extraction numbers to the MCWRA per local Ordinance.

Unless the GSA compares the (limited) set of eWRIMS data for the 180/400 with the MCWRA groundwater pumping reports for the nearly identical zone (the "Pressure"), the water budget numbers will erroneously assume water users in the 180/400 draw from two separate sources and hence their reduction to meet "sustainable yield" may be inaccurate. SGMA requires the "best available" data and transparency, which would not be met and the Plan may fail at DWR if the GSA continues to ignore the data and simple analytical approach[1] at its fingertips.

[1] The MCWRA reports are tied to wells while the State reports are tied to land, but both require monthly extraction numbers, which can be directly compared. For example, a diversion for water use near Speckles that reports surface water diversions in succeeding calendar months of 115.2, 229.4, and 425.7 AF and a MCWRA report for a well near Speckles that reports groundwater extractions in succeeding calendar months of 115.2, 229.4, and 425.7 AF must be the same water. It should not be included twice in the water budget analyses.

The historical water budget reports surface water diversions on the order of nearly 10,000 AFY, which is a magnitude material to projecting a reliable sustainable yield. Chapter 6 at Tables 6-5 and 6-16, pages 10 and 18.

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS ABOUT CURRENT PROJECTS

The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15, pages 36 and 17. Consultant Williams explained that the delta is due (1) to the seawater intrusion projects (CSIP, SRDF) coming online during the historical period and (2) an assumed current and future "100%" level of performance of the. Again, what does the "best available" data show about the efficiency or performance of the MCWRA projects? If the data compiled by the MCWRA for its projects reflect a 50% or a 25% level of efficiency, then the model should use that metric instead of assuming the projects will magically perform far better than they have to date.

CONCLUSION

As noted in my prior letter and email and above, prior to further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality such as surface water diversions and project performance reality. The real danger for the Salinas Valley lies not in whether DWR accepts or approves the GSP, but in intelligently considering and selecting programs and management actions (a later chapter of the GSP) based on factious assumptions and projections about current project efficiency and wet water use/availability (whether labeled ground or surface). It is preferable to proceed with care than risk committing to projects or management actions that will either not lead to or perhaps even make the attainment of sustainability less likely.

Very truly yours,

Thomas S. Virsik

Thomas S. Virsik

Encl.
June 4, 2019 letter to GSA Planning Committee
June 11, 2019 email to GSA re eWRIMS and MCWRA

Thomas S. Virsik
ATTORNEY AT LAW
510-508-1530 | thomasvirsiklaw@gmail.com

4 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Planning Committee

Re: Agenda Item 4.b
Chapter 6 of 180/400 GSP

The below are comments and suggestions for the draft Chapter 6 of the 180/400 GSP. As presented, the draft Chapter fails to meet the minimum requirements of SGMA, lacking literally the word "overdraft" in its text. Emergency GSP Reg. 354.18(b)(5) (the historic, current, and projected water budgets must include quantification of overdraft when basin deemed in overdraft per Bulletin 118).[1]

NOTE ON REFERENCES
For ease of tracking (given the content will eventually be in other agenda packets), the following format is used: xx/yy, in which xx is the page of the Chapter and yy is the page of the paginated packet. Both numbers are found on the right-hand corner of the page.

CHAPTER SKIRTS AROUND IMPORTANT SUSTAINABLE YIELD CALCULATION
Chapter 8 revealed that the future sustainable yield of the entire Valley is estimated at 494,000 AFY. Chapter 8 19/196 (at Planning Committee). What is the current sustainable yield for the 180/400? That specific query does not appear addressed in draft Chapter 6. At 8.6.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. 22/41. The text equates that to a 10% reduction in pumping from the historical average.

The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. Those values come from the chart for the historical groundwater budget. 19/38[2]. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values in the parallel summary chart (20/39), the current sustainable yield appears to be 52,000 AFY for the 180/400. I.e., delta between inflows and outflows at Tables 6-18, 6-19, and 6-20 (109,300 - 57,300 = 52,000). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is near 50%. While sustainable yield is not "sustainability" itself, the

[1] That "overdraft" may be calculated from the figures and values presented does not obviate the GSP regulatory requirement of quantifying "overdraft" for the several water budgets. Whether the next Chapter revision is one of editing (e.g., a change of terminology) or of arithmetic (e.g., add an extra calculation labelled "overdraft" in certain tables) is a matter for the GSA and its consultant.
[2] Seawater intrusion and groundwater level changes are apparently lumped together as "change in storage" in the charts on 19/38 and 20/39 (last entry in both).

omission of the current sustainable yield is troubling, pointing to a failure to meet a core regulatory requirement. Reg. 354.18(b)(5).

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS
The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 34/53 and 15/34. How that significant reduction occurs while projected pumping increases beyond historical levels is not explained. 34/53 (pumping of 86,500 AFY for historical sustainable yield v. pumping of 115,300 to 120,600 AFY for projected). Moreover, the calculated historical sustainable yield in Chapter 6 did not use a total pumping value of 86,500 AFY, but 108,300. Table 6-20 at 22/41. Clearly the two halves of Chapter 6 have not been checked against each other.

The "black box" quality of the SVIHM -- at least in its current state when it cannot be publicly peer reviewed by third parties -- undermines the credibility of the 180/400 GSP. A GSP based on assuming seawater intrusion radically decreases while pumping increases strains credulity. It is possible that the model is "correct" per its myriad assumptions and interconnections used to project results, if only one could review and reality test all of them. But at least as recited in draft Chapter 6, its calculation of a 7% reduction in pumping to balance the 180/400 comes across as far-fetched and unrealistic.

On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft.

> If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 sub basin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP.

March 2017 letter, pages 6-7. Lacking specific quantification of overdraft in the several water budgets, draft Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential "management action" in SGMA nomenclature).

DATA REFERENCES CONFUSING
Draft Chapter 6 states that the 180/400 basin accounts for 7% of the surface water extractions per eWRIMS. 7/26 The data relied upon is listed in Appendix 6-A. ??/58, 62. Data on eWRIMS has always been public and in the current era can be downloaded. 7/26 Yet, the Appendix does not contain the public information on who, where, and

when the diversions are occurring. If the omission is due to convenience or time pressures, the next iteration of the chapter should make such data available in the sprit (if not requirement) of transparency. The relevance of the data from eWRIMS is less "who," but where (the intruded area?) and when (winter rains or parched river?), which may impact the mandatory demand reduction analysis, i.e., assuming a 7% reduction, when and in what areas of the 180/400 does one curtail pumping?

CONCLUSION
As noted above, prior to any further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality.

Very truly yours,

Thomas S. Virsik
Thomas S. Virsik

Gmail

Thomas S. Virsik <thomasvirsiklaw@gmail.com>

EWRIMS and MCWRA reports

Thomas S. Virsik <thomasvirsiklaw@gmail.com> Tue, Jun 11, 2019 at 2:10 PM
To: Gary Petersen <peterseng@svbgsa.org>

Gary,

For Williams' attention per his remarks yesterday that the nature of the reporting to (1) eWRIMS and (2) the MCWRA on water extractions was dissimilar (and hence could not be readily cross-checked for double counting). I vehemently disagree.

I have attached a T&A state report (three years, including the map showing location -- all from eWRIMS). I selected it at random. It claims to be using groundwater, by the way, at "Additional Comments." [I think the word "fights" is supposed to be "rights"]

One can make a direct comparison of the monthly amounts reported in the MCWRA and State databases. If any two reports (one from eWRIMS and the other from MCWRA) arguably within the same sub-basin reflect the exact same amounts for 1/17, 2/17, 3/17 etc. then there is double counting that skews (Ms. Isakson's word) the calculation of sustainable yield and pumping reductions. One need not correlate precise APN's or well codes. I can -- for my own clients whose MCWRA reports I possess-- do such a month by month comparison (none of which relate to the 180/400). I have made this comment in public before, but perhaps it was not understood.

Given the GSA has access to the MCWRA records, it can and must do the same comparison for the limited number of 180/400 eWRIMS statements. Chapter 8 draft Table 8-9. It's simple, yet necessary to meet the "best available" standard. And it leads to a better and more reliable real-world outcome based on accurate water use / yield numbers. No part of the comparison involves determining any "water right" or claim thereto.
--
Thomas S. Virsik
Attorney at Law

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4 attachments

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2015.pdf
73K

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2016.pdf
80K

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2017.pdf
80K

Maps from S014885.pdf
85K

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2015

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 05/31/2016

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3-4. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		3.017	0	3.017
February		2.637	0	2.637
March		14.177	0	14.177
April		9.469	0	9.469
May		8.465	0	8.465
June		13.554	0	13.554
July		14.954	0	14.954
August		4.292	0	4.292
September		0	0	0
October		0	0	0
November		0	0	0
December		0	0	0
Total		70.565	0	70.565
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
8e. Water transfered	No
8f. Quantity transfered (Acre-Feet)	
8g. Dates which transfer occurred	/ to /
8h. Transfer approved by	

Water Supply Contracts

8i. Water supply contract	No
8j. Contract with	
8k. Other provider	
8l. Contract number	
8m. Source from which contract water was diverted	
8n. Point of diversion same as identified water right	
8o. Amount (Acre-Feet) authorized to divert under this contract	
8p. Amount (Acre-Feet) authorized to be diverted in 2015	
8q. Amount (Acre-Feet) projected for 2016	
8r. Exchange or settlement of prior rights	
8s. All monthly reported diversion claimed under the prior rights	
8t. Amount (Acre-Feet) of reported diversion solely under contract	

5. Water Diversion Measurement		
a.	Measurement	Water directly diverted and/or diverted to storage was measured
b.	Types of measuring devices used	Propeller Meter
c.	Additional technology used	Flow Totalizer
	Description of additional technology used	
d.	Who installed your measuring device(s)	Representative using manufacturer's recommendations
e.	Make, model number, and last calibration date of your measuring device(s)	Water Specialties, Propeller meter
f.	Why direct measurement using a device listed in Section 1 is "not locally cost effective"	
	Explanation of why use of devices and technologies listed in Section 1 are "not locally cost effective"	
g.	Method(s) used as an alternative to direct measurement	
	Explanation of method(s) used as an alternative to direct measurement	

6. Purpose of Use	
Irrigation	661.90 Acres Vegetables

7. Changes in Method of Diversion

8. Conservation of Water		
a.	Are you now employing water conservation efforts?	Yes

	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates.
b.	Amount of water conserved	Acre-Feet
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

11a. Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Ron
Last Name	Yokota
Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2016

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 08/03/2018

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	**Area Irrigated (Acres)**	**Primary Irrigation Method**
Vegetables	Yes	661.90	Sprinkler

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		0	0	0
February		0	0	0
March		0	0	0
April		5.059	0	5.059
May		11.164	0	11.164
June		19.857	0	19.857
July		25.109	0	25.109
August		23.773	0	23.773
September		19.856	0	19.856
October		16.781	0	16.781
November		0	0	0

December		0	0	0
Total		121.599	0	121.599
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2016	
6p. Amount (Acre-Feet) projected for 2017	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M010336
This Device/Method was used to measure water during the current reporting period	
M1. Briefly describe the measurement device or method	propellor meter
M2. Nickname	
M3. Type of device / method	Flow meter (propeller)
M4. Device make	McCrometer
M5. Serial number	932573-8

M6. Model number	
M7. Approximate date of installation	04/13/2016
M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	11/01/2015
M10. Estimated accuracy of measurement	5%
M11. Description of calibration method	Calibrated to manufaturers specifications before installation manufacturer representative
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	
M14. Phone number	
M15. Email	
M16. Qualifications of the individual	California-licensed contractor authorized by the State License Board for C-57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps
M17. License number and type for the qualified individual above and/or any other relevant explanation	
M18. Type of data recorder device / method	
M19. Data recorder device make	
M20. Data recorder serial number	
M21. Data recorder model number	
M22. Data recorder units of measurement	
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	
M26. I report my diversion or storage date by telemetry to the following website	
M27. I have attached additional information on the method I used to calculate the volume of water	
M28. Describe any documents related to this measurement device or method that are attached to this water use report	

8. Conservation of Water

a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Anthony
Last Name	Duttle

Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2017

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 08/03/2018

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	**Area Irrigated (Acres)**	**Primary Irrigation Method**
Vegetables	Yes	661.90	Sprinkler

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		0	0	0
February		0.476	0	0.476
March		6.191	0	6.191
April		8.05	0	8.05
May		27.526	0	27.526
June		27.296	0	27.296
July		24.129	0	24.129
August		0.762	0	0.762
September		3.002	0	3.002
October		41.776	0	41.776
November		0.003	0	0.003

December		1.233	0	1.233
Total		140.444	0	140.444
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2017	
6p. Amount (Acre-Feet) projected for 2018	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M010336
This Device/Method was used to measure water during the current reporting period	Yes
M1. Briefly describe the measurement device or method	propellor meter
M2. Nickname	
M3. Type of device / method	Flow meter (propeller)
M4. Device make	McCrometer
M5. Serial number	932573-8

M6. Model number	
M7. Approximate date of installation	04/13/2016
M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	11/01/2015
M10. Estimated accuracy of measurement	5%
M11. Description of calibration method	Calibrated to manufaturers specifications before installation manufacturer representative
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	
M14. Phone number	
M15. Email	
M16. Qualifications of the individual	California-licensed contractor authorized by the State License Board for C-57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps
M17. License number and type for the qualified individual above and/or any other relevant explanation	
M18. Type of data recorder device / method	
M19. Data recorder device make	
M20. Data recorder serial number	
M21. Data recorder model number	
M22. Data recorder units of measurement	
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	
M26. I report my diversion or storage date by telemetry to the following website	
M27. I have attached additional information on the method I used to calculate the volume of water	
M28. Describe any documents related to this measurement device or method that are attached to this water use report	

8. Conservation of Water

a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates.
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Anthony
Last Name	Duttle

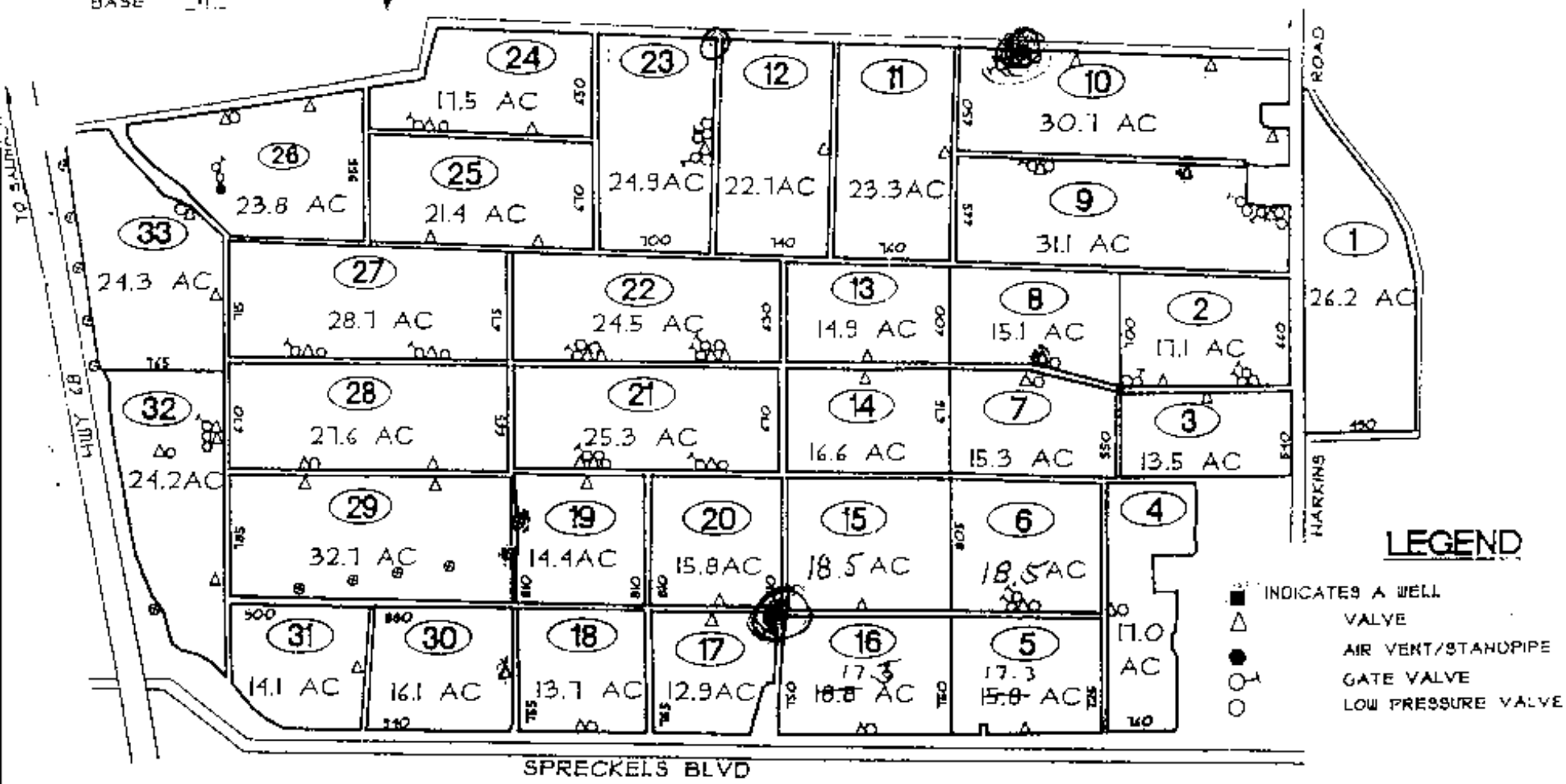
Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

SO14885

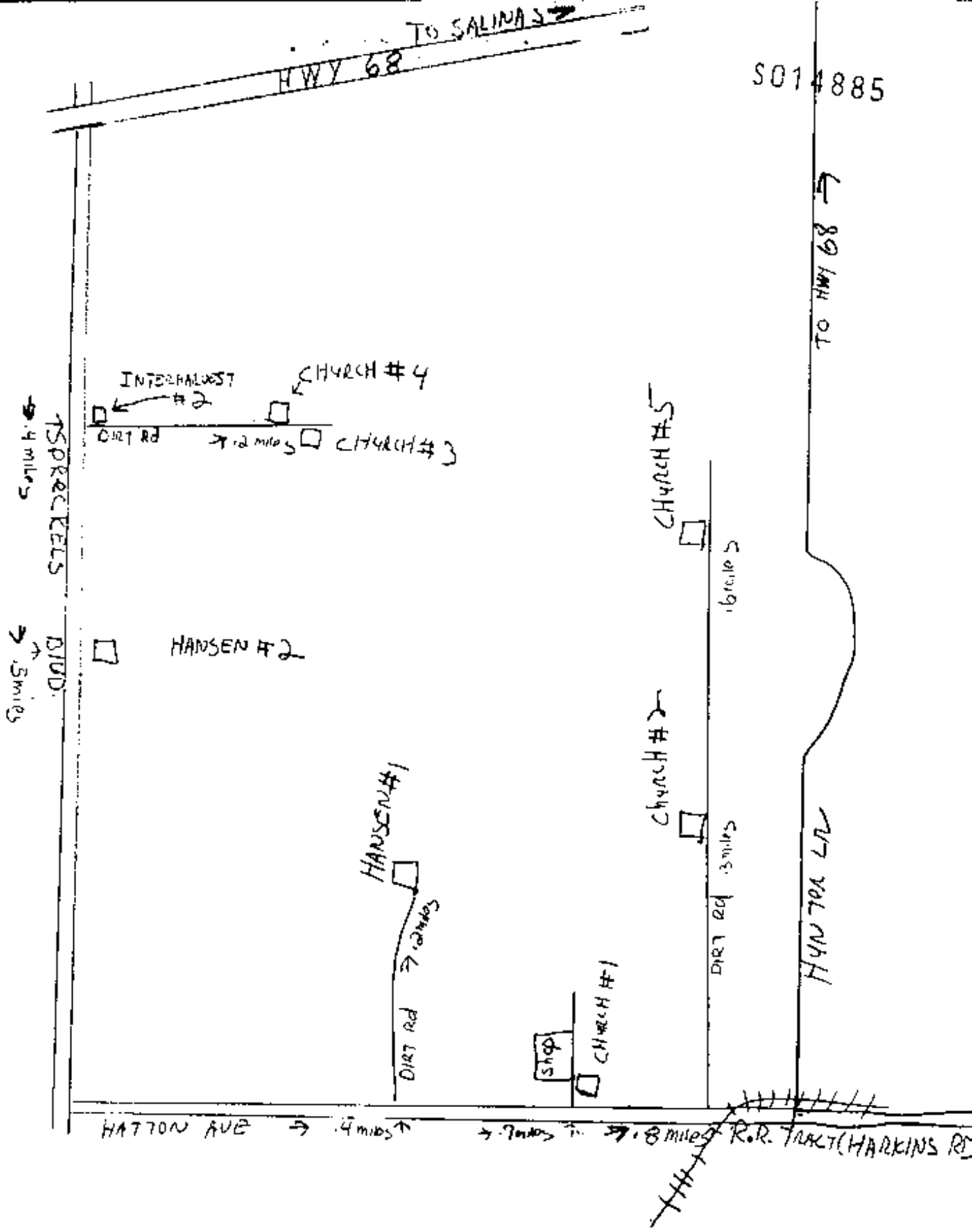
COUNTY 21
TOWNSHIP 15S
RANGE 3E
SECTION 20
BASE M

SPRECKELS RANCH
TANIMURA & ANTLE, INC.

SURVEYED 1982. REVISED 1984 & 1988
MAPPED APRIL 1995
FILE: TASPRECK.DWG 1"=100'



677.2± ACRES NET CROP



TO SALINAS
HWY 68
S014885
TO HWY 68
INTERHARVEST #2
CHURCH #4
DIRT Rd
.2 miles
CHURCH #3
SPRECKELS BLVD
.4 miles
.5 miles
HANSEN #2
CHURCH #5
.6 miles
CHURCH #2
.3 miles
DIRT Rd
HUNTER LN
HANSEN #1
.2 miles
DIRT Rd
CHURCH #1
shop
HATTON AVE
.4 miles
.7 miles
.8 miles
R.R. TRACT (HARKINS RD

June 10, 2019

Michael McHatten, Chair
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Via email peterseng@svbgsa.org, camela@svbgsa.org

RE: Chapter 7: 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan

Dear Chair McHatten and Members of the Board of Directors:

Thank you for the opportunity to review Chapter 7: 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan. Implementation of an adequate Groundwater Sustainability Plan is essential to protect existing groundwater users, predominately farmers, and to ensure that the Salinas Valley remains a productive economic engine for the county and the state. Attaining sustainability may include fair share costs of capital projects and/or pumping reductions. The fair allocation of these potential expenses requires that groundwater pumping be reported accurately, both historically and in the future.

The evidence in the record does not support continued reliance on the Monterey County Water Resource Agency's (MCWRA) enforcement of the County's existing pumping reporting ordinance. Therefore, LandWatch strongly recommends that the Salinas Valley Groundwater Basin Groundwater Sustainability Agency adopt an ordinance that requires

1) Independently calibrated and monitored flowmeters on agricultural pumps throughout the Salinas Valley Groundwater Basin; and
2) Annual pumping reports that are independently validated for accuracy.

The ordinance should also include strict enforcement provisions that help assure full compliance. LandWatch's comments support these recommendations.

We reject the proposed use of the existing monitoring program, as described in Chapter 7, to monitor annual groundwater pumping because it will generate inaccurate results and potentially lead to unfair cost allocations.

Monterey County Ordinance No. 3717 (1993) Requires Flowmeters

Section 1.01.14 of Monterey County Ordinance No. 3717, adopted in 1993, requires installation of flowmeters meeting MCWRA specifications for all groundwater extraction facilities after February 15, 1994. As Monterey County Counsel summarizes:

> Ordinance No. 3717 applies to all groundwater extraction facilities located within Zones 2, 2A and 2B with a discharge pipe having an inside diameter of at least 3 inches. The ordinance requires that the owner or operator of such facilities make annual reports to the Monterey County Water Resources Agency concerning quantities of water pumped from the facilities, as well as additional information concerning the distribution and use of the water. The ordinance requires that flowmeters be installed on all groundwater extraction facilities on or before November 1, 1993, in subareas P-l, P-2, and E-l, and on or before February 15, 1994, in the remaining areas of Zones 2, 2A and 2B, and limits the purposes for which monetary exactions may be imposed based upon water use measured by the meters**.** The ordinance provides a variance procedure and also establishes penalties for violations of the ordinance.

Section 1.01.18(C) requires that a MCWRA-recognized tester test and calibrate each flowmeter annually to ensure compliance with MCWRA specifications. The tester is required to submit its test report to MCWRA, including the flowmeter reading on the date of testing:

> The owner of each water flowmeter shall have each such meter tested and calibrated annually by an Agency-recognized tester to ensure compliance with the applicable Agency specifications. Upon completion of the annual test, the tester will submit to the Agency a report of testing which will include the water flowmeter reading on the date of testing.

Section 1.01.24(B) provides that violation of the ordinance is a public nuisance, an implicit recognition that accurate reporting is critical to fair and effective groundwater management.

Ordinance No. 3717 Has Not Been Enforced

There is evidence in the record that MCWRA has not enforced some requirement of Ordinance 3717, specifically requirements for flowmeters. Moreover, there is no evidence that MCWRA has enforced other requirements. Consequently, previously collected groundwater pumping data are almost certainly inaccurate. Future data are likely to be inaccurate, too, as long as the County does not enforce the requirement for independently tested and calibrated flowmeters.

The 2015 MCWRA Groundwater Summary Extraction Report, an annual report of groundwater pumping, acknowledges that the data it presents are not in fact based on use of the required flowmeters:

> The Groundwater Reporting Program provides well operators with a choice of three different reporting methods: Water Flowmeter, Electrical Meter, or Hour Meter(timer). The summary of groundwater extractions presented in this report is compiled from data generated by all three reporting methods. Ordinance 3717

> requires annual pump efficiency tests and/or meter calibration of each well to ensure the accuracy of the data reported.[1]

The 2015 MCWRA Groundwater Summary Extraction Report states that only 71% of reporting methods were based on flowmeters; that 28% of methods were based on electrical meters; and that 1% of methods were based on hour meters. The 2014 reporting methods were similar. Previous annual reports do not indicate the percentage of reporting based on each method, but they do acknowledge that reporting was based on electrical meters and hour meters as well as flowmeters.

There is no evidence in the record that MCWRA has enforced the Ordinance 3717 requirement for annual independent testing and calibration of flowmeters and for the reporting of annual flowmeter readings by approved third-party testing organizations. The 2015 MCWRA Groundwater Summary Extraction Report includes the following disclaimer:

> While the Agency has made every effort to ensure the accuracy of the data presented in this report, it should be noted that the data are submitted by individual reporting parties. In addition, since so many factors can affect the extraction calibration, it is understood that no reporting method is 100 percent accurate. The Agency maintains strict quality assurance in the compilation, standardization, and entry of the data received. Changes to historical data may occur due to additional submittals after the due date or database upgrades. The Agency received Groundwater Extraction Reports from ninety-eight percent (98%) of the 1,901 wells in the Salinas Valley for the 2015 reporting year. Agricultural and Urban Water Conservation Plan submittals for 2016 were ninety percent (90%) and one hundred percent (100%), respectively.

The disclaimer references the MCWRA quality assurance in the "compilation, standardization, and entry of the data received," but it does not assert that MCWRA has required compliance with the Ordinance 3717 section 1.01.18(C) requirement that each facility provide the results of the mandatory annual independent testing and calibration of flowmeters, including the flowmeter reading. If there were verified compliance with this requirement, MCWRA would not have to rely only on data "submitted by individual reporting parties." MCWRA would be able to rely on data submitted by owners of pumping facilities <u>and</u> on the data submitted by its approved independent flowmeter testing agencies. Chapter 7 does not discuss the challenge of independent monitoring and verification of annual flowmeter calibration.

Not all of the owners of pumping facilities actually submit the reports required by Ordinance 3717. MCWRA reports annual percentage compliance in each of its annual Groundwater Summary Extraction Reports. Approximately 5% of known pumping facilities have not complied with reporting requirements for the 21 years from 1995

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[1] Available at https://www.co.monterey.ca.us/government/government-links/water-resources-agency/programs/groundwater-extractions-gems#wra.

through 2015.[2] Chapter 7 does not discuss means of ensuring 100% compliance with reporting mandates.

It is not clear that MCWRA actually has an accurate record of the wells for which monitoring is required under Ordinance 3717. Chapter 7 acknowledges that an "accurate count of the number of municipal, agricultural, and domestic wells in the GSP area" is needed, but it proposes to defer the finalization of a database of existing and active wells until implementation of the plan. (p. 13.)

The proposed monitoring system for groundwater pumping in Chapter 7 effectively acknowledges that that Ordinance No. 3717 is not adequately enforced by characterizing the "accuracy and reliability of reported pumping rates" as a data gap. (p. 13.) Instead, of proposing means to enforce the existing reporting mandate in Ordinance 3717, Chapter 7 assumes that the mandate will <u>not</u> be enforced. Thus, Chapter 7 proposes to permit the use of crop data and crop duty multiplies for estimating unreported pumping. (p. 14.) This method should be employed only as a means of validating the flowmeter data that is reported, e.g., as required by ordinance 3717, not as a substitute for that reporting.[3]

Finally, according to MCWRA, due to staffing constraints at the agency, the 2016, 2017 and 2018 summary reports are pending and will be posted on the website once they are presented to the Board of Supervisors.

Proposed Monitoring in Chapter 7 for Groundwater Agricultural Pumping

Chapter 7 does not propose to require enforcement of the requirement for flowmeters. Rather, the Plan proposes that data on agricultural pumping of groundwater be collected in one of two ways:

> Most agricultural pumpers comply with the existing Monterey County Ordinance 3717 that requires groundwater users to report total pumping rates annually to the MCWRA. Groundwater pumping wells with a discharge pipe less than 3 inches in diameter are exempt from this requirement. These lower production wells will be accounted for separately. SVBGSA will work with MCWRA to obtain these data through a coordinated reporting program such that wells owners can provide a single annual reporting to fulfill the requirements of the GSP and the existing County ordinance 3717. [excerpt from Chapter 7]
>
> For agricultural users that do not report their pumping annually, pumping will be estimated using Monterey County crop data and crop duty estimates, times a multiplier. The crop duty and multipliers are a data gap as described in Section 7.3.1. [excerpt from Chapter 7]

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[2] Data compiled from annual reports available at https://www.co.monterey.ca.us/government/government-links/water-resources-agency/documents/groundwater-extraction-summaries#wra.

[3] It is inconsistent to require domestic water users, who constitute a small portion of total demand, to meter water use while not requiring all other users to do the same.

Clearly there are significant problems with both proposals. In the first instance, pumping data are self-reported and not independently verified. In the second, pumping data are estimated using a proxy and a multiplier, neither of which has been statistically determined or independently verified.

Electricity Consumption Inaccurately Estimates Water Volumes Pumped

Using electricity consumption to estimate pumping volumes is unreliable, although MCWRA has relied on this method historically to collect groundwater water volume data. A report prepared in May 2017 by the Irrigation Training and Research Center, California Polytechnic State University, addresses use of electricity as a method for estimating groundwater pumping.[4] The paper includes the following findings:

1. Average assumptions of pump efficiency are very inaccurate when applied to individual wells.
2. Many well pumps use about the same energy use (kWh) per rate of volume pumped (gallons per minute or GPM) over a wide range of flows. Therefore, they do not have a good relationship between kWh and acre-feet pumped.
3. Well pump conditions change over time due to:
    a. wear
    b. changes in groundwater levels due to aquifer changes
    c. changes in flow rate as the discharge flow rate demand changes
    d. changes in flow rate as the discharge pressure requirements change

The SVBGSA should investigate whether use of this method materially affected the reliability of previously reported data. If so, it should restate historic and projected water budget data in Chapter 6 as appropriate. The SVBGSA should not rely on such data in the future.

Data Gap

Based on the foregoing information, there is uncertainty and a potentially serious data gap regarding groundwater pumping in the 180- and 400-foot aquifer subbasin. Chapter 7 ignores the following problems or potential problems with historic and future data collection:

- Failure to enforce the requirement to submit flowmeter-based pumping data and the use of less reliable means to estimate pumping
- Apparent failure to require that flowmeter data be independently calibrated and reported by approved testing organizations on an annual basis
- Failure of 5% of known wells to report at all
- Potential uncertainty as to the number and location of other wells
- Potential confusion if action plans are predicated on a water balance and hydrological model using inaccurate historic data while subsequent compliance benchmarks and fair share contributions are based on more accurate future water use data.

[4] Available at http://www.itre.org/papers/wellrecords.htm [ITRC Paper No. P 17-001].

Non-compliance with reporting requirements may result in underreporting. If the cost of future water projects is allocated in proportion to reported pumping, underreporting by some users could impose a greater share of the costs on water users that accurately report their water use. Similarly, the burden of any future pumping reductions that might be required should be allocated on the basis of accurate historic pumping data.

Need to Update Chapter 7

To assure that pumping data are complete and verifiably accurate, Chapter 7 should be updated to address the following questions:

1. When will pumping data for the years 2016, 2017 and 2018 be made available? Will it be used to inform the Chapter 6 water balance data and the hydrologic model?
2. Has historic pumping data been systematically or materially misreported? If so, what action should be taken to correct the data and, if necessary, to re-assess the water balance data and hydrologic model?
3. How are current wells mapped? If they are not reliably mapped, how will unmapped wells be identified and pumping reported?
4. How will new wells be tracked?
5. How will the requirement to install flowmeters to and report pumping based on flowmeters be enforced?
6. How will flowmeters be tested and verified for accuracy?
7. How will the requirement for independent reporting of flowmeter readings be enforced?

Chapter 7 should acknowledge that SVBGSA does not need to rely on Ordinance 3717 and MCWRA's limited budget for enforcement. The SVBGSA has the independent statutory authority to mandate reporting and data collection methods and to use its fees to collect essential data.

Indeed, to fulfill its mandate under the Sustainable Groundwater Management Act, SVBGSA must exercise independent authority to require calibrated and monitored flowmeters on agricultural pumps throughout the Salinas Valley Groundwater Basin along with annual pumping reports that are independently validated for accuracy.

Sincerely,

Michael DeLapa
Executive Director

The Nature Conservancy
Protecting nature. Preserving life.

CALIFORNIA WATER | GROUNDWATER

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[916] 449-2850

nature.org
GroundwaterResourceHub.org

June 18, 2019

Gary Petersen, General Manager
Salinas Valley Basin Groundwater Sustainability Agency
1441 Schilling Place
Salinas, CA 93901

Submitted via email: *peterseng@svbgsa.org*

Re: Chapters 7 & 8, 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan (GSP)

Dear Mr. Gary Petersen,

The Nature Conservancy (TNC) appreciates the opportunity to comment on Chapters 7 and 8 of the 180/400-Foot Aquifer Subbasin GSP, within the Salinas Valley Basin, that is being prepared under the Sustainable Groundwater Management Act (SGMA). It is understood that the Salinas Valley-Wide Integrated Groundwater Sustainability Plan (ISP) is intended to be an overarching document for the Salinas Valley Basin, which includes the 180/400-Foot Aquifer Subbasin. Please note that we have previously submitted comments to Chapter 4 of the GSP on February 7, 2019, and comments to Chapter 5 of the GSP and Chapters 1 through 4 of the ISP on April 11, 2019.

TNC as a Stakeholder Representative for the Environment

TNC is a global, nonprofit organization dedicated to conserving the lands and waters on which all life depends. We seek to achieve our mission through science-based planning and implementation of conservation strategies. For decades, we have dedicated resources to establishing diverse partnerships and developing foundational science products for achieving positive outcomes for people and nature in California. TNC was part of a stakeholder group formed by the Water Foundation in early 2014 to develop recommendations for groundwater reform and actively worked to shape and pass SGMA.

Our reason for engaging is simple: California's freshwater biodiversity is highly imperiled. We have lost more than 90 percent of our native wetland and river habitats, leading to precipitous declines in native plants and the populations of animals that call these places home. These natural resources are intricately connected to California's economy providing direct benefits through industries such as fisheries, timber and hunting, as well as indirect benefits such as clean water supplies. SGMA must be successful for us to achieve a sustainable future, in which people and nature can thrive within the Salinas Valley Groundwater Authority region and California.

We believe that the success of SGMA depends on bringing the best available science to the table, engaging all stakeholders in robust dialog, providing strong incentives for beneficial outcomes and rigorous enforcement by the State of California.

Given our mission, we are particularly concerned about the inclusion of nature, as required, in GSPs. The Nature Conservancy has developed a suite of tools based on best available science to help GSAs, consultants, and stakeholders efficiently incorporate nature into GSPs. These tools and resources are available online at GroundwaterResourceHub.org. The Nature Conservancy's tools and resources are intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

Addressing Nature's Water Needs in GSPs

SGMA requires that all beneficial uses and users, including environmental users of groundwater, be considered in the development and implementation of GSPs (Water Code § 10723.2).

The GSP Regulations include specific requirements to identify and consider groundwater dependent ecosystems (23 CCR §354.16(g)) when determining whether groundwater conditions are having potential effects on beneficial uses and users. GSAs must also assess whether sustainable management criteria may cause adverse impacts to beneficial uses, which include environmental uses, such as plants and animals. In addition, monitoring networks should be designed to detect potential adverse impacts to beneficial uses due to groundwater. Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decision, and using data collected through monitoring to revise decisions in the future. Over time, GSPs should improve as data gaps are reduced and uncertainties addressed.

To help ensure that GSPs adequately address nature as required under SGMA, The Nature Conservancy has prepared a checklist (Attachment A) for GSAs and their consultants to use. The Nature Conservancy believes the following elements are foundational for 2020 GSP submittals. For detailed guidance on how to address the checklist items, please also see our publication, *GDEs under SGMA: Guidance for Preparing GSPs*[1].

1. Environmental Representation

SGMA requires that groundwater sustainability agencies (GSAs) consider the interests of all beneficial uses and users of groundwater. To meet this requirement, we recommend actively engaging environmental stakeholders by including environmental representation on the GSA board, technical advisory group, and/or working groups. This could include local staff from state and federal resource agencies, nonprofit organizations and other environmental interests. By engaging these stakeholders, GSAs will benefit from access to additional data and resources, as well as a more robust and inclusive GSP.

2. Basin GDE and ISW Maps

SGMA requires that groundwater dependent ecosystems (GDEs) and interconnected surface waters (ISWs) be identified in the GSP. We recommend using the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) provided online[2] by the Department of Water Resources (DWR) as a starting point for the GDE map. The NC Dataset was developed through a collaboration between DWR, the Department of Fish and Wildlife and TNC.

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[1] GDEs under SGMA: Guidance for Preparing GSPs is available at: https://groundwaterresourcehub.org/public/uploads/pdfs/GWR_Hub_GDE_Guidance_Doc_2-1-18.pdf

[2] The Department of Water Resoruces' Natural Communities Commonly Associated with Groundwater dataset is available at: *https://gis.water.ca.gov/app/NCDatasetViewer/*

3. Potential Effects on Environmental Beneficial Users

SGMA requires that potential effects on GDEs and environmental surface water users be described when defining undesirable results. In addition to identifying GDEs in the basin, The Nature Conservancy recommends identifying beneficial users of surface water, which include environmental users. This is a critical step, as it is impossible to define "significant and unreasonable adverse impacts" without knowing *what* is being impacted. For your convenience, we've provided a list of freshwater species within the boundary of the 180/400-Foot Subbasin in Attachment C. Our hope is that this information will help your GSA better evaluate the impacts of groundwater management on environmental beneficial users of surface water. We recommend that after identifying which freshwater species exist in your basin, especially federal and state listed species, that you contact staff at the Department of Fish and Wildlife (DFW), United States Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Services (NMFS) to obtain their input on the groundwater and surface water needs of the organisms on the GSA's freshwater species list. Because effects to plants and animals are difficult and sometimes impossible to reverse, we recommend erring on the side of caution to preserve sufficient groundwater conditions to sustain GDEs and ISWs.

4. Biological and Hydrological Monitoring

If sufficient hydrological and biological data in and around GDEs is not available in time for the 2020/2022 plan, data gaps should be identified along with actions to reconcile the gaps in the monitoring network.

Our comments related to Chapters 7 and 8 of the 180/400-Foot Aquifer Subbasin GSP are provided in detail in Attachment B and are in reference to the numbered items in Attachment A. Attachment D describes six best practices that GSAs and their consultants can apply when using local groundwater data to confirm a connection to groundwater for DWR's Natural Communities Commonly Associated with Groundwater Dataset[2]. Attachment E provides an overview of a new, free online tool that allows GSAs to assess changes in groundwater-dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data.

Thank you for fully considering our comments as you develop your GSP.

Best Regards,

Sandi Matsumoto
Associate Director, California Water Program
The Nature Conservancy

Attachment A
Considering Nature under SGMA: A Checklist

The Nature Conservancy is neither dispensing legal advice nor warranting any outcome that could result from the use of this checklist. Following this checklist does not guarantee approval of a GSP or compliance with SGMA, both of which will be determined by DWR and the State Water Resources Control Board.

GSP Plan Element*		GDE Inclusion in GSPs: Identification and Consideration Elements		Check Box
Admin Info	2.1.5 Notice & Communication *23 CCR §354.10*	Description of the types of environmental beneficial uses of groundwater that exist within GDEs and a description of how environmental stakeholders were engaged throughout the development of the GSP.		1
Planning Framework	2.1.2 to 2.1.4 Description of Plan Area *23 CCR §354.8*	Description of jurisdictional boundaries, existing land use designations, water use management and monitoring programs; general plans and other land use plans relevant to GDEs and their relationship to the GSP.		2
		Description of instream flow requirements, threatened and endangered species habitat, critical habitat, and protected areas.		3
		Summary of process for permitting new or replacement wells for the basin, and how the process incorporates protection of GDEs		4
Basin Setting	2.2.1 Hydrogeologic Conceptual Model *23 CCR §354.14*	Basin Bottom Boundary: Is the bottom of the basin defined as at least as deep as the deepest groundwater extractions?		5
		Principal aquifers and aquitards: Are shallow aquifers adequately described, so that interconnections with surface water and vertical groundwater gradients with other aquifers can be characterized?		6
		Basin cross sections: Do cross-sections illustrate the relationships between GDEs, surface waters and principal aquifers?		7
	2.2.2 Current & Historical Groundwater Conditions *23 CCR §354.16*	Interconnected surface waters:		8
		Interconnected surface water maps for the basin with gaining and losing reaches defined (included as a figure in GSP & submitted as a shapefile on SGMA portal).		9
		Estimates of current and historical surface water depletions for interconnected surface waters quantified and described by reach, season, and water year type.		10
		Basin GDE map included (as figure in text & submitted as a shapefile on SGMA Portal).		11
		If NC Dataset *was* used:	Basin GDE map denotes which polygons were kept, removed, and added from NC Dataset (Worksheet 1, can be attached in GSP section 6.0).	12

			The basin's GDE shapefile, which is submitted via the SGMA Portal, includes two new fields in its attribute table denoting: 1) which polygons were kept/removed/added, and 2) the change reason (e.g., why polygons were removed).	13
			GDEs polygons are consolidated into larger units and named for easier identification throughout GSP.	14
		If NC Dataset *was not* used:	Description of why NC dataset was not used, and how an alternative dataset and/or mapping approach used is best available information.	15
		Description of GDEs included:		16
		Historical and current groundwater conditions and variability are described in each GDE unit.		17
		Historical and current ecological condition and variability are described in each GDE unit and adequate to describe baseline as of 2015.		18
		Each GDE unit has been characterized as having high, moderate, or low ecological value.		19
		Inventory of species, habitats, and protected lands for each GDE unit with ecological importance (Worksheet 2, can be attached in GSP section 6.0).		20
	2.2.3 Water Budget *23 CCR §354.18*	Groundwater inputs and outputs (e.g., evapotranspiration) of native vegetation and managed wetlands are included in the basin's historical and current water budget.		21
		Potential impacts to groundwater conditions due to land use changes, climate change, and population growth to GDEs and aquatic ecosystems are considered in the projected water budget.		22
Sustainable Management Criteria	3.1 Sustainability Goal *23 CCR §354.24*	Environmental stakeholders/representatives were consulted.		23
		Sustainability goal mentions GDEs or species and habitats that are of particular concern or interest.		24
		Sustainability goal mentions whether the intention is to address pre-SGMA impacts, maintain or improve conditions within GDEs or species and habitats that are of particular concern or interest.		25
	3.2 Measurable Objectives *23 CCR §354.30*	Description of how GDEs were considered and whether the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment, beneficial uses and managed areas.		26
	3.3 Minimum Thresholds *23 CCR §354.28*	Description of how GDEs and environmental uses of surface water were considered when setting minimum thresholds for relevant sustainability indicators:		27
		Will adverse impacts to GDEs and/or aquatic ecosystems dependent on interconnected surface waters (beneficial user of surface water) be avoided with the selected minimum thresholds?		28
		Are there any differences between the selected minimum threshold and state, federal, or local standards relevant to the species or habitats residing in GDEs or aquatic ecosystems dependent on interconnected surface waters?		29
	3.4 Undesirable Results *23 CCR §354.26*	For GDEs, hydrological data are compiled and synthesized for each GDE unit:		30
		If hydrological data *are available* within/nearby the GDE	Hydrological datasets are plotted and provided for each GDE unit (Worksheet 3, can be attached in GSP Section 6.0).	31
			Baseline period in the hydrologic data is defined.	32
			GDE unit is classified as having high, moderate, or low susceptibility to changes in groundwater.	33

			Cause-and-effect relationships between groundwater changes and GDEs are explored.	34
		If hydrological data *are not available* within/nearby the GDE	Data gaps/insufficiencies are described.	35
			Plans to reconcile data gaps in the monitoring network are stated.	36
		For GDEs, biological data are compiled and synthesized for each GDE unit:		37
		Biological datasets are plotted and provided for each GDE unit, and provide baseline conditions for assessment of trends and variability.		38
		Data gaps/insufficiencies are described.		39
		Plans to reconcile data gaps in the monitoring network are stated.		40
		Description of potential effects on GDEs, land uses and property interests:		41
		Cause-and-effect relationships between GDE and groundwater conditions are described.		42
		Impacts to GDEs that are considered to be "significant and unreasonable" are described.		43
		Known hydrological thresholds or triggers (e.g., instream flow criteria, groundwater depths, water quality parameters) for significant impacts to relevant species or ecological communities are reported.		44
		Land uses include and consider recreational uses (e.g., fishing/hunting, hiking, boating).		45
		Property interests include and consider privately and publicly protected conservation lands and opens spaces, including wildlife refuges, parks, and natural preserves.		46
Sustainable Management Criteria	3.5 Monitoring Network *23 CCR §354.34*	Description of whether hydrological data are spatially and temporally sufficient to monitor groundwater conditions for each GDE unit.		47
		Description of how hydrological data gaps and insufficiencies will be reconciled in the monitoring network.		48
		Description of how impacts to GDEs and environmental surface water users, as detected by biological responses, will be monitored and which GDE monitoring methods will be used in conjunction with hydrologic data to evaluate cause-and-effect relationships with groundwater conditions.		49
Projects & Mgmt Actions	4.0. Projects & Mgmt Actions to Achieve Sustainability Goal *23 CCR §354.44*	Description of how GDEs will benefit from relevant project or management actions.		50
		Description of how projects and management actions will be evaluated to assess whether adverse impacts to the GDE will be mitigated or prevented.		51

* In reference to DWR's GSP annotated outline guidance document, available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/GD_GSP_Outline_Final_2016-12-23.pdf

Attachment B

TNC Evaluation of
Chapters 7 and 8 of the 180/400-Foot Aquifer Subbasin Draft GSP

Chapters 7 and 8 of the of the 180/400-Foot Aquifer Subbasin GSP have been provided as a Draft for public review and comment. TNC reviewed initial drafts of Chapters 4 and 5 of the 180-400 Foot Aquifer Subbasin GSP and the Salinas Valley Basin Integrated Sustainability Plan (ISP), and provided comments in our letters dated 7 February 2019 and 11 April 2019, respectively. This attachment summarizes our comments on the recently provided draft Chapters 7 and 8 of the GSP. We understand that details provided in the Salinas Valley ISP are intended to be overarching for all subbasins within the Salinas Valley Basin, which includes the 180/400-Foot Aquifer Subbasin. Since the GSP does not follow the Department of Water Resources Annotated GSP Outline, we have organized our comments below in accordance with the item numbers in the checklist included as Attachment A. In addition, the page numbers in Chapter 8 appear to inadvertently contain duplicate entries. To avoid confusion, our references to the page numbers in Chapter 8 are to page x of y of the pdf file, rather than to the page numbers that appear in the page footers. The page numbering for Chapter 7 appears to be correct, and our references for Chapter 7 are to the page numbers as they appear in the page footer.

<u>Checklist Items 23-25 – Sustainability Goal (23 CCR §354.24).</u>

- [Section 8.2 Sustainability Goal (PDF pp. 6 and 7 of 70)] In a future draft of the document, please provide more details on how the needs of environmental beneficial users (GDE and ISW ecosystems) will be balanced with other water users in the basin. The sustainability goal should describe how projects and actions will balance environmental water needs and avoid adverse impacts to GDEs and ISWs, how the basin will be operated to maintain or improve these aquatic ecosystems, and an explanation of how the sustainability goal will be achieved within 20 years of implementation of the GSP. For more case studies on how to incorporate environmental benefits into groundwater projects, please visit our website: https://groundwaterresourcehub.org/case-studies/recharge-case-studies/
- [Section 8.3 General Process for Establishing Sustainable Management Criteria (PDF pg. 7 of 70)] This section broadly lists how the chapter was developed, but "publicly available information" and specific stakeholders are not clearly defined or cross referenced to other sections. Please provide or cross-reference this information, including reference to publicly available information regarding GDEs that was researched and how environmental stakeholders were engaged.

<u>Checklist Item 26 – Measurable Objectives (23 CCR §354.30), and Checklist Items 27-29 – Minimum Thresholds (23 CCR §354.28).</u>

- <u>Section 8.10 Depletion of Interconnected Surface Water SMC (PDF pg. 59 of 70)</u> This section states that …"*shallow sediments above the confined 180-Foot aquifer … are connected to the surface water system. However, there almost no groundwater*

pumping in this area and it is not identified as a defined aquifer. The Salinas River tends to be a losing river where surface water infiltrates into the unconfined zone above the 180-Foot Aquifer. This occurs primarily in the dry season, and the Salinas River is largely dependent on the San Antonio and Nacimiento Reservoir releases for its continuous flow rate." Groundwater extraction from the 180-400 Foot Aquifer System has the potential to locally affect conditions in the overlying Shallow Aquifer and deplete interconnected surface water, potentially causing adverse impacts to the environmental beneficial users in the basin. Please integrate the following information into this section of the GSP to appropriately establish SMC for ISWs in a way that balances the needs of environmental beneficial users and achieves the basin's sustainability goal to balance *all* beneficial users of the basin:

- The shallow aquifer is indeed a principal aquifer that needs SMC established to prevent adverse impacts to surface water beneficial users. SGMA defines principal aquifers as "aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems" [23 CCR § 351 (aa)]. In addition, more nested/clustered wells are needed in the 180-400 Foot Aquifer area to determine vertical groundwater gradients and whether pumping in the deeper aquifers are causing groundwater levels to lower in the shallow aquifer and deplete surface water.
- As previously mentioned in our April 11 letter regarding Chapter 5 of the Draft GSP, the shallow aquifer in the 180/400 Foot Aquifer and Monterey Subbasins are likely to be supporting GDEs and interconnecting with the Salinas River. Thus, pumping in *deeper aquifers* can still cause adverse impacts to environmental beneficial users reliant on shallow groundwater. Even if pumping is not occurring in shallow groundwater aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, especially those that support springs, surface water and GDEs for current and future uses.
- Several published references indicate that the 180-Foot aquifer is in direct hydraulic communication with the overlying Dune Sand Aquifer or Shallow Alluvial Aquifer where the Salinas Valley Aquitard is thin or absent.[3] These same references indicate aquitards within the 180-/400-Foot aquifer system are known to be locally discontinuous. In addition, the fact that the Salinas is a losing stream and that of 67,000 acre feet are recharged from the stream to the groundwater basin in an average year strongly suggests that the shallow aquifer is hydraulically connected to the underlying pumped aquifer systems.
- The GDE Pulse web application developed by The Nature Conservancy provides easy access to 35 years of satellite data to view trends of vegetation metrics, groundwater depth (where available), and precipitation data. This satellite imagery can be used to observe trends for NC dataset polygons within the 180-400 Foot Aquifer area (Figure 1). Over the past 10 years

[3] *See for example "Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA," by Knight et al., dated 15 March 2018, and Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, Special Reports Series 17-01," by Monterey County Water Resources Agency, dated October 2017.*

(2009-2018), NC dataset vegetation polygons have experienced adverse impacts to vegetation growth and moisture which are correlated to declines in groundwater levels (e.g., as indicated by wells GZWA21202, CHEA21208).

Figure 1. GDE Pulse web viewer screenshots of satellite-based trends of vegetation growth (NDVI), moisture (NDMI), shallow groundwater levels, and precipitation for selected vegetation from the NC dataset in the 180-400 Foot Aquifer area.

- <u>[Section 8.10.1 Locally Defined Significant and Unreasonable Conditions; 8.10.2 Minimum Thresholds; and 8.10.2.1 Information and Methodology Used to Establish Minimum Thresholds and Measurable Objectives (PDF pp. 59, 60 and 61 of 70)]</u> These sections explain that the definition of Significant and Unreasonable Conditions, and establishment of Minimum Thresholds and Measurable Objectives is based on considerations related to flows in the Salinas River and specifically the maintenance of minimum flows for the protection of aquatic species and water rights. Steelhead are not the only environmental user that need consideration. A list of freshwater aquatic species identified in the 180-/400-Foot Aquifer Subbasin is included for your reference as Attachment C. There appear GDEs have been omitted, as they are not mentioned or considered. We believe this to be a deficiency, as the Department of Water Resource's NC Dataset Viewer indicates a variety of potential GDE habitats are located in the subbasin along the Salinas River and its tributaries, and not just within the stream. Furthermore, TNC's GDE Pulse Tool (Attachment E) shows declining ecosystem conditions along the Salinas River between 2014 and 2018, including the period <u>*after*</u> the recent drought (and <u>*after*</u> the baseline period specified in SGMA). NDVI (which represents vegetation growth) and NDMI (which represents vegetation

moisture) coincide with a decline in groundwater levels for NC dataset polygons along the Salinas River west of Salinas (Figure 1). Please include a discussion of how baseline conditions, current trends and potential adverse impacts to GDEs were considered in the definition of significant and unreasonable conditions and establishment of Minimum Thresholds and Measurable Objectives. A discussion of applicable state, federal and local standards, policies and guidelines applicable to the GDE species and habitats identified should also be provided. The section should explain how, in light of the nature and condition of the GDEs, these Sustainable Management Criteria will prevent undesirable results related to damage to GDE resources. Any data gaps and the means to address them should be identified.

- [Section 8.10.2.4 Effects on Beneficial Uses and Users (PDF pp. 66 and 67 of 70)]
  The listing of beneficial uses of interconnected surface water is limited to instream resources of the Salinas River alone. Please expand the listing of beneficial uses and users to address GDEs and ecosystems that are located adjacent to the river and its tributaries. A list of fresh water aquatic species identified in the 180-/400-Foot Aquifer Subbasin is included for your reference as Attachment C. The relationships between GDEs and ecosystems adjacent to the river and its tributaries, and their dependence on interactions with ISW and groundwater, are key to understanding the appropriateness of the subbasin-wide Minimum Threshold for interconnected surface water depletion being proposed for all ISWs, and the extent to which GDEs adjacent to the river should also be considered when establishing the SMC for Chronic Lowering of Groundwater levels. Adjacent or nearby GDEs could be significantly affected by small depletions depending on the depletion rate, their location and the existing surface and groundwater hydraulic gradients. However, even if they are not, these GDEs could still be affected by relatively modest groundwater level declines and likely still need to be considered separately according to groundwater levels under the Chronic Lowering of Groundwater SMC. The discussion of ecological land uses and users should include GDEs and ecosystems adjacent to the river and its tributaries, and their dependence on interactions with ISW and groundwater.

- [Section 8.10.2.5 Relation to State, Federal, or Local Standards (PDF pp. 67 of 70)]
  We recommend the streamflow requirements set by the NMFS should be explicitly stated or referenced in the GSP. In addition, any other state, federal or local standards, requirements and guidelines pertaining to the GDE habitats and species identified in the NC dataset or the list of species included in Attachment C should also be discussed or referenced.

- [Section 8.10.2.6 Method for Quantitative Measurement of Minimum Threshold (PDF [pg. 67 of 70)]
  Modeling/calculation of surface water depletion is the only proposed means to measure the minimum threshold for depletion of ISWs. Ecosystems sensitive to declines in groundwater levels and depletion of interconnected surface waters can

experience significant declines in a short period of time depending on their hydraulic function, structure and the species involved. Use of a single calculated value in lieu of measured field data and linkages to other measured hydrogeologic data (such as groundwater levels) leaves a significant data gap that must be filled to assure protection of these resources. Model estimates should be monitored more closely than every five years in order to detect potentially significant effects in a time frame that allows for rapid response and alleviation of ecosystem decline. As discussed, the TNC's GDE Pulse Tool (Attachment E) already shows declining ecosystem conditions along the Salinas River between 2014 and 2018, including the period *after* the recent drought (and *after* the baseline period specified in the SGMA). Please discuss how the minimum threshold will be measured in a way that assures protection of GDEs and instream environmental beneficial users.

- [Section 8.5.2.1 Information and Methodology use to Establish Minimum Thresholds and Measurable Objectives (PDF pp. 8 to 16 of 70)]
  This section describes the methodology used to establish Minimum Thresholds and Measurable Objectives for Chronic Groundwater Level Decline. Subbasin-wide groundwater levels experienced in 2015 are defined as the Minimum Threshold, and the Measurable Objective was established the subbasin-wide groundwater levels experienced in 1992, which were approximately 1 foot higher. Table 8-1 (PDF pg. 16 of 70) lists "Representative Monitoring Sites" or wells where groundwater levels will be measured and compared to the Measurable Objectives to assess compliance with the plan. It is noteworthy that the table does not include a single well completed in the Shallow Alluvial or Dune Sand Aquifer. Please identify the lack of shallow aquifer monitoring wells as a data gap, and cross reference your plans discussed in Chapter 7 to install a sufficient number of shallow monitoring wells to assess potential undesirable results to GDEs.

- [Sections 8.5.2.3 and Section 8.6.2.2 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators (PDF pp.17-19 and pp.27-28, respectively)]
  When groundwater levels are used as an objective, their relationship to other Sustainability Indicators must be discussed. These sections describe the relationship of chronic groundwater level declines and change in groundwater storage, which are measured using groundwater levels, to depletion of interconnected surface waters. The discussion is limited to the potential effect of groundwater levels on stream flows, and the potential effect of groundwater level declines on GDEs is not mentioned. The statement that *"minimum thresholds for reduction in groundwater storage is a single value for the entire Basin. Therefore, the concept of potential conflict between minimum thresholds is not applicable"* does not recognize the potential presence of ecosystems and GDEs that could be sensitive to relatively minor or localized declines in groundwater levels. The potential effect of groundwater level declines on GDEs depends on the type of vegetation present and its ability to adapt to changing groundwater levels, the local interaction between surface and groundwater, and the nature of regional and local pumping stresses. Specification of

a single groundwater level is likely insufficient to assure protection of GDEs in the absence of a monitoring program that encompasses both groundwater levels *and* related surface conditions (23 CCR §354.34 (a) and (b)), e.g., the health of the GDEs, for example, by using a tool similar to GDE Pulse. Please revise these sections to include a discussion regarding the effects of potential groundwater level declines on GDEs and limitations of groundwater level monitoring alone to assess potential undesirable results to GDEs.

- [Sections 8.5.2.5 and 8.6.2.4 Effects on Beneficial Users and Land Uses (PDF pp.19-20, and 29-30 of 70, respectively)]
  The discussion on ecological land uses and users does not include a discussion on GDEs, ISWs, or other uses that benefit aquatic and terrestrial wildlife, ecosystem processes or recreation. A list of fresh water aquatic species identified in the 180-/400-Foot Aquifer Subbasin is included for your reference as Attachment C. These sections imply that ecological land uses *may* benefit secondarily from the potential curtailment of agricultural and domestic land uses, but does no clearly state how these specialized aquatic ecosystems and related beneficial groundwater users would benefit or be protected from further decline or future damage. Please include a discussion explaining how GDEs, ISW-related ecosystems and recreational uses may benefit or be protected by implementation of the proposed Minimum Thresholds and Measurable Objectives. A list of freshwater aquatic species identified in the 180-/400-Foot Aquifer Subbasin is included for your reference as Attachment C.

- [Section 8.5.4.3 Effects on Beneficial Users and Land Uses (PDF pg. 26 of 70)]
  This section discusses the effects on beneficial users and land uses of criteria used to define undesirable results related to chronic groundwater level decline. Fifteen percent of exceedances is considered reasonable if the wells are widespread through the subbasin. The section acknowledges that significant unreasonable effects could occur in a smaller clustered area due to localized pumping, but does not describe specifically how the proposed regional compliance strategy will identify or address a more localized occurrence. TNC's GDE Pulse Tool (Attachment E) shows declining ecosystem conditions along the Salinas River west of Salinas between 2014 and 2018. This section should be revised to use these data as a basis for addressing how the proposed compliance strategy will address significant and undesirable decline of GDEs at the spatial scale already observed in the GDEPulse data.

- [Section 8.9.2.2 Relationship between Individual Minimum Thresholds and Relationships to Other Sustainability Indicators (pp.55, which is pp.47 in the document due to formatting errors)]
  This section discusses the relationship between Minimum Thresholds for subsidence and other Sustainability Indicators, including depletion of interconnected surface waters. The GSP states that "thresholds will not change the amount or location of pumping and will not result in a significant or unreasonable depletion of

interconnected surface waters". Please expand this section to include a discussion regarding the potential effects of the minimum thresholds for subsidence, which are based on infrastructure, on the hydraulic function of wetlands and other GDEs.

Checklist Item 47-49 – Monitoring Network (23 CCR §352.34).

- [Table 7.2 Existing 180/400-Foot Aquifer CASGEM Well Network (pg. 4)
  The wells listed in the table and proposed for monitoring do not include any wells completed in the Shallow Alluvial or Dune Sand Aquifers. As such, the proposed monitoring well network is inadequate to assess the potential effects of groundwater pumping and management on ISWs and GDEs. This fact should be acknowledged with a cross reference to Section 7.2.4 which describes the proposed work to remedy this situation.

- [Section 7.7 Interconnected Surface Water Monitoring Network (pp. 23-24)
  This section states that *"… there is little to no interconnection between the 180-Foot, 400-Foot or Deep Aquifer and surface water in the 180/400-Foot Aquifer Subbasin. Therefore, there will be no SMC and no monitoring network for depletion of interconnected surface water in this GSP."* This statement contradicts other published reports and the statement in the next paragraph that there is *"very little monitoring data"* and that the *"level of interconnection is unclear."* The section further states that "the Salinas River is potentially in connection with groundwater in the shallow sediments" and yet Section 8.10.2 states that the average annual surface water depletion of the Salinas River is 67,000 acre feet. The GSP should explain how this amount of recharge can be redistributed through the aquifer system without any significant interconnection between the shallow and deeper aquifer systems. Furthermore, it is our understanding that the rate of surface water depletion from the Salinas River is in fact correlated historical groundwater level declines in the shallow and 180-Foot aquifer systems which have also resulted in seawater intrusion into the subbasin. The installation of two groundwater monitoring wells is insufficient to characterize surface-groundwater interactions across the entire subbasin. The BMP cited in section 7.2 instructs GSAs to "*Monitor surface water and groundwater … to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions."* Per the BMP, 13 to 14 monitoring wells would be more adequate to achieve this objective. Please revise this section to reflect what is known and published regarding potential surface-groundwater interactions in the subbasin and related groundwater level and budget trends, identify the existing data gaps, and provide recommendations for an adequate number of monitoring wells to assess surface-groundwater interaction and shallow groundwater level trends.

  The GSP Regulations (23 CCR §354.34 (a) and (b)) require that monitoring must address trends in groundwater *and related surface conditions* (emphasis added).

This includes “the tools and methods necessary to calculate depletions” and “[o]ther factors that may be necessary to identify adverse impacts on beneficial uses of the surface water,” including impacts to GDEs. Please specify what other monitoring data and methods will be implemented to inform a determination whether significant and unreasonable impacts to GDEs are occurring, and explain how they will adequately meet the requirements of 23 CCR §354.34(c)(6) relative to GDEs and ISWs.

- Monitoring protocols are referenced to be included in Appendix 7-A (pg. 8); however, this appendix in the present version includes only Global Positioning System (GPS) receiver manuals, as opposed to describing monitoring protocols. Please include monitoring protocols that meet the requirements of 23 CCR §354.34(c)(6) relative to GDEs and ISWs.

Attachment C

Freshwater Species Located in the 180/400-Foot Aquifer Subbasin

To assist in identifying the beneficial users of surface water necessary to assess the undesirable result "depletion of interconnected surface waters", Attachment C provides a list of freshwater species located in the 180/400-Foot Aquifer Subbasin in the Salinas Valley. To produce the freshwater species list, we used ArcGIS to select features within the California Freshwater Species Database version 2.0.9 within the GSA's boundary. This database contains information on ~4,000 vertebrates, macroinvertebrates and vascular plants that depend on fresh water for at least one stage of their life cycle. The methods used to compile the California Freshwater Species Database can be found in Howard et al. 2015[4]. The spatial database contains locality observations and/or distribution information from ~400 data sources. The database is housed in the California Department of Fish and Wildlife's BIOS[5] as well as on The Nature Conservancy's science website[6].

Scientific Name	Common Name	Legal Protected Status		
		Federal	State	Other
BIRDS				
Actitis macularius	Spotted Sandpiper			
Aechmophorus clarkii	Clark's Grebe			
Aechmophorus occidentalis	Western Grebe			
Agelaius tricolor	Tricolored Blackbird	Bird of Conservation Concern	Special Concern	BSSC - First priority
Aix sponsa	Wood Duck			
Anas acuta	Northern Pintail			
Anas americana	American Wigeon			
Anas clypeata	Northern Shoveler			
Anas crecca	Green-winged Teal			
Anas cyanoptera	Cinnamon Teal			
Anas discors	Blue-winged Teal			
Anas platyrhynchos	Mallard			
Anas strepera	Gadwall			
Anser albifrons	Greater White-fronted Goose			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Aythya affinis	Lesser Scaup			
Aythya americana	Redhead		Special Concern	BSSC - Third priority
Aythya collaris	Ring-necked Duck			
Aythya marila	Greater Scaup			
Aythya valisineria	Canvasback		Special	
Botaurus lentiginosus	American Bittern			

[4] Howard, J.K. et al. 2015. Patterns of Freshwater Species Richness, Endemism, and Vulnerability in California. PLoSONE, 11(7). Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0130710
[5] California Department of Fish and Wildlife BIOS: https://www.wildlife.ca.gov/data/BIOS
[6] Science for Conservation: https://www.scienceforconservation.org/products/california-freshwater-species-database

Bucephala albeola	Bufflehead			
Bucephala clangula	Common Goldeneye			
Butorides virescens	Green Heron			
Calidris alpina	Dunlin			
Calidris mauri	Western Sandpiper			
Calidris minutilla	Least Sandpiper			
Chen caerulescens	Snow Goose			
Chen rossii	Ross's Goose			
Chlidonias niger	Black Tern		Special Concern	BSSC - Second priority
Chroicocephalus philadelphia	Bonaparte's Gull			
Cistothorus palustris palustris	Marsh Wren			
Cygnus columbianus	Tundra Swan			
Egretta thula	Snowy Egret			
Empidonax traillii	Willow Flycatcher	Bird of Conservation Concern	Endangered	
Fulica americana	American Coot			
Gallinago delicata	Wilson's Snipe			
Geothlypis trichas trichas	Common Yellowthroat			
Grus canadensis	Sandhill Crane			
Haliaeetus leucocephalus	Bald Eagle	Bird of Conservation Concern	Endangered	
Himantopus mexicanus	Black-necked Stilt			
Histrionicus histrionicus	Harlequin Duck		Special Concern	BSSC - Second priority
Icteria virens	Yellow-breasted Chat		Special Concern	BSSC - Third priority
Limnodromus scolopaceus	Long-billed Dowitcher			
Lophodytes cucullatus	Hooded Merganser			
Megaceryle alcyon	Belted Kingfisher			
Mergus merganser	Common Merganser			
Mergus serrator	Red-breasted Merganser			
Numenius americanus	Long-billed Curlew			
Numenius phaeopus	Whimbrel			
Nycticorax nycticorax	Black-crowned Night-Heron			
Oxyura jamaicensis	Ruddy Duck			
Pelecanus erythrorhynchos	American White Pelican		Special Concern	BSSC - First priority

Phalacrocorax auritus	Double-crested Cormorant			
Phalaropus tricolor	Wilson's Phalarope			
Plegadis chihi	White-faced Ibis		Watch list	
Pluvialis squatarola	Black-bellied Plover			
Podiceps nigricollis	Eared Grebe			
Podilymbus podiceps	Pied-billed Grebe			
Porzana carolina	Sora			
Rallus limicola	Virginia Rail			
Recurvirostra americana	American Avocet			
Riparia riparia	Bank Swallow		Threatened	
Rynchops niger	Black Skimmer			
Setophaga petechia	Yellow Warbler			BSSC - Second priority
Tachycineta bicolor	Tree Swallow			
Tringa melanoleuca	Greater Yellowlegs			
Tringa semipalmata	Willet			
Tringa solitaria	Solitary Sandpiper			
Xanthocephalus xanthocephalus	Yellow-headed Blackbird		Special Concern	BSSC - Third priority
CRUSTACEANS				
Americorophium spp.	Americorophium spp.			
Cambaridae fam.	Cambaridae fam.			
Cyprididae fam.	Cyprididae fam.			
Gammarus spp.	Gammarus spp.			
Gnorimosphaeroma spp.	Gnorimosphaeroma spp.			
Hyalella spp.	Hyalella spp.			
Neomysis mercedis				Not on any status lists
FISH				
Eucyclogobius newberryi	Tidewater goby	Endangered	Special Concern	Vulnerable - Moyle 2013
Oncorhynchus mykiss - SCCC	South Central California coast steelhead	Threatened	Special Concern	Vulnerable - Moyle 2013
Spirinchus thaleichthys	Longfin smelt	Candidate	Threatened	Vulnerable - Moyle 2013
Catostomus occidentalis mnioltiltus	Monterey sucker			Least Concern - Moyle 2013
Cottus aleuticus	Coastrange sculpin			Least Concern - Moyle 2013
Cottus asper ssp. 1	Prickly sculpin			Least Concern - Moyle 2013
Entosphenus tridentata ssp. 1	Pacific lamprey		Special	Near-Threatened - Moyle 2013

Eucyclogobius newberryi	Tidewater goby	Endangered	Special Concern	Vulnerable - Moyle 2013
Gasterosteus aculeatus aculeatus	Coastal threespine stickleback			Least Concern - Moyle 2013
Gasterosteus aculeatus microcephalus	Inland threespine stickleback		Special	Least Concern - Moyle 2013
Lavinia exilicauda harengeus	Monterey hitch		Special	Vulnerable - Moyle 2013
Lavinia symmetricus subditus	Monterey roach		Special Concern	Near-Threatened - Moyle 2013
Oncorhynchus gorbuscha	Pink salmon		Special Concern	Endangered - Moyle 2013
Oncorhynchus mykiss - SCCC	South Central California coast steelhead	Threatened	Special Concern	Vulnerable - Moyle 2013
Oncorhynchus mykiss irideus	Coastal rainbow trout			Least Concern - Moyle 2013
Orthodon microlepidotus	Sacramento blackfish			Least Concern - Moyle 2013
Ptychocheilus grandis	Sacramento pikeminnow			Least Concern - Moyle 2013
Rhinichthys osculus ssp. 1	Sacramento speckled dace			Least Concern - Moyle 2013
HERPS				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Ambystoma californiense californiense	California Tiger Salamander	Threatened	Threatened	ARSSC
Ambystoma macrodactylum	Long-toed salamander			
Ambystoma macrodactylum croceum	Santa Cruz Long-toed Salamander	Endangered	Endangered	
Anaxyrus boreas boreas	Boreal Toad			
Anaxyrus boreas halophilus	California Toad			ARSSC
Pseudacris regilla	Northern Pacific Chorus Frog			
Pseudacris sierra	Sierran Treefrog			
Rana boylii	Foothill Yellow-legged Frog	Under Review in the Candidate or Petition Process	Special Concern	ARSSC

Rana draytonii	California Red-legged Frog	Threatened	Special Concern	ARSSC
Spea hammondii	Western Spadefoot	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
Taricha torosa	Coast Range Newt		Special Concern	ARSSC
Thamnophis elegans elegans	Mountain Gartersnake			Not on any status lists
Thamnophis elegans terrestris	Coast Gartersnake			Not on any status lists
Thamnophis hammondii hammondii	Two-striped Gartersnake		Special Concern	ARSSC
Thamnophis sirtalis infernalis	California Red-sided Gartersnake			Not on any status lists
Thamnophis sirtalis sirtalis	Common Gartersnake			
INSECTS AND OTHER INVERTEBRATES				
Abedus spp.	Abedus spp.			
Ablabesmyia spp.	Ablabesmyia spp.			
Acentrella spp.	Acentrella spp.			
Aeshna interrupta interna				
Aeshna palmata	Paddle-tailed Darner			
Aeshnidae fam.	Aeshnidae fam.			
Agabus spp.	Agabus spp.			
Ameletus spp.	Ameletus spp.			
Argia spp.	Argia spp.			
Baetidae fam.	Baetidae fam.			
Baetis spp.	Baetis spp.			
Belostomatidae fam.	Belostomatidae fam.			
Berosus spp.	Berosus spp.			
Bisancora spp.	Bisancora spp.			
Brachycentrus spp.	Brachycentrus spp.			
Brillia spp.	Brillia spp.			
Calineuria californica	Western Stone			
Callibaetis spp.	Callibaetis spp.			
Centroptilum spp.	Centroptilum spp.			
Chaetocladius spp.	Chaetocladius spp.			
Cheumatopsyche spp.	Cheumatopsyche spp.			
Chironomidae fam.	Chironomidae fam.			
Chironomus spp.	Chironomus spp.			
Chloroperlidae fam.	Chloroperlidae fam.			
Choroterpes spp.	Choroterpes spp.			
Cladotanytarsus spp.	Cladotanytarsus spp.			
Coenagrionidae fam.	Coenagrionidae fam.			

Corisella decolor				Not on any status lists
Corisella spp.	Corisella spp.			
Corixidae fam.	Corixidae fam.			
Cricotopus spp.	Cricotopus spp.			
Cryptotendipes spp.	Cryptotendipes spp.			
Cymbiodyta spp.	Cymbiodyta spp.			
Dicrotendipes spp.	Dicrotendipes spp.			
Diphetor hageni	Hagen's Small Minnow Mayfly			
Drunella spp.	Drunella spp.			
Dytiscidae fam.	Dytiscidae fam.			
Enallagma carunculatum	Tule Bluet			
Enallagma spp.	Enallagma spp.			
Epeorus spp.	Epeorus spp.			
Ephydridae fam.	Ephydridae fam.			
Fallceon quilleri	A Mayfly			
Fallceon spp.	Fallceon spp.			
Gomphidae fam.	Gomphidae fam.			
Gumaga spp.	Gumaga spp.			
Gyrinus spp.	Gyrinus spp.			
Heptageniidae fam.	Heptageniidae fam.			
Hydrophilidae fam.	Hydrophilidae fam.			
Hydroporus spp.	Hydroporus spp.			
Hydropsyche spp.	Hydropsyche spp.			
Hydroptila spp.	Hydroptila spp.			
Hydroptilidae fam.	Hydroptilidae fam.			
Ischnura spp.	Ischnura spp.			
Isoperla spp.	Isoperla spp.			
Laccobius spp.	Laccobius spp.			
Laccophilus spp.	Laccophilus spp.			
Lepidostoma spp.	Lepidostoma spp.			
Leptoceridae fam.	Leptoceridae fam.			
Leucrocuta spp.	Leucrocuta spp.			
Limnophyes spp.	Limnophyes spp.			
Liodessus obscurellus				Not on any status lists
Malenka spp.	Malenka spp.			
Micropsectra spp.	Micropsectra spp.			
Microtendipes spp.	Microtendipes spp.			
Mystacides spp.	Mystacides spp.			
Nanocladius spp.	Nanocladius spp.			
Nectopsyche spp.	Nectopsyche spp.			
Ochthebius spp.	Ochthebius spp.			
Onocosmoecus spp.	Onocosmoecus spp.			
Optioservus spp.	Optioservus spp.			
Oreodytes spp.	Oreodytes spp.			
Pantala hymenaea	Spot-winged Glider			

Paracladopelma spp.	Paracladopelma spp.			
Paracymus spp.	Paracymus spp.			
Parakiefferiella spp.	Parakiefferiella spp.			
Paraleptophlebia spp.	Paraleptophlebia spp.			
Paratanytarsus spp.	Paratanytarsus spp.			
Paratendipes spp.	Paratendipes spp.			
Peltodytes spp.	Peltodytes spp.			
Phaenopsectra spp.	Phaenopsectra spp.			
Polypedilum spp.	Polypedilum spp.			
Procladius spp.	Procladius spp.			
Psephenus falli				Not on any status lists
Pseudosmittia spp.	Pseudosmittia spp.			
Psychodidae fam.	Psychodidae fam.			
Rhagovelia distincta				Not on any status lists
Rhagovelia spp.	Rhagovelia spp.			
Rheotanytarsus spp.	Rheotanytarsus spp.			
Rhionaeschna multicolor	Blue-eyed Darner			
Rhionaeshna spp.	Rhionaeshna spp.			
Rhithrogena spp.	Rhithrogena spp.			
Rhyacophila spp.	Rhyacophila spp.			
Serratella spp.	Serratella spp.			
Sigara spp.	Sigara spp.			
Simulium spp.	Simulium spp.			
Sperchon spp.	Sperchon spp.			
Sperchontidae fam.	Sperchontidae fam.			
Stylurus spp.	Stylurus spp.			
Sweltsa spp.	Sweltsa spp.			
Sympetrum corruptum	Variegated Meadowhawk			
Tanytarsus spp.	Tanytarsus spp.			
Tipulidae fam.	Tipulidae fam.			
Trichocorixa calva				Not on any status lists
Trichocorixa spp.	Trichocorixa spp.			
Tricorythodes spp.	Tricorythodes spp.			
Tropisternus spp.	Tropisternus spp.			
Uvarus subtilis				Not on any status lists
Zaitzevia spp.	Zaitzevia spp.			
MAMMALS				
Lontra canadensis canadensis	North American River Otter			Not on any status lists
MOLLUSKS				
Anodonta californiensis	California Floater		Special	
Ferrissia rivularis	Creeping Ancylid			CS

Ferrissia spp.	Ferrissia spp.			
Helisoma spp.	Helisoma spp.			
Hydrobiidae fam.	Hydrobiidae fam.			
Lymnaea spp.	Lymnaea spp.			
Menetus opercularis	Button Sprite			CS
Physa spp.	Physa spp.			
Pisidium spp.	Pisidium spp.			
Planorbidae fam.	Planorbidae fam.			
Pomatiopsis spp.	Pomatiopsis spp.			
Sphaeriidae fam.	Sphaeriidae fam.			
PLANTS				
Arundo donax	NA			
Azolla filiculoides	NA			
Calochortus uniflorus	Shortstem Mariposa Lily		Special	CRPR - 4.2
Carex densa	Dense Sedge			
Carex harfordii	Harford's Sedge			
Carex obnupta	Slough Sedge			
Cotula coronopifolia	NA			
Eleocharis macrostachya	Creeping Spikerush			
Euthamia occidentalis	Western Fragrant Goldenrod			
Helenium puberulum	Rosilla			
Hypericum anagalloides	Tinker's-penny			
Jaumea carnosa	Fleshy Jaumea			
Juncus effusus pacificus				
Juncus phaeocephalus phaeocephalus	Brown-head Rush			
Juncus xiphioides	Iris-leaf Rush			
Lemna minor	Lesser Duckweed			
Lepidium oxycarpum	Sharp-pod Pepper-grass			
Limonium californicum	California Sea-lavender			
Mimulus guttatus	Common Large Monkeyflower			
Navarretia intertexta	Needleleaf Navarretia			
Oenanthe sarmentosa	Water-parsley			
Perideridia gairdneri gairdneri	Gairdner's Yampah		Special	CRPR - 4.2
Phacelia distans	NA			
Phragmites australis australis	Common Reed			
Plantago elongata elongata	Slender Plantain			
Populus trichocarpa	NA			Not on any status lists

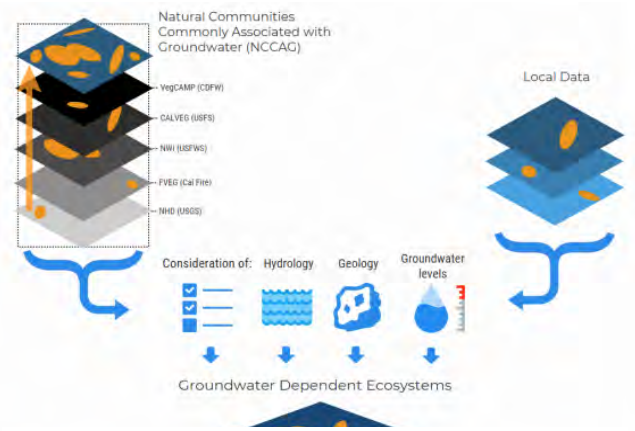
Potentilla anserina pacifica				Not on any status lists
Psilocarphus tenellus	NA			
Rorippa curvisiliqua curvisiliqua	Curve-pod Yellowcress			
Rumex conglomeratus	NA			
Rumex occidentalis				Not on any status lists
Rumex salicifolius salicifolius	Willow Dock			
Rumex stenophyllus	NA			
Salix babylonica	NA			
Salix exigua exigua	Narrowleaf Willow			
Salix laevigata	Polished Willow			
Salix lasiandra lasiandra				Not on any status lists
Salix lasiolepis lasiolepis	Arroyo Willow			
Sequoia sempervirens				
Sparganium eurycarpum eurycarpum				
Stachys ajugoides	Bugle Hedge-nettle			
Stachys chamissonis chamissonis	Coast Hedge-nettle			
Stellaria littoralis	Beach Starwort		Special	CRPR - 4.2
Triglochin maritima	Common Bog Arrow-grass			
Typha latifolia	Broadleaf Cattail			
Veronica anagallis-aquatica	NA			

Attachment D

IDENTIFYING GDEs UNDER SGMA
Best Practices for using the NC Dataset

The Sustainable Groundwater Management Act (SGMA) requires that groundwater dependent ecosystems (GDEs) be identified in Groundwater Sustainability Plans (GSPs). As a starting point, the Department of Water Resources (DWR) is providing the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) online[7] to help Groundwater Sustainability Agencies (GSAs), consultants, and stakeholders identify GDEs within individual groundwater basins. To apply information from the NC Dataset to local areas, GSAs should combine it with the best available science on local hydrology, geology, and groundwater levels to verify whether polygons in the NC dataset are likely supported by groundwater in an aquifer (Figure 1)[8]. This document highlights six best practices for using local groundwater data to confirm whether a potential GDE identified in the NC dataset is supported to groundwater.

The NC Dataset identifies vegetation and wetland features that are good indicators of a GDE. The dataset is comprised of 48 publicly available state and federal datasets that map vegetation, wetlands, springs, and seeps commonly associated with groundwater in California[9]. It was developed through a collaboration between DWR, the Department of Fish and Wildlife, and The Nature Conservancy (TNC). TNC has also provided detailed guidance on identifying GDEs from the NC dataset[10] on the Groundwater Resource Hub, a website dedicated to GDEs[11].



[7] *NC Dataset Online Viewer is available at: https://gis.water.ca.gov/app/NCDatasetViewer/*

[8] California Department of Water Resources (DWR). 2018. Summary of the "Natural Communities Commonly Associated with Groundwater" Dataset and Online Web Viewer. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Statewide-Reports/Natural-Communities-Dataset-Summary-Document.pdf

[9] *For more details on the mapping methods, refer to: Klausmeyer, K., J. Howard, T. Keeler-Wolf, K. Davis-Fadtke, R. Hull, A. Lyons. 2018. Mapping Indicators of Groundwater Dependent Ecosystems in California: Methods Report. San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE_data_paper_20180423.pdf*

[10] "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans" is available at https://groundwaterresourcehub.org/gde-tools/gsp-guidance-document/

[11] *The Groundwater Resource Hub is available at: www.GroundwaterResourceHub.org*

BEST PRACTICE #1. Establishing a Connection to Groundwater

Groundwater basins can be comprised of one continuous aquifer (Figure 2A) or multiple aquifers stacked on top of each other (Figure 2B). In unconfined aquifers (Figure 2A), using the depth to groundwater and the rooting depth of the vegetation is a reasonable method to determine groundwater dependence for GDEs. If groundwater is well below the rooting (and capillary) zone of the plants and any wetland features, the ecosystem is considered disconnected and groundwater management is not likely to affect the ecosystem (Figure 2D). However, it is important to consider local conditions (soil type, groundwater flow gradients, and aquifer parameters) and to review groundwater depth data from multiple seasons and water year types (wet and dry) because intermittent periods of high groundwater levels can replenish perched clay lenses that serve as the water source for GDEs (Figure 2C). Maintaining these natural groundwater fluctuations are important to sustaining GDE health.

Basins with a stacked series of aquifers (Figure 2B) may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. If pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, such as perched aquifers, that support springs, surface water, domestic wells, and groundwater dependent ecosystems (Figure 2). This is because vertical groundwater gradients across aquifers may result in pumping from deeper aquifers to cause adverse impacts onto beneficial users reliant on shallow aquifers or interconnected surface water. The goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits. While groundwater pumping may not be currently occurring in a shallower aquifer, use of this water may become more appealing and economically viable in future years as pumping restrictions are placed on the deeper production aquifers in the basin to meet the sustainable yield and criteria. Thus, identifying GDEs in the basin should done irrespective to the amount of current pumping occurring in a particular aquifer, so that future impacts on GDEs due to new production can be avoided. A good rule of thumb to follow is: *if groundwater can be pumped from a well - it's an aquifer*.

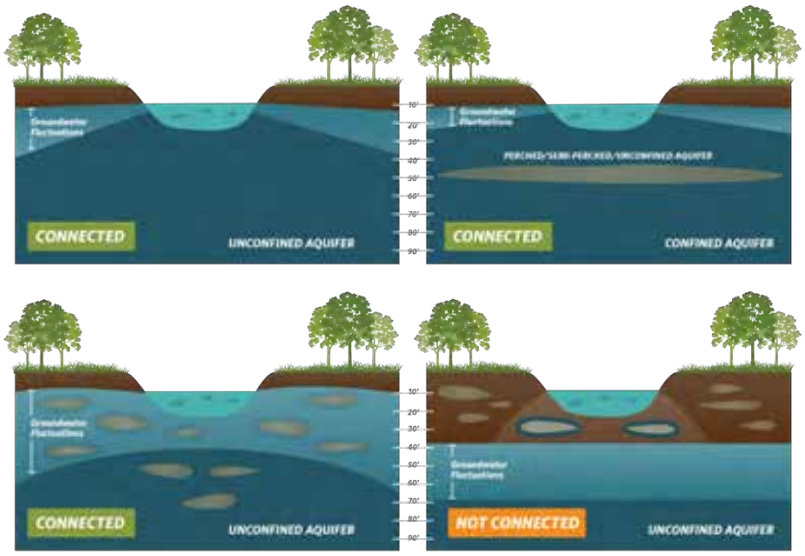


Figure 2. Confirming whether an ecosystem is connected to groundwater in a principal aquifer. Top: (Left) Depth to Groundwater in the aquifer under the ecosystem is an unconfined aquifer with depth to groundwater fluctuating seasonally and interannually within 30 feet from land surface. (Right) Depth to Groundwater in the shallow aquifer is connected to overlying ecosystem. Pumping predominately occurs in the confined aquifer, but pumping is possible in the shallow aquifer. Bottom: (Left) Depth to groundwater fluctuations are seasonally and interannually large, however, clay layers in the near surface prolong the ecosystem's connection to groundwater. (Right) Groundwater is disconnected from surface water, and any water in the vadose (unsaturated) zone is due to direct recharge from precipitation and indirect recharge under surface water feature. These areas typically support species that do not require access to groundwater to survive.

BEST PRACTICE #2. Characterize Seasonal and Interannual Groundwater Conditions

SGMA requires GSAs to describe current and historical groundwater conditions when identifying GDEs [23 CCR §354.16(g)]. Relying solely on the SGMA benchmark date (January 1, 2015) or any other single point in time to characterize groundwater conditions (e.g., depth-to-groundwater) is inadequate because managing groundwater conditions with data from one time point fails to capture the seasonal and interannual variability typical of California's climate. DWR's Best Management Practices document on water budgets[12] recommends using 10 years of water supply and water budget information to describe how historical conditions have impacted the operation of the basin within sustainable yield, implying that a baseline[13] could be determined based on data between 2005 and 2015. Using this or a similar time period, depending on data availability, is recommended for determining the depth-to-groundwater.

GDEs depend on groundwater levels being close enough to the land surface to interconnect with surface water systems or plant rooting networks. The most practical approach[14] for a GSA to assess whether polygons in the NC dataset are connected to groundwater is to rely on groundwater elevation data. As detailed in TNC's GDE guidance document[4], one of the key factors to consider when mapping GDEs is to contour depth-to-groundwater in the aquifer that is supporting the ecosystem (See Best Practice #5).

Groundwater levels fluctuate over time and space due to California's Mediterranean climate (dry summers and wet winters), climate change (flood and drought years), and subsurface heterogeneity in the subsurface (Figure 3). Many of California's GDEs have adapted to dealing with intermittent periods of water stress, however, if these groundwater conditions are prolonged adverse impacts to GDEs can result. While depth-to-groundwater levels within 30 feet[4] are generally accepted as being a proxy for confirming that polygons in the NC dataset are supported by groundwater, it is highly advised that fluctuations in the groundwater regime be characterized to understand the seasonal and interannual groundwater variability in GDEs. Utilizing groundwater data from one point in time can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Time series data on groundwater elevations and depths are available on the SGMA Data Viewer[15]. However, if insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network (See Best Practice #6).

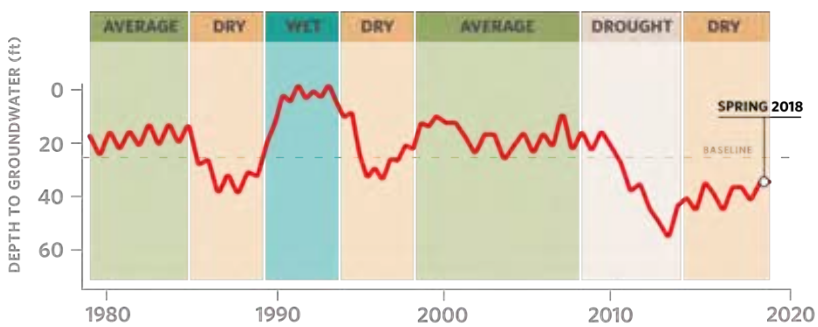


Figure 3. Example seasonality and interannual variability in depth to groundwater over time. Selecting one point in time, such as Spring 2018, to characterize groundwater conditions in GDEs fails to capture what groundwater conditions are necessary to maintain the ecosystem status into the future so adverse impacts are avoided.

[12] DWR. 2016. Water Budget Best Management Practice. Available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_Water_Budget_Final_2016-12-23.pdf

[13] *Baseline is defined under the GSP regulations as "historic information used to project future conditions for hydrology, water demand, and availability of surface water and to evaluate potential sustainable management practices of a basin." [23 CCR §351(e)]*

[14] Groundwater reliance can also be confirmed via stable isotope analysis and geophysical surveys. For more information see The GDE Assessment Toolbox (Appendix IV, GDE Guidance Document for GSPs - link in footnote above).

[15] *SGMA Data Viewer: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer*

BEST PRACTICE #3. Ecosystems Often Rely on Both Groundwater and Surface Water

GDEs are plants and animals that rely on groundwater for all or some of its water needs, and thus can be supported by multiple water sources. The presence of non-groundwater sources (e.g., surface water, soil moisture in the vadose zone, applied water, treated wastewater effluent, urban stormwater, irrigated return flow) within and around NC polygons does not preclude the possibility that a connection to groundwater exists. SGMA defines GDEs as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" [23 CCR §351(m)]. Hence, depth-to-groundwater data should be used to identify whether NC polygons are supported by groundwater and should be considered GDEs. In addition, SGMA requires that significant and undesirable adverse impacts to beneficial users of surface water be avoided. Beneficial users of surface water include environmental users such as plants or animals[16], which therefore must be considered when developing minimum thresholds for depletions of interconnected surface water.

GSAs are only responsible for impacts to GDEs resulting from groundwater conditions in the basin, so if adverse impacts to GDEs result from the diversion of applied water, treated wastewater, or irrigation return flow away from the GDE, then those impacts will be evaluated by other permitting requirements (e.g., CEQA) and may not be the responsibility of the GSA. However, if adverse impacts occur to the GDE due to changing groundwater conditions resulting from pumping or groundwater management activities, then the GSA would be responsible (Figure 4).

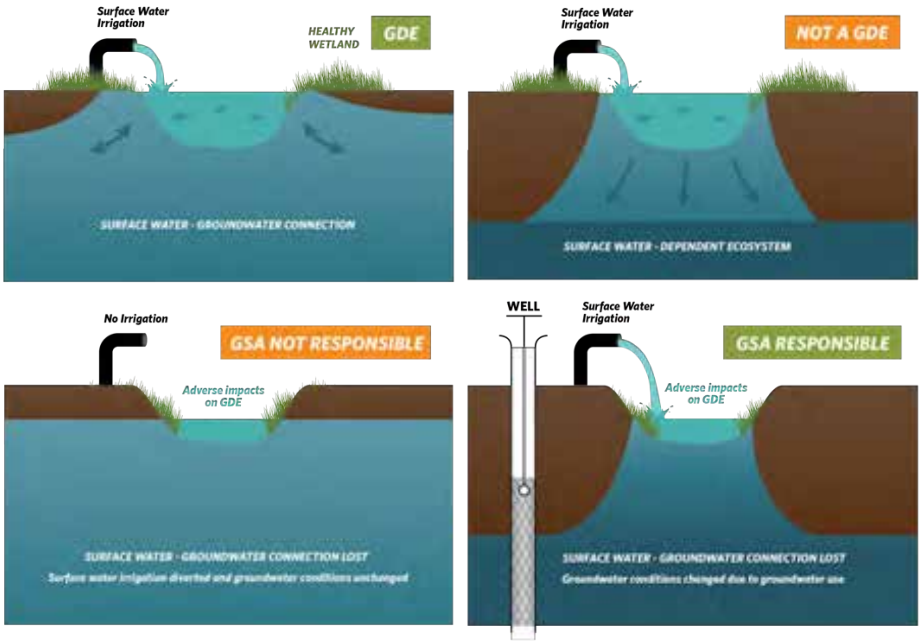


Figure 4. Ecosystems often depend on multiple sources of water. Top: (Left) Surface water and groundwater are interconnected, meaning that the GDE is supported by both groundwater and surface water. (Right) Ecosystems that are only reliant on non-groundwater sources are not groundwater-dependent. Bottom: (Left) An ecosystem that was once dependent on an interconnected surface water, but loses access to groundwater solely due to surface water diversions may not be the GSA's responsibility. (Right) Groundwater dependent ecosystems once dependent on an interconnected surface water system, but loses that access due to groundwater pumping is the GSA's responsibility.

[16] *For a list of environmental beneficial users of surface water by basin, visit: https://groundwaterresourcehub.org/gde-tools/environmental-surface-water-beneficiaries/*

BEST PRACTICE #4. Select Representative Groundwater Wells

Identifying GDEs in a basin requires that groundwater conditions are characterized to confirm whether polygons in the NC dataset are supported by the underlying aquifer. To do this, proximate groundwater wells should be identified to characterize groundwater conditions (Figure 5). When selecting representative wells, it is particularly important to consider the subsurface heterogeneity around NC polygons, especially near surface water features where groundwater and surface water interactions occur around heterogeneous stratigraphic units or aquitards formed by fluvial deposits. The following selection criteria can help ensure groundwater levels are representative of conditions within the GDE area:

- Choose wells that are within 5 kilometers (3.1 miles) of each NC Dataset polygons because they are more likely to reflect the local conditions relevant to the ecosystem. If there are no wells within 5km of the center of a NC dataset polygon, then there is insufficient information to remove the polygon based on groundwater depth. Instead, it should be retained as a potential GDE until there are sufficient data to determine whether or not the NC Dataset polygon is supported by groundwater.

- Choose wells that are screened within the surficial unconfined aquifer and capable of measuring the true water table.

- Avoid relying on wells that have insufficient information on the screened well depth interval for excluding GDEs because they could be providing data on the wrong aquifer. This type of well data should not be used to remove any NC polygons.

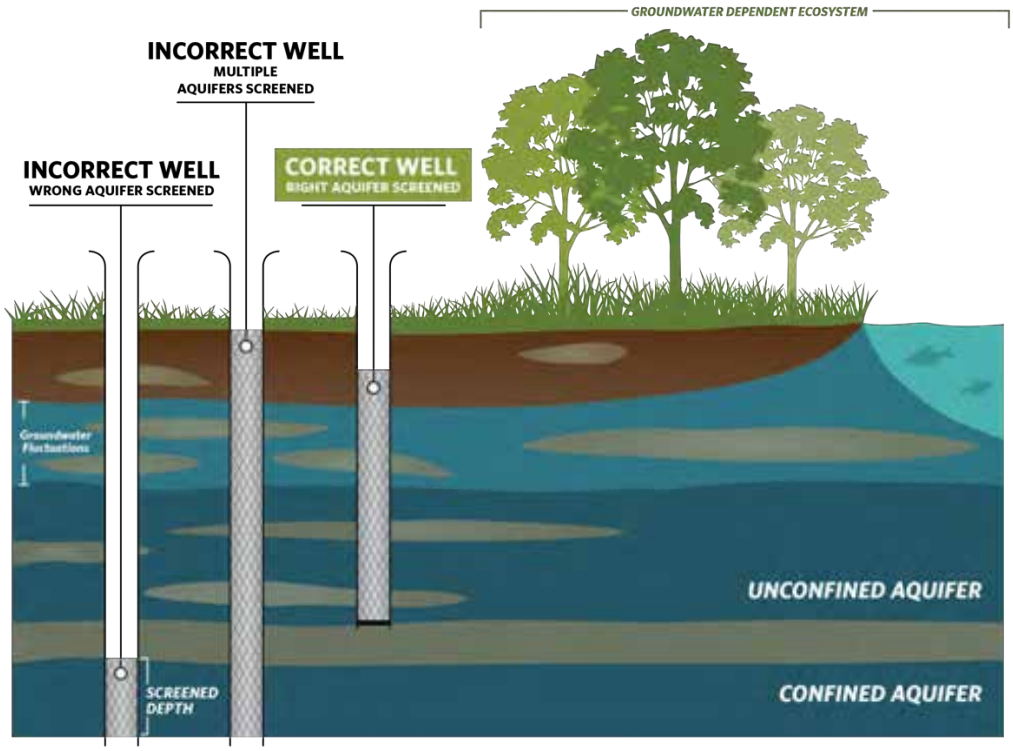


Figure 5. Selecting representative wells to characterize groundwater conditions near GDEs.

BEST PRACTICE #5. Contouring Groundwater Elevations

The common practice to contour depth-to-groundwater over a large area by interpolating measurements at monitoring wells is unsuitable for assessing whether an ecosystem is supported by groundwater. This practice causes errors when the land surface contains features like streams and wetlands depressions because it assumes the land surface is constant across the landscape and depth-to-groundwater is constant below these low-lying areas (Figure 6 - left panel). A more accurate approach is to interpolate groundwater elevations at monitoring wells to get an estimate of groundwater elevation across the landscape. This layer can then be subtracted from the land surface elevation from a Digital Elevation Model (DEM)[17] to estimate depth to groundwater contours across the landscape (Figure 6 – right panel; Figure 7). This will provide a much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found.

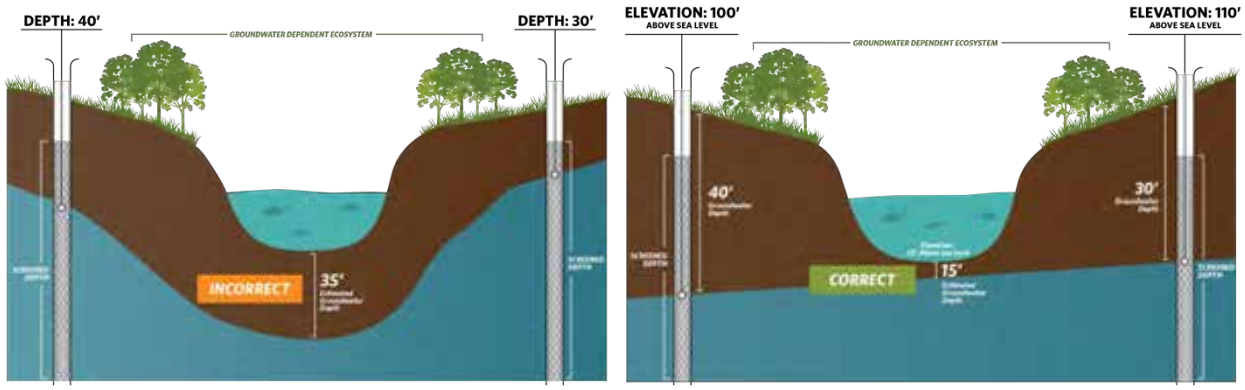


Figure 6. Contouring depth-to-groundwater around surface water features and GDEs. (Left) Groundwater level interpolation using depth-to-groundwater data from monitoring wells. (Right) Groundwater level interpolation using groundwater elevation data from monitoring wells and DEM data.

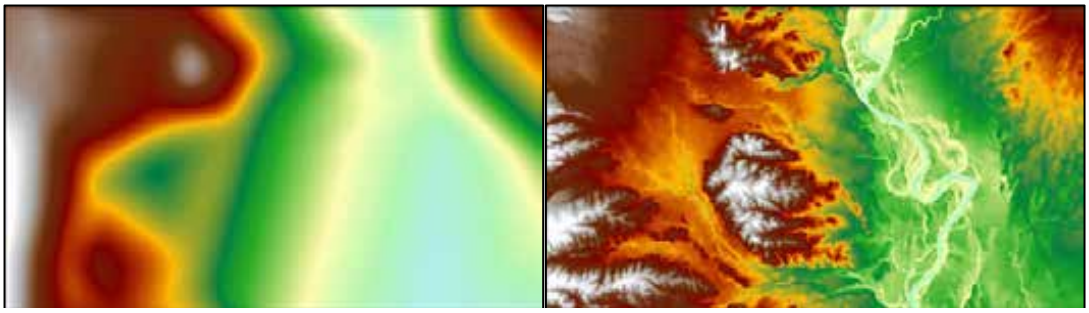


Figure 7. Depth to Groundwater Contours in Northern California. (Left) Contours were interpolated using depth to groundwater measurements determined at each well. (Right) Contours were determined by interpolating groundwater elevation measurements at each well and superimposing ground surface elevation from DEM spatial data to generate depth to groundwater contours. The image on the right shows a more accurate depth to groundwater estimate because it takes the local topography and elevation changes into account.

[17] USGS Digital Elevation Model data products are described at: https://www.usgs.gov/core-science-systems/ngp/3dep/about-3dep-products-services and can be downloaded at: https://viewer.nationalmap.gov/basic/

BEST PRACTICE #6. Best Available Science

Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decisions, and using the data collected through monitoring to revise decisions in the future. In many situations, the hydrologic connection of NC dataset polygons will not initially be clearly understood if site-specific groundwater monitoring data are not available. If sufficient data are not available in time for the 2020/2022 plan, The Nature Conservancy strongly advises that questionable polygons from the NC dataset be included in the GSP until data gaps are reconciled in the monitoring network. Erring on the side of caution will help minimize inadvertent impacts to GDEs as a result of groundwater use and management actions during SGMA implementation.

KEY DEFINITIONS

Groundwater basin is an aquifer or stacked series of aquifers with reasonably well-defined boundaries in a lateral direction, based on features that significantly impede groundwater flow, and a definable bottom. *23 CCR §341(g)(1)*

Groundwater dependent ecosystem (GDE) are ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. *23 CCR §351(m)*

Interconnected surface water (ISW) surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted. *23 CCR §351(o)*

Principal aquifers are aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems. *23 CCR §351(aa)*

ABOUT US

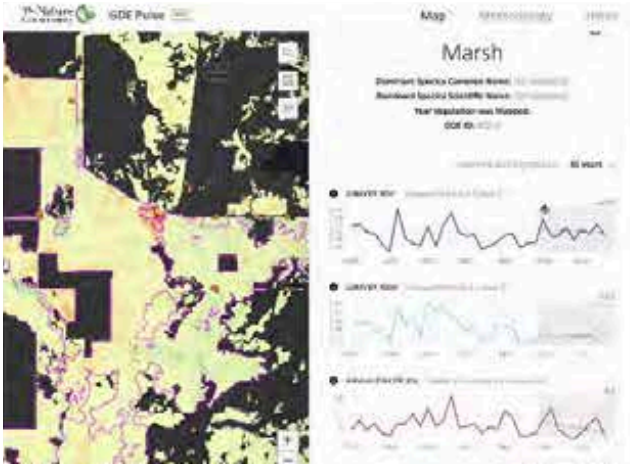
The Nature Conservancy is a science-based nonprofit organization whose mission is *to conserve the lands and waters on which all life depends*. To support successful SGMA implementation that meets the future needs of people, the economy, and the environment, TNC has developed tools and resources (www.groundwaterresourcehub.org) intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

Attachment E

GDE Pulse

A new, free online tool that allows Groundwater Sustainability Agencies to assess changes in groundwater dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data.

Visit
https://gde.codefornature.org/



Remote sensing data from satellites has been used to monitor the health of vegetation all over the planet. GDE pulse has compiled 35 years of satellite imagery from NASA's Landsat mission for every polygon in the Natural Communities Commonly Associated with Groundwater Dataset[18]. The following datasets are included:

Normalized Difference Vegetation Index (NDVI) is a satellite-derived index that represents the greenness of vegetation. Healthy green vegetation tends to have a higher NDVI, while dead leaves have a lower NDVI. We calculated the average NDVI during the driest part of the year (July - Sept) to estimate vegetation health when the plants are most likely dependent on groundwater.

Normalized Difference Moisture Index (NDMI) is a satellite-derived index that represents water content in vegetation. NDMI is derived from the Near-Infrared (NIR) and Short-Wave Infrared (SWIR) channels. Vegetation with adequate access to water tends to have higher NDMI, while vegetation that is water stressed tends to have lower NDMI. We calculated the average NDVI during the driest part of the year (July–September) to estimate vegetation health when the plants are most likely dependent on groundwater.

Annual Precipitation is the total precipitation for the water year (October 1st – September 30th) from the PRISM dataset[19]. The amount of local precipitation can affect vegetation with more precipitation generally leading to higher NDVI and NDMI.

Depth to Groundwater measurements provide an indication of the groundwater levels and changes over time for the surrounding area. We used groundwater well measurements from nearby (<1km) wells to estimate the depth to groundwater below the GDE based on the average elevation of the GDE (using a digital elevation model) minus the measured groundwater surface elevation.

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[18] *The Natural Communities Commonly Associated with Groundwater Dataset is hosted on the California Department of Water Resources' website: https://gis.water.ca.gov/app/NCDatasetViewer/#*

[19] The PRISM dataset is hosted on Oregon State University's website: http://www.prism.oregonstate.edu/

From: Ann Camel <camela@svbgsa.org>
Sent: Thursday, May 16, 2019 2:22 PM
To: Derrik Williams <dwilliams@elmontgomery.com>
Subject: FW: 180-400_Chapter_8_Chevron_Comments

Don't know if this was forwarded to you.

Ann Camel, Clerk
Salinas Valley Basin Groundwater Sustainability Agency
(831) 471-7519
P. O. Box 1350
Carmel Valley, CA 93924
camela@svbgsa.org
www.svbgsa.org

Assigned by RGS, SVBGSA contract administrator
(650) 587-7300, x24 www.rgs.ca.gov

From: Tubbs, Dallas
Sent: Thursday, May 16, 2019 11:22 AM
To: Gary Petersen (GPetersen@rgs.ca.gov); Ann Camel
Cc: Johnson, Jeffery W
Subject: 180-400_Chapter_8_Chevron_Comments

Dear Mr. Petersen,

Please find attached, Chevron's comments with respect to the "180-400_Chapter_8_SMC_Draft_20190426_toSVBGSA.pd.pdf" document.

General Question:

- The text describes how the basin will be managed as a whole to prevent undesirable results. Given the criteria set forth in Chapter 8, it seems likely there will be an undesirable result in the 180/400-Foot aquifer. Accordingly, does this mean that there will be basin-wide groundwater pumping limits, and if so, how will those be apportioned?

Section 8.5.2.2, page 7: Minimum Thresholds Impact on Domestic Wells

- The text states, "*Minimum thresholds for groundwater elevations are compared to the range of domestic well depths in the Subbasin*. *Conclusions from the comparison identifies modest impact to domestic wells in both the 180- and 400-foot aquifers*".

Question:

- Should there be a similar evaluation of the other well categories in the Subbasin to make the minimum thresholds impacts and trade-offs visible?

Section 8.5.2.3, page 7: Change in groundwater storage

- The text states, "*The groundwater elevation minimum thresholds are set at or above existing groundwater elevations*". We recommend that a "date" column be added to Table 8-1 on page 6, listing the baseline date for each well and measurement.

Question:

- Shouldn't the groundwater elevation minimum threshold be set when the GSP is adopted? Given the time gap between when these elevations were taken, groundwater elevations could be in an undesirable state before the GSP is submitted.

Section 8.5.2.3, page 8: Seawater intrusion

- In addition to the text here, it would be helpful to incorporate the MCWRA maps here showing the current areal extent of seawater intrusion (or at least be specific when citing the reference to other locations in the GSP). Please include a discussion of the groundwater gradient because this the driving force for seawater intrusion.

Question:

- If groundwater elevations are maintained at the minimum threshold (i.e., "*at or above the existing groundwater elevations*") does that mean there will be no further expansion of the areal extent of seawater intrusion?

Section 8.5.4.1; page 15: Undesirable Results

- One of the metrics to determine whether the basin is compliant is based on water level measurements. The proposed metric is 15% of wells below the groundwater elevation minimum threshold (or a cluster or wells) yields an undesirable result. One well in this - is already below the threshold, so three additional wells below the threshold would be considered an undesirable result (or less if the wells are in a cluster.) Also, with respect to seawater intrusion, it would seem that the location of the wells plays an important role. As worded, the requirement seems overly restrictive. Without supporting arguments, Chevron proposes the number of wells be increased.

Questions:

- Have the 23 existing monitoring wells been deemed to be a statistically meaningful quantity? If not, what is the recommended number of monitoring wells needed in the basin to provide statistically meaningful data?
- Given the seemingly small sample size (23 wells), we question if 15% is likely to be too sensitive to be representative of the overall basin.
- As a hypothetical question, if four wells with an undesirable result are all located at the northern end of the Subbasin, would that require the GSA to take action across the entire Basin, or just the effected Subbasin?

Section 8.6.2.6; page 20: Method for Quantitative Measurement of Minimum Threshold

- Text states, "*The current water use factor is assumed to be 0.39 AF/dwelling unit*". Please cite the reference that supports the water use factor of 0.39 AF per dwelling unit.

Section 8.6.3.1; page 21: Criteria for Defining Reduction in Groundwater Storage Undesirable Results

- This section is unclear (i.e., it reads like the "chicken and egg" conundrum). Please discuss the relationship between storage and pumping.

Section 8.8; page 30: Degraded Water Quality SMC

- The terms “SMCL” and “MCL” need to be defined in the document.
- This section describes metrics around water quality. The metrics seem excessively restrictive. For example, “*Zero additional municipal production wells that are in the GSP monitoring program shall exceed the sulfate SMCL of 250 mg/L*.” The secondary MCL for sulfate (which has to do with taste/odor and not toxicity) should not be metric. Many of the constituents listed in this section are naturally occurring, and some may be just below the MCL or SMCL. If these concentrations increase for a reason besides groundwater withdrawal (including natural variability) it does not make sense to include these. Chevron has concern that the metric requiring “zero additional wells” is setting the basin up for failure. Analytical variability, or bad sampling methods could yield an undesirable result. Interpreting analytical data is much more difficult than water level measurement data.

Section 8.8.2; page 31: Minimum Thresholds
The text reads, “*Constituents of concern must meet two criteria:*

- *They must have an established level of concern such as an MCL or SMCL, or a level that reduces crop production*
- *They must have previously been found in the Subbasin at levels above the level of concern*”

Question:
- Why is the word “previously” inserted in the second bullet point?

Section 8.8.2; page 32: Minimum Thresholds
- The text reads, “*These constituents are monitored with the ILRP wells and are known to cause reductions in crop production when irrigation water includes them in high concentrations*.”

Question:
- The term “high concentrations” is ambiguous. Should a specific value be stated for each constituent?

Section 8.8.2; page 32: Minimum Thresholds
- The text reads “*As noted in Section 5.6.3, based on available information there are no mapped groundwater contamination plumes in the Subbasin*”.

Question:
- What is the documentation to support this statement? Also, is seawater intrusion not defined as a plume?

Section 8.8.2.1; page 36: Municipal Production Wells
- As previously mentioned, the zero exceedances expectation is setting up the GSP for failure. Analytical variability, or bad sampling methods could yield an undesirable result. Interpreting analytical data is much more difficult than monitoring water level measurement data. We recommend using historical data to develop a reasonable tolerance band for each parameter.

Section 8.8.2.1, Table 8-3; page 37: Municipal Production Wells
- We note that several of the constituents of concern listed appear to show incorrect MCLs (e.g., chloride, Radon-222, Sulfate and TDS)

Question:

- What standard is being used for this information?

Section 8.8.4.1; page 43: Criteria for Defining Undesirable Results

- To clarify, does this section mean that future projects or management actions SVBGSA might undertake will be executed in such a way that an undesirable result does not occur?

Section 8.8.4.2; page 43: Groundwater Recharge

- Does this statement mean that ground water recharge can't contain anything that has an MCL above the threshold?

Section 8.9.2.3; page 47: Effect of Minimum Thresholds on Neighboring Basins and Subbasins.

- This section states, "the *minimum thresholds in the 180/400-Foot Aquifer Subbasin is zero subsidence*." Setting an absolute value for subsidence is unwise. The minimum threshold should be stated in terms of a subsidence metric measured over time. For example, is 1 cm of change over 40 years unacceptable? We advise waiting until historical InSAR data has been obtained and evaluated prior to setting the minimum threshold. Because ground elevations can change over time unrelated to water extraction, some subsidence may be reasonable depending on the rate of change.

Section 8.10.2; page 51: Minimum Thresholds

- The text reads, "without good historical data or a numerical model, it is difficult to assess whether and where the stream is connected to underlying groundwater". Perhaps it would be best to postpone setting a minimum threshold for depletion of interconnected surface water until more data can be captured or a numerical mode is made available.

Dallas

Best Regards,

Dallas H. Tubbs, PE
Manager – Subsurface Optimization
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July 2, 2019

Michael McHatten, Chair
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Via email peterseng@svbgsa.org, camela@svbgsa.org

RE: Chapter 8: 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan

Dear Chair McHatten and Members of the Board of Directors:

In general, LandWatch Monterey County supports the *sustainable management criteria* in Chapter 8. In particular, we support a long-term future sustainable yield as the minimum threshold for *reduction in groundwater storage* and the *measurable objective* of moving the 500 Mg/L chloride isocontour to the line defined by Highway 1. We have the following concerns and recommendations:

1. **Seawater Intrusion**

We recommend that the *minimum threshold* be revised to reflect 2018 data when they are available. As noted in public hearing testimony, seawater intrusion has probably exceeded the 2017 lines identified by the Monterey County Water Resource Agency (MCWRA).

2. **Reduction in Groundwater Storage**

We support setting the minimum threshold for depletion based on a scientifically sound sustained yield. The 112,000-acre feet per year (AFY) sustained yield estimate must be revisited as soon as the USGS historical model is available to calibrate the operational model on which this yield is based. In addition, concerns regarding double counting of surface and groundwater raised by other commenters must be resolved because, if accurate, it may significantly reduce the sustained yield.

Uncertainty in the historical and current water budgets reflects the differing levels of certainty associated with each component of the water budgets. Although the water budgets may be sufficiently constrained to provide a basis for developing the Groundwater Sustainability Plan (GSP), an important element of the plan is the monitoring program (Chapter 7) that will provide

valuable data for improving the water budget during plan implementation. Therefore, the individual components of the historical and current water budgets as well as the overall water budgets should be viewed only as the best current estimates, subject to revision as more information becomes available.

3. Reduction in Groundwater Storage and Seawater Intrusion

The groundwater *minimum thresholds* should be set at the levels that have been determined to be sufficient to prevent seawater intrusion. These levels must clearly be higher than sea level. These levels should be determined based on the most current modeling or groundwater levels that are sufficient to prevent seawater intrusion. If currently modeling is not available, then the 2013 modeling prepared by Geoscience for MCWRA should be used.

Chapter 8 sets *minimum thresholds* and *measurable objectives* for chronic lowering of groundwater levels. Section 8.6.2 sets a minimum threshold for groundwater elevations at one foot above the 2015 groundwater levels. This proposed level is equal to the 1991-1992 groundwater level, which was the lowest historical level that occurred in the 1967-1998 climatic cycle. (See Chapter 8, Figure 8-2). Figures 8-2 and 8-3 show that ***the proposed minimum groundwater levels would be well below sea levels in the northern end of the Salinas Valley.*** This is consistent with the MCWRA groundwater contour maps for 2015, which show that 2015 elevations were in fact well below sea level in the northern Salinas Valley. (Maps available at https://www.co.monterey.ca.us/home/showdocument?id=31284 and https://www.co.monterey.ca.us/home/showdocument?id=31286.)

Section 8.6.3 sets a measurable objective for chronic lowering of groundwater levels that "represent groundwater elevations that are higher than the minimum thresholds" in order to "provide operational flexibility to ensure that the Subbasin can be managed sustainably." This level was set at the 2003 groundwater levels, representing "an *average* groundwater level from the relatively recent past." Figures 8-4 and 8-5 show that ***the proposed measurable objective for groundwater levels would be well below sea levels in the northern end of the Salinas Valley.*** Again, this is consistent with the MCWRA groundwater contour maps for 2003, which show that 2003 elevations were well below sea level in the northern Salinas Valley. (Maps available at https://www.co.monterey.ca.us/home/showdocument?id=19538 and https://www.co.monterey.ca.us/home/showdocument?id=19554.

The Chapter 8 discussion at pages 17-18 appears to justify the minimum thresholds and measurable objectives based on the percentage of wells that would still have 25 feet of water. **However, setting *minimum thresholds* and *measurable objectives* for groundwater levels at this level would permit continued seawater intrusion because that level is demonstrably insufficient to prevent seawater intrusion.**

Seawater intrusion occurred throughout the 1967-1998 climatic cycle and has continued to date. It is caused by groundwater levels that are too low to hold back seawater. In its 2013 study for MCWRA, *Protective Elevations to Control Seawater Intrusion in the Salinas Valley*, Geoscience reported the historic rate of seawater intrusion in various time intervals. (Report available at https://www.co.monterey.ca.us/home/showdocument?id=19642.) Intrusion *accelerated* over the period 1965 to 1999. (*Protective Elevations*, p. 5, Table 2.) It has recently accelerated again.

Geoscience explained that "historical pumping has lowered ground water levels in both the 180-Foot and 400-Foot aquifer systems such that there is a landward hydraulic gradient which has caused extensive sea water intrusion." (Id., p. 4.) The report explains that control of sea water intrusion requires achieving and maintaining "protective elevations," which are defined as "those groundwater elevations which will keep the fresh/salt water interface from migrating inland. ***In the northern portion of the Salinas Valley these elevations need to be above sea level*** and the flow of ground water toward the coast." (Id., p. 6, emphasis added.) The report explains that Geoscience quantified the protective elevations necessary to halt seawater intrusion using the SVIGSM model. Geoscience's report sets out these necessary protective elevations in Figures 9 and 10 for the 180-Foot and 400-Foot Aquifers. ***These protective elevations necessary to prevent seawater intrusion are from 10 to 30 feet above sea level in the northern Salinas Valley***.[1]

As Chapter 8 explains at page 18, "the GSP must describe the relationship between the selected minimum threshold and minimum thresholds for other sustainability indicators (e.g., describe how a water level minimum threshold would not trigger an undesirable result for land subsidence)." In short, the GSP must set minimum thresholds that ensure that *all* undesirable results are addressed.

Chapter 8 discusses the relation of seawater intrusion and the *minimum threshold* for groundwater levels at page 19 as follows:

> **Seawater intrusion**. A significant and unreasonable condition for seawater intrusion is seawater intrusion in excess of the extent delineated by MCWRA in 2017. Lower groundwater elevations, particularly in the 180-and 400-Foot Aquifers, could cause seawater to advance inland. The groundwater elevation minimum thresholds are set at or above existing groundwater elevations. Therefore, the groundwater elevation minimum thresholds will not exacerbate, and may help control, seawater intrusion.

The discussion is not accurate. The proposed groundwater *minimum thresholds* and *measurable objectives* would cause seawater to advance, would exacerbate existing conditions, and would not help control seawater intrusion. The fact that the minimum thresholds are proposed to be higher than existing groundwater elevations or that the measurable objectives are based on average conditions is insufficient. **Because historic groundwater levels have**

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[1] Geoscience determined that in order to achieve these protective elevations, additional recharge or “in lieu recharge,” i.e., coastal pumping reductions made possible by moving water from the south to the north, would be required:

> The amount, location and timing of groundwater recharge (direct and in lieu), needed to maintain protective elevations and a seaward hydraulic gradient was determined using the SVIGSM. Based on model results, and assuming 2030 land use conditions, 12,000 acre-ft/year will be required from the SVWP Phase I facilities and 48,000 acre-ft/year will be required from the SVWP Phase II facilities. Given the hydrologic variability in the Salinas Valley area, in order to supply a total of 60,000 acre-ft/year (on average), to the SVWP, it will be necessary to have the right to divert up to 135,00 acre-ft/year from the Salinas River.

caused seawater intrusion, the minimum thresholds and measurable objectives cannot simply be based on historic minimums or averages.[2]

4. **Groundwater Dependent Ecosystems**

We recommend that *minimum thresholds* be established for *groundwater dependent ecosystems* when the GSP is next updated. As the Nature Conservancy notes in its February 7, 2019 letter to the SVBGSA:

> California's freshwater biodiversity is highly imperiled. We have lost more than 90 percent of our native wetland and river habitats, leading to precipitous declines in native plants and the populations of animals that call these places home. These natural resources are intricately connected to California's economy providing direct benefits through industries such as fisheries, timber and hunting, as well as indirect benefits such as clean water supplies. Given the inextricable connection between the Salinas River and the Salinas Valley's groundwater supply, SGMA must be successful for a sustainable future for the Salinas Valley in which people and nature thrive.

Thank you for the opportunity to comment on Chapter 8.

Sincerely,

Michael DeLapa
Executive Director

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[2] Chapter 8 also discusses the relation of groundwater elevation minimum thresholds with changes in groundwater storage. That discussion concludes that because the proposed minimum thresholds are set above existing groundwater levels, they "will not result in long term significant or unreasonable change in groundwater storage." This is also not accurate. Chapter 6 of the GSP concludes at page 15 that there has been an average loss of storage of 2,100 afy during the historical period. This conclusion is consistent with the calculated 2,000 average loss of storage in the Pressure Subarea during the period from 1944 to 2013, reported in Table ES-3 of MCWRA's *State of the Salinas River Groundwater Basin*. (available at https://www.co.monterey.ca.us/home/showdocument?id=19586). If the *average* historic groundwater elevations are correlated with the continuous depletion of the aquifer, setting the minimum groundwater elevations at the *lowest* historic level cannot support maintenance of aquifer storage.

July 16, 2019

Gary Petersen
General Manager
Salinas Valley Basin Groundwater Sustainability Agency
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Dear Mr. Petersen:

CENTRAL COAST WATER BOARD COMMENTS ON THE SALINAS VALLEY 180/400 FOOT AQUIFER SUBBASIN GROUNDWATER SUSTAINABILITY PLAN DRAFT: CHAPTER 8, SUSTAINABLE MANAGEMENT CRITERIA

The Central Coast Regional Water Quality Control Board (Central Coast Water Board) is a state agency that implements state and federal water quality laws within the Central Coast region. The Salinas Valley groundwater basin falls within the jurisdictional area of the Central Coast region and as such, the Central Coast Water Board has an interest in monitoring, preserving, and restoring water quality within the basin. The Central Coast Water Board has reviewed the draft Chapter 8 of the Salinas Valley 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (GSP) on *Sustainable Management Criteria* and would like to provide comments on the groundwater quality-related portions of this draft chapter.

Minimum Thresholds Related to Supply Wells

We recommend that on-farm domestic wells be added to the types of wells included in the *Minimum Thresholds* (MT) criteria. Section 354.28(c)(2) of the SGMA regulation states that supply wells be included in the threshold, though no definition is provided for supply wells. The draft chapter includes only agricultural and municipal supply wells as the well types that will be included in the MT criteria. However, in many parts of the subbasin, domestic wells are the sole source of water to one or more households and should be included as a supply well type in the MT criteria. Including domestic wells in the MT criteria would be relatively easy because the Central Coast Water Board's Irrigated Lands Regulatory Program (ILRP) currently requires on-farm domestic well sampling; therefore, data from the ILRP's monitoring program can be used to inform a domestic well MT without any additional sampling by the Groundwater Sustainability Agency.

Changes to the ILRP's Groundwater Monitoring Program

Much of the draft chapter proposes to utilize data from the ILRP's groundwater monitoring program, which we fully support. However, we want to make it explicitly clear that the ILRP's monitoring requirements will change when the new agricultural order (Ag Order 4.0) is adopted; at this time, however, staff are still in the process of determining the monitoring requirements. As such, we recommend the GSP incorporate flexibility to accommodate changes in ILRP requirements that will occur with Ag Order 4.0, particularly regarding domestic well water quality.

Another change that may occur under Ag Order 4.0 is the number of irrigation and on-farm domestic wells that are sampled. Currently, the draft chapter establishes the MT and Measurable Objectives (MO) based on the number of wells that are currently included in the ILRP monitoring program, and the baseline for an exceedance is determined by the current number of wells that exceed the water quality threshold. If the number of wells included in the ILRP monitoring program changes under Ag Order 4.0, the number of wells used to determine an exceedance will also need to change. To accommodate changes in the number of wells monitored, we recommend the draft chapter base the MT for an exceedance on a percentage of wells that currently exceed the relevant water quality standard, rather than static numbers.

The Central Coast Water Board thanks the GSA for the work being done to sustainably manage groundwater resources in the Salinas Valley and appreciates this opportunity to provide comments. If you have questions or would like to discuss these comments in greater detail, please feel free to reach out to James Bishop, Daniel Pelikan, or Diane Kukol at the Central Coast Water Board:

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Sincerely,

for John M. Robertson
Executive Officer

cc:

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

July 26, 2019

Gary Petersen
General Manager
Salinas Valley Basin Groundwater Sustainability Agency
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Carmel Valley, California 93924

Re: NOAA's National Marine Fisheries Service's comments on the April 25, 2019 Draft Chapter 8 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan

Dear Mr. Petersen:

NOAA's National Marine Fisheries Service (NMFS) is the federal agency responsible for managing, conserving, and protecting living marine resources in inland, coastal, and offshore waters of the United States. We derive our mandates from numerous statutes, including the Federal Endangered Species Act (ESA). The purpose of the ESA is to conserve threatened and endangered species and their ecosystems. The Salinas River watershed, including portions within the Salinas Valley Basin Groundwater Sustainability Agency's (SVBGSA) boundary, supports federally threatened South-Central California Coast steelhead (*Oncorhynchus mykiss*). Below are our comments on the SVBGSA's April 25, 2019 *Draft 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan* (GSP).

8.5.2.3 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

Depletion of interconnected surface waters

The GSP states "*Because the groundwater elevation minimum thresholds are set to current elevations or higher, future groundwater elevations will not induce additional depletion of interconnected surface waters. Therefore, the groundwater elevation minimum thresholds will not result in a significant or unreasonable depletion of interconnected surface waters.*" This statement assumes current groundwater elevations do not deplete interconnected surface waters to a level that harms threatened steelhead. The GSP should justify this statement by showing existing conditions avoid surface water depletion that has significant and unreasonable adverse impacts on beneficial uses of the surface water. As suggested by the California Department of Fish and Wildlife (CDFW), GSAs should analyze the following when defining significant and unreasonable impacts of groundwater pumping on steelhead habitat in the Salinas Basin: temporal water needs, spatial water needs, hydrologic variability, water availability, and water quality (CDFW 2019). By simply maintaining current conditions or by just slightly improving conditions, the SVBGSA's plan will likely fall short of avoiding adverse impacts to steelhead and their critical habitat resulting from surface water depletion.

8.6.2.2 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

Depletion of interconnected surface waters

The GSP states, "*The reduction in storage minimum threshold is established to prevent further reduction in storage, and therefore prevent lowering of groundwater levels. Therefore, the change in storage minimum threshold will not induce additional depletion of interconnected surface waters and will not result in a significant or unreasonable depletion of interconnected surface waters.*" The draft GSP does not document the basis of these findings. First, groundwater levels should not be used as a proxy for streamflow depletion thresholds unless a "significant correlation exists between groundwater elevations and streamflow depletion impacts" (23 CCR § 354.36(b)). Second, there is no explanation of groundwater/surface water relationships in the GSP that suggests current groundwater storage levels are *not* currently depleting interconnected surface waters in a significant or unreasonable way. SVBGSA should explain their findings, in part, by showing that existing conditions maintain interconnected surface waters to the extent that they preserve beneficial uses. Finally, in situations, such as the Salinas Valley, where groundwater/surface water dynamics are either unknown or in the process of being analyzed, GSAs should develop conservative thresholds and measurable objectives that err on the side of caution when protecting salmon or steelhead (CDFW 2019).

8.10.1 Locally Defined Significant and Unreasonable Conditions

NMFS has several concerns with the following paragraph from section 8.10.1 of the GSP: "[Monterey County Water Resources Agency (MCWRA)] *currently manages flows in the Salinas River to meet the requirements of the National Marine Fisheries Service biological opinion (National Marine Fisheries Service, 2007). The NMFS biological opinion was developed using measured streamflows between 1995 and 2005. The measured streamflow reflects current surface water depletion rates, and therefore current depletion rates are already incorporated into the river management plan. Furthermore, releases from Nacimiento Reservoir and San Antonio Reservoir have successfully maintained required environmental flows under current groundwater pumping and surface water depletion conditions. The Steelhead Trout flow prescriptions are described in Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River (MCWRA, 2005). This document guides the operating rules for the San Antonio and Nacimiento reservoir releases. Therefore, steelhead flow requirements are being met and current surface water depletion rates are not unreasonable with regards to maintaining flow required in the biological opinion.*"

Our foremost concern is the inaccuracy of this statement. We withdrew the referenced biological opinion and associated incidental take statement by letter to the U.S. Army Corps of Engineers and MCWRA on February 20, 2019. This means that MCWRA has no ESA take coverage for their ongoing releases. It is inappropriate for the GSP to rely on the moot flow prescriptions of the withdrawn biological opinion to suggest that steelhead flow requirements are being met or that current surface water depletion rates are not unreasonable. Regardless of the biological opinion's standing, relying on MCWRA's reservoir releases to mitigate groundwater use impacts within the SVBGSA's jurisdiction will simply perpetuate current management practices and their detrimental environmental outcomes. Such an approach has and will result in excessive groundwater pumping

that has become reliant on reservoirs to replenish the resulting overdraft conditions. We strongly urge the SVBGSA to quantify the impacts of water diversions along the river (including permitted and any unpermitted wells), including assessing shallow alluvial extraction in and around the river, and develop a plan that independently mitigates these impacts. NMFS is hopeful the SVBGSA's GSP will result in a clear path to changing this paradigm.

Additionally, the GSP should explain if and how measured streamflows between 1995 and 2005 still "reflect current surface water depletion rates". We have reviewed Chapter 5 of the draft GSP (Section 5.5.2 Surface Water Depletion Rates) and have not found any analysis regarding a comparison of the 1995-2005 rates and the current surface water depletion rates. Moreover, we believe the 1995-2005 rates should be reconsidered in light of major intervening changes that have occurred in the watershed since this rate was developed. Namely, the Salinas Valley Water Project began operating in 2010 and a historic drought soon followed. In sum, NMFS questions the SVBGSA's assumption that the 1995-2005 surface water depletion rates accurately reflect current rates, and we strongly urge the SVBGSA to provide additional analysis to support this statement.

Thank you for considering our comments. If you have any questions, please do not hesitate to contact William Stevens, North-Central Coast Office in Santa Rosa, California at (707) 575-6066, or via email at William.Stevens@noaa.gov.

Sincerely,

A. Ingham

Amanda E. Ingham
Central Coast Branch Chief
North-Central Coast Office

cc: Monica Oey, California Department of Fish and Wildlife (Monica.Oey@wildlife.ca.gov)
Benjamin Gooding, Department of Water Resources (Benjamin.Gooding@water.ca.gov)
Copy to ARN File # 151416WCR2019SR00162

Literature Cited

California Department of Fish and Wildlife (CDFW). 2019. Fish & Wildlife Groundwater Planning Considerations. California Department of Fish and Wildlife Groundwater Program. 28 pp. Found at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=170185&inline

Addressees: board@svbgsa.org
peterseng@svbgsa.org

Dear Board Members and Mr. Petersen:

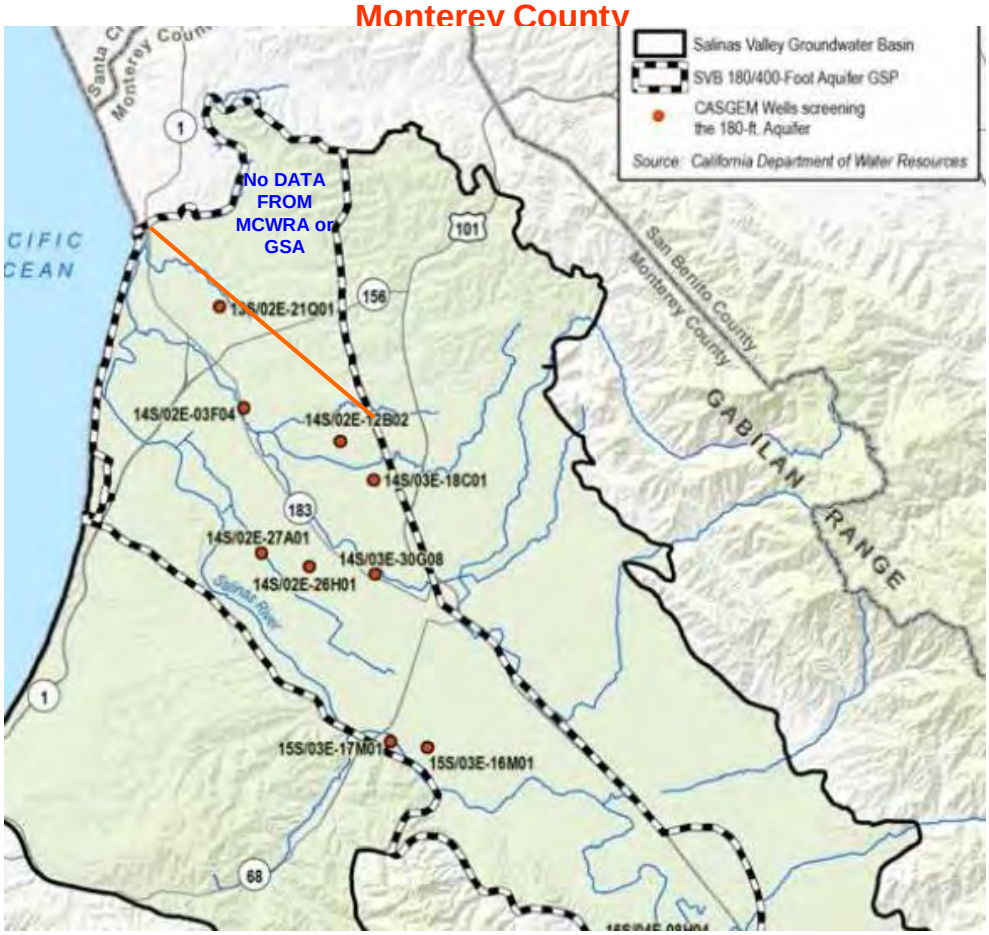
The Salinas Valley Basin Groundwater Sustainability Plan does not adequately address groundwater sustainability or sea water intrusion. There are dozens of reasons why this Plan should not be adopted as a viable document to guide water use in our area. It needs to be vastly improved before it should be submitted to the State Department of Water Resources as representing a meaningful starting point for the Salinas Valley Basin and groundwater sustainability.

1). There needs to be language added in the implementation chapter that does the following:

Commit that by 2021 the GSA (or MCWRA) will do the studies that SHOULD HAVE BEEN DONE **before** the "sustainability" criteria was developed. There is absolutely no monitoring well data from the hill areas in the northern part of the 180/400 ft. aquifer. The monitoring wells are located on the flatland areas only. SVBGSA has NO IDEA what the condition of wells are in the hill areas where thousands of rural residents live. They do not know how many wells are already at risk in terms of groundwater level and how the proposed projects and continued high pumping rates could exacerbate those low levels.

No Data in the Plan for North Monterey County

#1



2). Revise 8.6.2.2 as follows: ~~Minimum thresholds for groundwater elevations are compared to the range of domestic well depths in the Subbasin using DWR's Online System for Well Completion Reports (OSWCR) database. This check was done to assure that the minimum thresholds maintain operability in a reasonable percentage of domestic wells. The proposed minimum thresholds for groundwater elevation do not necessarily protect all domestic wells because it is impractical to manage a groundwater basin in a manner that fully protects the shallowest wells. The average computed depth of domestic wells in the Subbasin is 316.6 feet for the domestic wells in the OSWCR database. The comparison showed: • In the 180-foot aquifer, 89% of all domestic wells will have at least 25 feet of water in them as long as groundwater levels remain above minimum thresholds; and 91% of all domestic wells will have at least 25 feet of water in them when measurable objectives are achieved. • In the 400-foot aquifer, 79% of all domestic wells will have at least 25 feet of water in them as long as groundwater levels remain above minimum thresholds; and 82% of all domestic wells will have at least 25 feet of water in them when measurable objectives are achieved.~~ Well depth and groundwater level information for domestic wells over a long-term period has not been provided by the Monterey County Water Resource Agency or other agency. The impact that the proposed groundwater level minimum threshold is likely to have on domestic wells located in the 180/400 ft. sub-basin is not known. Therefore, the reasonableness of the minimum threshold can not be determined.

3). In the chapter regarding implementation, there needs to be a commitment that by 2022 private well owners and small water system managers will be notified if their well is located in an area where sea water encroachment is intrudingbased on increases in chloride and total dissolved solids occurring between 1995 through current time, whether the encroachment exceeds state standards or not,.

4). In the chapter regarding implementation, there needs to be a commitment that by 2022 private well owners and small water system managers will be notified if their well is located in an area where ground levels have dropped below the minimum threshold or similar criteria that indicates potential risk of sanding or failing.

5). In the chapter regarding implementation, there needs to be a commitment that by 2022 private well owners and small water system managers will receive either in conjunction with #2 and #3 above, or independent of it, notification of funding and/or programs available for water testing, water impurity removal systems and funding for improvements to wells that are in jeopardy of well failure.

6). In Chapter 8, Table 8.1, is unrealistic in the minimum threshold criteria for chronic lowering of groundwater levels. The level needs to be raised to the groundwater average level for the year 2007. This change is needed because the 2015 level is too close to the lowest gw level in 74 years of history records. Is it not reasonable to "Freeze" the minimum to the bottom that occurred during drought periods where well failures were know to occur. It is clear that severe over-drafting has been occurring for decades as evidenced by massive sea water intrusion. 2015 level is not a reasonable "floor" to prevent continued over-draft / sea water intrusion. The need for a higher minimum threshold is especially true considering the stated intent from GSA officials that measurable objectives do not need to met. They are just "goals".

7). The proposed undesirable result for chronic lowering of groundwater levels in Table 8.1 of 15% exceedance for 2 consecutive years IS MUCH TOO GREAT OF AN EXCEEDANCE. This is especially true because the positive impacts of projects may not be known for decades.

8). Reduction in Storage

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10). Revise Table 8.1- Sustainability Criteria as shown on the following page

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result	Interim Milestones
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Seawater intrusion	Minimum threshold is the 2017 extent of the 500 mg/L chloride isocontour as developed by MCWRA for the 180- and 400-Foot aquifers. The minimum threshold is the line defined by Highway 1 for the deep aquifer.	Seawater intrusion maps developed by MCWRA	Measurable objective is the line defined by Highway 1 for the 180-Foot, 400-Foot, and Deep aquifers	On average in any one year there shall be no mapped seawater intrusion beyond the 2017 extent of the 500 mg/L chloride isocontour.	5-Year: identical to current conditions 10-year: one-third of the way to the measurable objective 15-year: two-thirds of the way to the

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<u>11). Language needs to be added to the Chapter for Stakeholder Engagement and Public Outreach</u> that more specifically identifies strategies that will be used to inform and engage the public. The existing language is very vague. In addition, not all of the outreach described in the Consensus Building document was carried out. The chapter needs to identify specific data bases that will be used to contact the public, such as the Environmental Health Bureau's small water system list, Monterey County Water Resource Agency's well owner list, and Monterey Resource Agency home owner association lists. The chapter needs to list identified social media that are known by local community organizations such as Prunedale Preservation Alliance, Monterey County Water Systems, Next Door, Prunedale Community Neighborhood Watch, and several others.

Thank you for revising the GSA Plan to reflect thresholds and objectives that will attain true groundwater sustainability.

Sincerely,

Attachment A

Over-zealous, Unrealistic, and Unstated assumptions of the Future "Sustainable" Yield Model

Table 6-13: Current Annual Groundwater Pumping by Water Use Sector

Water Use Sector	Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
Agricultural	91,900	89,000	97,700
Urban	17,000	12,900	19,000
Rural-Domestic	200	200	200
Total Pumping	109,100	108,200	110,900

Table 6-30: Projected Annual Groundwater Pumping by Water Use Sector

Water Use Sector	2030 Average	2070 Average
Agricultural	94,800	99,500
Urban (total pumping minus agricultural)	20,500	21,100
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Total Pumping	135,800	141,600

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4). The model assumes a 640 % increase in 2030 and 691 % increase in 2070 in deep percolation of rain to ground water above current levels.

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	Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
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Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
FLOW	60,400	38,800	103,600

Table 6-25: Average Land Surface Water Budget Outflows

Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Deep Percolation	77,000	82,300

Table 6-31: Projected Sustainable Yields

	2030 Projected Sustainable Yield	2070 Projected Sustainable Yield	Historical Sustainable Yield
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Change in Storage	-4,600	-4,700	-2,100
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These figure assume 7,000 and 6,600 AF/yr is "projects" that have not been approved or funded

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Deep Percolation (groundwater recharge and flow to agricultural drains)	21,400	22,400

#7

It is interesting that the future "sustainable" water budget of 112,000 happens to coincide almost precisely with the "current" water budget

Addressees: board@svbgsa and peterseng@svbgsa.org

Dear Board Members and Mr. Petersen:

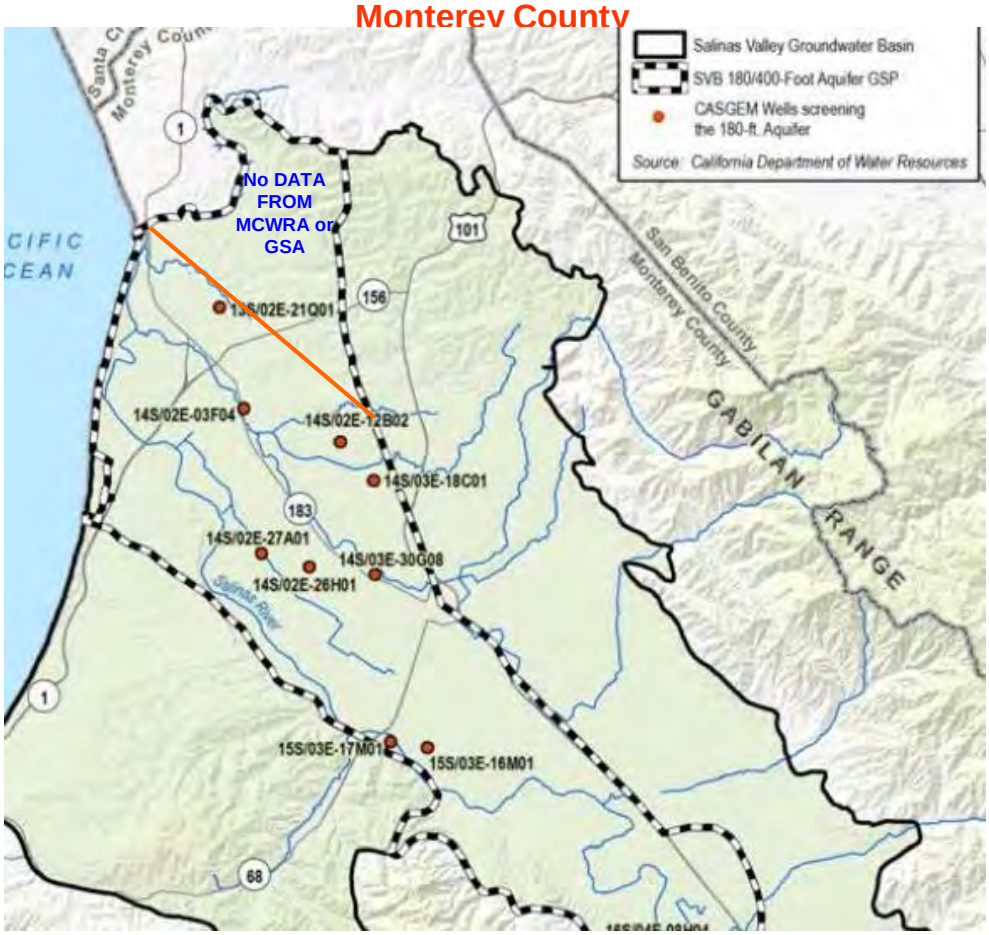
The Salinas Valley Basin Groundwater Sustainability Plan does not adequately address groundwater sustainability or sea water intrusion. There are dozens of reasons why this Plan should not be adopted as a viable document to guide water use in our area. It needs to be vastly improved before it should be submitted to the State Department of Water Resources as representing a meaningful starting point for the Salinas Valley Basin and groundwater sustainability.

1). There needs to be language added in the implementation chapter that does the following:

Commit that by 2021 the GSA (or MCWRA) will do the studies that SHOULD HAVE BEEN DONE **before** the "sustainability" criteria was developed. There is absolutely no monitoring well data from the hill areas in the northern part of the 180/400 ft. aquifer. The monitoring wells are located on the flatland areas only. SVBGSA has NO IDEA what the condition of wells are in the hill areas where thousands of rural residents live. They do not know how many wells are already at risk in terms of groundwater level and how the proposed projects and continued high pumping rates could exacerbate those low levels.

No Data in the Plan for North Monterey County

#1



2). In the chapter regarding implementation, there needs to be a commitment that by 2022 private well owners and small water system managers will be notified if their well is located in an area where sea water encroachment is intruding, whether the encroachment exceeds state standards or not, based on increases in chloride and total dissolved solids occurring between 1995 throughjcurrent time.

3). In the chapter regarding implementation, there needs to be a commitment that by 2022 private well owners and small water system managers will be notified if their well is located in an area ground levels have dropped below the minimum threshold or similar criteria that indicates potential at-risk of sanding or failing.

4). In the chapter regarding implementation, there needs to be a commitment that by 2022 private well owners and small water system managers will receive either in conjunction with #2 and #2 above, or independent of it, notification of funding and/or programs available for water testing, water impurity removal systems and funding for improvements to wells that are in jeopardy of well failure.

5). In Chapter 8, Table 8.1, is unrealistic in the minimum threshold criteria for chronic lowering of groundwater levels. The level needs to be raised to the groundwater average level for the year 2007. This change is needed because the 2015 level is too close to the lowest gw level in 74 years of history records. Is it not reasonable to "Freeze" the minimum at the bottom during drought periods where well failures were know to occur. It is clear that severe over-drafting has been occurring for decades as evidenced by massive sea water intrusion. It is not a reasonable "floor" to prevent continued over-draft / sea water intrusion. The need for a higher minimum threshold is especially true considering the stated intent from GSA officials that measurable objectives do not necessarily need to met. They are just "goals".

6). The proposed undesirable result for chronic lowering of groundwater levels in Table 8.1 of 15% exceedance for 2 consecutive years IS MUCH TOO GREAT OF AN EXCEEDANCE. This is especially true because the positive impacts of projects may not be known for decades.

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Salinas Valley Water Coalition
33 El Camino Real • Greenfield, CA 93927
(831) 674-3783 • FAX (831) 674-3835

TRANSMITTED VIA EMAIL

Salinas Valley Groundwater Sustainability Agency
Atten: Mr. Gary Petersen, General Manager

September 10, 2019

Re: SVBGSA 180/400 Aquifer GSP

Dear Mr. Petersen

Thank you for this opportunity to comment on Chapter 9 of the Salinas Valley Basin Groundwater Sustainability Agency's ("SVBGSA") Groundwater Sustainability Plan ("GSP") for the 180/400 Foot Aquifer Subbasin ("180/400 Subbasin"). Our comments are summarized below and detailed in the body of this letter.

- This GSP should not set forth any basin-wide commitments since the other subbasins within the Salinas Valley Groundwater Basin ("SVGB") have not benefited from any thorough analysis.
- Water charges framework should require voter approval for funding of projects consistent with Proposition 218.
- All of the Priority Management Actions in Chapter 9 can be supported by the Coalition for further consideration and analysis to address seawater intrusion and overdraft in the 180/400 Subbasin. That said, these Priority Management Actions should be evaluated for their appropriateness for the other Subbasins of the SVGB *only* at the time the respective GSPs are prepared for these Subbasins.
- The Coalition strongly supports further consideration and analysis of Priority Management Action 3, Reservoir Reoperation. This Management Action should be evaluated not only for valley-wide benefits but also for environmental (fishery flow) benefits.
- The Coalition supports further evaluation and analysis of the following Priority Projects in Chapter 9 in order to address seawater intrusion and overdraft in the 180/400 Subbasin: invasive species eradication; optimize Castroville Seawater Intrusion Project ("CSIP") operations; maximize existing Salinas River Diversion Facility ("SRDF") diversion; modify Monterey One Water recycled water plant; and expand area served by CSIP.
- The Coalition supports further evaluation and analysis of the following Priority and Alternative Projects in Chapter 9 for consideration and potential implementation to address sustainability issues, if any, in the Subbasins other than the 180/400 Subbasin: winter releases (coupled with reservoir infrastructure upgrade) and 11043 Diversion Facilities Phase 1 and Phase II.
- Any "new water" the Salinas Valley Water Project ("SVWP") generates as part of any related projects such as "optimize CSIP operations" and "maximize existing SRDF diversion" must be shown to be over that amount already produced by the previously approved SVWP and must not be double counted. The SVWP is currently funded by special assessments which must be taken into consideration when determining a Prop 218 vote for its expansion or optimization.
- Nitrate issues are already addressed through other governmental processes, and those processes should be referenced to avoid duplicative efforts.

A. The GSP Should Not Set Forth Any Basin-Wide Commitments Since the Other Subbasins Have Not Benefited from Any Thorough Analysis.

The GSP is solely for the 180/400 Subbasin, which is the only basin within the SVGB that has been determined to be in critical overdraft. Accordingly, this Subbasin requires particularly focused analyses and management actions to mitigate the overdraft and halt seawater intrusion. The other subbasins do not have the same challenges. In fact, the consultants preparing the GSPs for SVBGSA have repeatedly stated in public forums that the Upper Valley Subbasin is currently sustainable.

Each Subbasin within the SVGB was identified as being hydrologically distinct by the Department of Water Resources ("DWR") in Bulletin 118. For the purposes of the Sustainable Groundwater Management Act ("SGMA"), each subbasin within the SVGB falls within the definition of "basin". Specifically, "basin" is defined under SGMA as "a groundwater basin or

subbasin identified and defined in Bulleting 118…" (Water Code §10721(b).) In the GSP for each basin, specifically-tailored analysis and management actions must be developed in order to meet the objective of achieving "the sustainability goal for the basin for the long-term beneficial uses of groundwater." (Water Code §10727.1) Projects and Management Actions in Chapter 9 should focus on what actions and projects are needed to provide sustainability for the critically overdrafted 180/400 Subbasin. Discussions of basin-wide actions and projects are inappropriate at this time until futher analyses have been performed for each Subbasin.

Specifically, the water charges framework set forth in Chapter 9, which includes pumping allowances and fees, may be appropriate for the 180/400 Subbasin, but may not be appropriate for the other Subbasins within the SVGB which haven't had the benefit of any thorough analysis. For example if any one of those Subbasins is already determined to be sustainable, as has been stated regarding the Upper Valley Subbasin, pumping allowances and fees may not be appropriate for that Subbasin. <u>We request that all references in the GSP for basin-wide water charges and pumping allowances be stricken.</u> Such sentences as "A similarly structured water charges framework will be implemented in all Salinas Valley subbasins in Monterey County" is inappropriate since the other Subbasins have not had the benefit of a thorough analysis in order to determine the proper management actions needed for those Subbasins. The appropriate time to discuss the management actions for these other Subbasins is at the time a GSP is being prepared for these Subbasins.

B. Water Charges Framework Requires Voter Approval.

Chapter 9 sets forth extraction fees in a tiered system, and the revenues generated from the fees would be used either for projects or for administration, which includes the development and maintenance of a complicated banking system to keep track of extractions, hold overs and transfers. We appreciate that Chapter 9 recognizes and states that the fee structure and allowances "will not be uniform across the Salinas Valley subbasins", and that "different subbasins in the Salinas Valley will be subject to different fee and pumping allowance structures". However, Chapter 9 also states that "a similarly structured water charges framework will be implemented in all Salinas Valley subbasins in Monterey County." As previously stated, the water charges framework may not be appropriate for all subbasins. While it might be appropriate to state that "a similar structured water charges framework will be considered for implementation in all Salinas Valley subbasins", it is NOT appropriate to say that they will be, in fact, implemented. That said, in order to implement the water charges framework, the SVBGSA must seek voter approval pursuant to Proposition 26 or Proposition 218.

In general, Proposition 26 prohibits a local government from enacting, increasing, or extending any levy, charge, or exaction of any kind without voter approval unless an exception can be identified. An applicable exception may be any charge imposed for a specific benefit conferred or privilege granted or service or product provided directly to the payor that is not provided to those not charged, and which does not exceed the reasonable costs to the local government of conferring the benefit or granting the privilege. Proposition 218, on the other hand, allows for special assessments to be charged to those property owners who receive (proportional) special benefits which are not received by the public at large.

Since portions of the extraction fees would be used to fund projects and to administer a banking system, there must be voter approval of the fees and taxes pursuant to Proposition 26 and Proposition 218, with fees allocated proportionate to the benefit received. To make this manageable and to reduce the risk of voter rejection, each subbasin requiring projects or extraction fees should be a separate assessment district.

C. All of the Priority Management Actions in Chapter 9 can be supported by the Coalition for further consideration and analysis to address seawater intrusion and overdraft in the 180/400 Subbasin. That said, these Priority Management Actions should be evaluated for their appropriateness for the other Subbasins of the SVGB *only* at the time the respective GSPs are prepared for these Subbasins.

Many of the Priority Management Actions outlined in Chapter 9 are key to addressing seawater intrusion and overdraft in the 180/400 Subbasin. The following are specific comments to the Management Actions proposed in Chapter 9.

- <u>Priority Management Action 3: Reservoir Reoperation</u> - The reservoirs must be reoperated to provide benefits for the entire Salinas Valley, and the reoperation must be done in a manner that considers, and is consistent with, the benefits promised to the rate payers in the Subbasins for the voter approved SVWP. Under SGMA, management actions taken for one basin cannot result in harm to an adjacent basin. Thus, in determining the proper reoperation of the reservoirs, consideration must be made to share the resource: (1) to recharge of Upper Valley and Forebay subbasins; (2) for delivery to CSIP; and (3) for fishery flows. We support the stated two goals of this Management Action, with the following recommended revision:

1. Allow surface flow release to recharge groundwater in the various Salinas Valley subbasins ~~almost~~ **every** winter
2. Allow summer flows to better reach the SRDF diversion

We believe the implementation of this Priority Management Action could be expedited as it was evaluated in the original SVWP's EIR.

- Priority Management Action 4: Restrict Pumping in CSIP Area – Chapter 9 states that the primary benefit received from restricting CSIP pumping is to manage extractions from the Subbasin. It goes on to state that a second benefit received from restricting CSIP pumping is to halt the decline or raise of groundwater elevations. It then goes on to state that "CSIP pumping restrictions will only be implemented after the CSIP optimization projects are implemented, providing a reliable supply of water to growers in the CSIP area." That statement fails to recognize the restrictions and regulations that are already in place to reduce groundwater pumping in the CSIP area. These existing regulations have failed to be enforced; thus, exacerbating seawater intrusion in the 180/400 Subbasin. According to the Engineer's Report for the SVWP, the project was intended to deliver up to 12,800 AFY via SRDF to CSIP based on an additional capture of 29,000 afy (average over hydrologic record) from spillway modifications of the Nacimiento Dam and reoperations of the reservoirs. In exchange for providing surface water at the SRDF to CSIP, individual wells in the CSIP area were to be destroyed, and the MCWRA's supplemental wells were to be used only occasionally. Instead, only about ¼ of the maximum delivery to the SRDF has occurred, individual wells continue to be used in addition to MCWRA supplemental wells; thus, resulting in the continued advancement of seawater intrusion.

  Individual actions that also caused the SVWP/CSIP projects to fail to slow down seawater intrusion include the rejection of the recycled water from Monterey One Water by growers in the CSIP area and the continued pumping of individual wells and MCWRA's supplemental wells. Regulations, which includes destruction of individual wells, and regulatory enforcement are key to restricting pumping in the CSIP area.

  Immediate implementation and enforcement of these regulations must be considered rather than delayed. It is shortsighted to state that the CSIP pumping restrictions will only be implemented after the CSIP optimization projects are implemented. What if the CSIP optimization projects fail to be implemented and/or fail to be implemented in a timely manner so that seawater intrusion is further exacerbated? What are the potential impacts of proceeding in this manner?

D. The Coalition Supports MCWRA's Restrictions on Additional Wells in the Deep Aquifer, Which Restrictions Must be Enforced.

Similar to the management actions for restricting pumping in the CSIP area, regulations, which not only prohibit new wells but also replacement wells in the deep aquifer, along with regulatory enforcement, are key to stopping the depletion of groundwater in the deep aquifer.

E. The Coalition supports further evaluation and analysis of the following Priority Projects in Chapter 9 in order to address seawater intrusion and overdraft in the 180/400 Subbasin: Invasive Species Eradication; Optimize CSIP Operations; Maximize Existing SRDF diversion; Modify Monterey One Water Recycled Water Plant; and Expansion Area Served by CSIP.

Several of the Priority Projects discussed in Chapter 9 have already been analyzed and approved by Monterey County Water Resources Agency and Monterey County and should be implemented based on prior analysis and approvals. The Priority Projects supported by the Coalition are discussed below.

- Optimize CSIP operations; improve SRDF diversion, modify Monterey One Water Recycled Water Plant; and expand area served by CSIP – As stated before, the SVWP was intended to deliver up to 12,800 AFY via SRDF to CSIP based on an additional capture of 29,000 afy (average over hydrologic record) from the spillway modifications of the Nacimiento Dam and reoperations of the reservoirs. In exchange for providing surface water at the SRDF to CSIP, individual wells in the CSIP area were to be destroyed, and the MCWRA's supplemental wells were to be used only during those times when surface water wasn't available. The SRDF has failed to be utilized to the maximum extent as intended, and instead, only about ¼ of the maximum delivery to the SRDF has occurred, individual wells continue to be used in addition to MCWRA supplemental wells-- thus, resulting in the continued advancement of seawater intrusion.

  We appreciate the discussion and identification of the need to look at the timing of supply and demand for the use of recycled water. One of the reasons why maximum delivery has not been achieved is due to physical constraints of the developed project. The physical

constraints include an 80-acre pond which receives as first priority the recycled water from Monterey One Water before the pond can then receive surface water, even if the surface water is readily available. Additional limitations include the sizes of pumps and pipelines and the extent of the pipelines in the CSIP area which make the maximum delivery infeasible. These physical constraints (as well as the management actions discussed above) need to be addressed.

Many of the Priority Projects in Chapter 9 (i.e., optimize CSIP operations, improve SRDF diversion, expand area served by CSIP) related to the SVWP were not only analyzed and approved as part of the SVWP, but also included as policies in the Monterey County's 2010 General Plan and analyzed in its EIR; therefore, these Priority Projects can be implemented in an expedited manner

F. The Coalition Supports Further Evaluation and Analysis of the Following Priority and Alternative Projects in Chapter 9 for Consideration and Potential Implementation to Address Sustainability Issues, if any, in the Subbasins Other Than the 180/400 Subbasin (Except as Noted): SRDF Winter Flow Injection, Winter Releases (coupled with reservoir infrastructure upgrade) and 11043 Diversion Facilities Phase 1 and Phase II.

- 11043 Diversion Facilities - The MCWRA has not taken proper actions to protect their water rights under Permit #11043, and it is our understanding that the permit is currently subject to a notice of proposed revocation by the State Water Resources Control Board ("SWRCB"). This is despite the extensive stakeholder involvement in 2013___ to determine the proper projects for utilizing the water rights. The SVBGSA should consider the recommendations made by the Regional Advisory Committee ("RAC") when determining the appropriate projects to be developed under Permit #11043. We believe the use of Permit #11043 is better suited for the Eastside Subbasin rather than the 180/400 Subbasin. The RAC's recommendations are included as Exhibit A.

- SRDF Winter Flow Injection - This Priority Project should be considered for potential implementation in the GSP for the 180/400 Subbasin as well as other Subbasins' respective GSPs, such as for the Eastside Subbasin. During the presentation to the SVBGSA BOD, your consultant stated that the largest issue with implementing this project will be water rights related issues and that the water rights held by the MCWRA need to be better understood. The MCWRA's water rights are clearly set forth in the SWRCB permits. MCWRA has an obligation to bypass natural inflow of the Nacimiento and San Antonio rivers to satisfy the superior downstream riparian and overlying water right holders. Bypassing natural flows until the river reaches the lagoon prior to storage in the reservoirs would allow the SVGB to be full, reducing waste through evaporation. Storage in the aquifer also allows for ready releases to the SRDF. Bypassing natural inflows would not require a change in the MCWRA's water rights permits. However, there may need to be clarification of the MCWRA's water right permit as to timing and amount of diversion at the SRDF.

- Winter Releases (Coupled with Changes to Reservoir Operation Infrastructure) – As discussed above, the reservoirs must be reoperated to provide benefits for the entire Salinas Valley, which includes not only delivery to the CSIP area, but also recharge to the Upper Valley and Forebay subbasins. Winter releases would allow water to be stored in the aquifers, thus, reducing waste through evaporation, and allowing for ready releases to the SRDF in the Spring.

  Additionally, modifications to the Nacimiento Dam could also benefit releases to CSIP. Of particular interest are the low-level gates at the Nacimiento Reservoir, which we are told have an operating capacity of 460 cfs. Because San Antonio and Nacimiento reservoirs are operated together, increasing the capacity of these low-level gates at the Nacimiento Reservoir would allow for greater flow capacity in order to provide conservation releases and releases to the SRDF while meeting the mandatory release to the lagoon as required in the MCWRA's water rights permits.

  Any "new water" generated as part of any project related to the SVWP (e.g., "optimize CSIP operations", "maximize existing SRDF diversion", etc.) must be shown to be over that amount already generated by the previously approved SVWP and not be double counted. The SVWP is currently funded by special assessments which must be taken into consideration when determining a Prop 218 vote for its expansion.

  As stated previously, the Engineer's Report for the SVWP stated that the project was intended to deliver up to 12,800 AFY as part of the CSIP based on an additional capture of 29,000 afy (average over hydrologic record) from spillway modifications at Nacimiento Dam and reoperations of the reservoirs. The additional water generated by the SVWP of

29,000 afy should not be considered "new water" for the purposes of this GSP since that water is already accounted and paid for by Zone 2C landowners.

The SVWP was successfully approved by the landowners within Zone 2C, an assessment district. Yet, the project that was analyzed for the purpose of determining the special assessments in its Engineer's Report is not the same project as the project that was constructed and implemented. As described previously, the SVWP was downsized, and the operations of the reservoirs from that described in the Engineer's Report and EIR were significantly modified. Simply stated, the special assessments that continue to be paid by Zone 2C landowners do not match the special benefits conferred onto the landowners as analyzed in the Engineer's Report. This issue should be addressed before any expansion of the SVWP is considered.

E. Nitrate Issues Are Already Addressed Through Other Processes.

Although water quality issue, in particular nitrate, was raised during the meeting you held on July 18, 2019, we would like to note that this particular issue is being addressed through: (1) installation of treatment systems; (2) Irrigated Lands Program of the Regional Water Control Board ("RWQCB"); and (3) basin-wide Settlement Agreement with the RWQCB and SWRCB, which requires providing replacement water to water systems with nitrate issues. The GSP would only need to reference the above actions when addressing the water quality problems associated with nitrates. Seawater intrusion, on the other hand, requires management actions and projects.

Thank you for your consideration,

Nancy Isakson, President

180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan

Commentary on Chapter 9 - Projects and Management Actions, dated August 2, 2019

By AH water consulting, Israel
Raanan Adin and Prof. Avner Adin

Submitted to General Farm Investment, Salinas CA

October 8, 2019

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ABBREVIATIONS AND ACRONYMS

BMPs	Best Management Practices
CSIP	Castroville Seawater Intrusion Project
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
M1W	Monterey One Water
MCWRA	Monterey County Water Resources Association
mgd	million gallons per day. 1 mgd=189.42 m3/h=4546.09 m3/d
RTP	Monterey One Water's Regional Wastewater Treatment Plant
SGMA	Sustainable Groundwater Management Act
SRDF	Salinas River Diversion Facility
SVBGSA	Salinas Valley Basin Groundwater Sustainability Agency
SVRP	Salinas Valley Reclamation Project

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1. Background

"180/400-Foot Aquifer Subbasin" is one of the subbasins in Salinas Valley for which a Groundwater Sustainability Plan (GSP) is being prepared under California's Sustainable Groundwater Management Act (SGMA).
Chapter 9 of this GSP, entitled "Projects and Management Actions", was published on August 2, 2019.
Chapter 9 includes section 9.4 entitled "Projects" describing projects that are considered by the appointed engineering company for implementation. A project of specific interest is the hydraulic barrier to control seawater intrusion.
Submission of the 20-year plan for the pressure sub-basin to the state is due January of 2020.

This document is a commentary expressing thoughts on chapter 9, including the hydraulic barrier project.

The commentary focuses on section 9.4 and addresses additional relevant sections as well.

2. Highlights

2.1. Hydraulic barrier:

A hydraulic barrier could potentially stop seawater intrusion. The potential benefit of a hydraulic barrier is well presented. The chapter does not include sufficient information to assess its shortcomings. Two alternatives for implementation are extraction and injection. The effect on the aquifer is not presented for either of the alternatives (this preferred project is the only one with no Estimated Groundwater Level Benefit graphs - graphs are presented for preferred projects 1, 2, 4, 7, 8 and 9, we consider projects 3-5 as one as mentioned below in clause 2.5). In the case of injection wells the sources are not identified. Energy requirements are missing.
Since this project is presented as a fundamental part of the GSP, a clear integrated plan, with timeline, of water extraction and of water injection needs should be presented, including all planned projects of the GSP and other agencies. The plan should consider, among other consideration, the following key issues: (1) According to information on the barrier project it will start operating approximately 5 years after initiation. By that time 3 of the other preferred projects are planned to be completed and start improving the water balance and we can assume other agencies' projects will progress an as well; (2) Additional 4 preferred projects are planned to be completed with 3 years of the barrier's start of operation, potentially improving the water balance as well; (3) At the end of the GSP, 15 years after the barrier starts operating, complete water balance must be achieved and the barrier is supposed to become redundant. This should also be considered in the financial scheme that is said to calculate amortization over 25 years.

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2.2. Water conservation:

Water conservation is mentioned under "Other Groundwater Management Activities" as not specifically funded or managed by this GSP, yet saving water by implementing agriculture best management practices (BMPs) and urban and rural residential conservation (and hopefully institutional too, which is not mentioned) could be as effective as the projects, if not more. This item is worth being given a high priority.

2.3. Measurable objectives:

Specific measurable success criteria are important and should be identified or if necessary, developed for each project. As written several times in the chapter, direct correlation between most projects and the GSP's measurable objectives (changes in groundwater levels, subsidence and seawater intrusion, etc.) is likely not possible because there are many management actions and projects that will be implemented in the Subbasin.

2.4. Projects and preferred projects:

The methodology of assessment and selection of preferred projects should be presented in detail.
The full list of projects and the list of preferred projects should be revisited occasionally as more information is gathered. Reassessment with new information may change projects' preferences.

2.5. Preferred Projects 3, 4 and 5:

Preferred Project 3: *Modify Monterey One Water Recycled Water Plant - Winter Modifications*, Preferred Project 4: *Expand Area Served by CSIP* and Preferred Project 5: *Maximize Existing SRDF Diversion* are highly interdependent and should be planned and managed as one integrated project.

2.6. Injection and extraction wells:

In cases where injection and extraction may both be needed in the same area, dual-purpose wells should be considered, e.g. for underground storage or for aquifers where the water table rises enough seasonally or due to unpredictable climate changes. "Dual-purpose well" is a well intended both for injection and recovery. Dual purpose well may be cheaper in construction and in operation and maintenance than two separate wells, and less susceptible to clogging due to its redeveloping technique.

2.7. Modify Monterey One Water Recycled Water Plant:

Plans are made to treat and reuse some of the wastewater during the wet season. Efforts should be made to treat and reuse all wastewater during all seasons. Managing water quality of effluents to the right level for irrigation (storage, CSIP network expansion project, etc.), recharge or the hydraulic barrier will optimize energy and other costs.

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2.8. Minerals content management of desalinated water:

It is highly important to manage the mineral content of supplied desalinated water to prevent illnesses, plant deterioration and SAR increase associated with lack of minerals (magnesium, calcium and more, that are vital to human health as well as to plant and soil). Solutions may include mixing and remineralization.

2.9. Public Noticing:

It is not enough to present only the merits of proposed project. The shortcomings of each proposed project should be equally presented with detailed comparison of the alternatives. Currently, according to the document reviewed, assessments that will be presented to the SVBGSA Board in publicly noticed meetings are not required to include shortcomings or detailed comparison of alternatives.

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3. Commentary

The following table (Table 1) presents detailed commentary with reference to section number and text quoted from the chapter.

Table 1: Commentary on Chapter 9 - Projects and Management Actions, 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan

Section	Text	Commentary
9.3.5.8 Estimated cost	The SVBGSA will support the development of a mandatory pumping reduction program. The implementation of the program will be through MCWRA and is estimated to take two years to develop. The support of the implementation program will be $50,000 for two years or a total of $100,000.	The "mandatory pumping reduction program" should be explained and the activities covered by the mentioned budget should be listed.
9.4 Projects	Several potential projects are included in this GSP that are currently being pursued by other agencies. These projects are considered sufficiently established, and will be constructed independently of this GSP. ... some of these projects are currently already in the planning stages or in design by other agencies	The time-line of projects currently being pursued by other agencies and their integration with the preferred projects should be clearly explained in this GSP.
9.4.1 Overview of Project Types	There are four major types of projects that can be developed to supplement the Subbasin's groundwater supplies or limit seawater intrusion: 1. In-lieu recharge through direct delivery of water to replace groundwater pumping 2. Direct recharge through recharge basins or wells 3. Indirect recharge through decreased evapotranspiration or increased infiltration 4. Hydraulic barrier to control seawater intrusion	What about water conservation: Is looking for substituting types of plants/products that evapotranspirate at high rate or consume much water with more effective ones totally out of question? A close issue to this is water savings by controlling "exporting water" so called also "virtual water" through export of agricultural products that contain large percentage of water.
9.4.1.1 In-Lieu Recharge through Direct Delivery	Direct delivery projects use available water supplies for irrigation in lieu of groundwater. This option offsets the use of groundwater, allowing the groundwater basin to recharge naturally.	The offset depends on the water source. Reclaimed wastewater and desalinated seawater (remineralized) could be used to offset use of groundwater. Using river water and rainwater harvesting to offset use of groundwater requires careful water balance calculations considering potential natural recharge by these waters.

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Section	Text	Commentary
9.4.1.2 Direct Recharge through Recharge Basins and wells	Recharge basins have the advantage of generally being less expensive to build and operate than in-lieu distribution systems or injection systems.	In view of the continuously increasing demand for food, land availability and cost is expected to increase.
9.4.1.2 Direct Recharge through Recharge Basins and wells	Injection wells are used to inject available water supplies directly into the groundwater basin.	Dual-purpose wells should also be considered for underground storage or for aquifers where the water table rises enough seasonally or due to unpredictable climate changes. "Dual-purpose well" is a well intended both for injection and recovery.
9.4.1.3 Indirect Recharge through Decreased Evapotranspiration or Increased Percolation	Within the Subbasin there are areas that represent opportunities for increased groundwater supply through either a decrease in evapotranspiration or an increase in percolation. Example projects include removal of invasive species from riparian corridors (decreased evapotranspiration) and stormwater capture (increased percolation).	A highly effective method for reducing water loss by evaporation, already widely implemented in Salinas Valley, is transformation of traditionally used irrigation methods such as flood or furrow irrigation to irrigation with low-rate applicators, e.g. sprinkler or drip irrigation systems. Other BMPs in agriculture should be explored.
9.4.1.4 Hydraulic Barrier to Control Seawater Intrusion	A hydraulic barrier can be operated as a recharge barrier, wherein water is injected into the wells and the resulting water level mound creates the hydraulic barrier. Or the barrier can be operated as an extraction barrier, wherein the wells are pumped and the resulting water level trough creates the hydraulic barrier. Recharge barriers require a source of water for recharge. extraction barriers require an end-use for the pumped water.	Dual-purpose wells may also be worth consideration here (see comment above). Energy demand and cost are particularly critical in this kind of project, and should be presented. Injection - The possible water resources should be listed. Extraction - Seawater might have no use other than discharge to the sea.
9.4.2.2 Public Noticing	GSA staff will bring an assessment of the need for the project to the SVBGSA Board in a publicly noticed meeting. This assessment will include: o A description of the undesirable result(s) that may occur if action is not taken o A description of the proposed project o An estimated cost and schedule for the proposed project o Any alternatives to the proposed project	It is not enough to present only the merits. The shortcomings of each proposed project should be equally presented. A detailed comparison of the alternatives should be presented.
9.4.3 All Projects Considered for Integrated Management of the Salinas Valley	This GSP is part of an integrated plan for managing groundwater in all six subbasins of the Salinas Valley that lie in Monterey County. The projects listed in this GSP constitute an integrated management program for the entire Valley.	A true holistic approach demands presenting the integrated GSP at basin level.

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Section	Text	Commentary
9.4.3 All Projects Considered for Integrated Management of the Salinas Valley	The potential projects listed in Appendix 9-B were assessed for cost effectiveness in achieving sustainability throughout the Salinas Valley.	The methodology of assessment should be presented in detail.
9.4.4.1 Assumptions used in developing projects	Assumptions that were used to develop projects and cost estimates are provided in Appendix 9-C. Assumptions and issues for each project need to be carefully reviewed and revised during the pre-design phase of each project. Project designs, and therefore costs, could change considerably as more information is gathered.	The full list of projects and the list of preferred projects should be revisited occasionally as more information is gathered. Reassessment with new information may change projects' preferences.
9.4.4.2 Preferred project 1: Invasive Species Eradication	The initial treatment phase includes mechanical and/or chemical treatment ... The final phase is the on-going monitoring and maintenance treatment phase. This phase requires annual monitoring for re-growth of the invasive species or new invasive species and chemical treatment every three to five years.	Which chemical treatment? How will it affect groundwater and runoff to Salinas river? Using chemicals for invasive species eradication is not a sustainable solution and should be reconsidered or minimized, requiring careful environmental impact assessment. This may take a while. What will be done in the cleared areas? Could cleared areas be used as recharge basins or storage reservoirs? Could agriculture be a future use?
9.4.4.2 Preferred project 1: Invasive Species Eradication	Relevant Measurable Objectives Relevant measurable objectives benefiting from this project include: • Groundwater elevation measurable objective • Groundwater storage measurable objective ... A direct correlation between invasive species eradication and changes in groundwater levels, subsidence, or seawater intrusion is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin.	A direct measure of success could be river flow before and after cleared areas and groundwater elevation measurements in the large cleared areas.
9.4.4.3 Preferred Project 2: Optimize CSIP Operations	4. Piping Upgrades: The hydraulic model will identify deficiencies in the water distribution system that will require piping upgrades. The exact piping upgrades are unknown. This component of the project is a placeholder for anticipated upgrades required to the system to assist in the regulation of flow and pressure.	Leakage is not mentioned. Leak detection and repair should be included and priced. Increasing pressure will increase leakage and require more leakage detection and repair. Requirements for the ongoing monitoring of the system should include leak detection. Advanced technologies for this are readily available.

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Section	Text	Commentary
9.4.4.4 Preferred Project 3: Modify Monterey One Water Recycled Water Plant – Winter Modifications	Monterey One Water (M1W) is currently designing and permitting this project. SVBGSA will work closely with M1W to support and implement this project. Monterey One Water's Regional Wastewater Treatment Plant (RTP) has a maximum capacity of 29.6 mgd. Currently, the facility is only treating 16 to 18 mgd of influent wastewater. During the wet weather months, 100% of all secondary treated wastewater is discharged to the ocean, forgoing the opportunity for beneficial reuse. During the wet weather months, there is some demand for recycled water in the CSIP system; however, M1W cannot efficiently produce the reduced demand for tertiary treated water to supply the growers. As a result, growers turn to the groundwater basin for their irrigation needs during these months. Modifications are required at the M1W RTP in order to efficiently treat and store recycled water during the wet weather months.	Is there a plan for using these effluents for injection to the aquifer in the hydraulic barrier project?
9.4.4.4 Preferred Project 3: Modify Monterey One Water Recycled Water Plant – Winter Modifications	Under the M1W Recycled Water Plant Modifications Project, the SVRP will be improved to allow delivery of tertiary treated wastewater to the CSIP system when recycled water demand is less than 5 mgd.	An effort should be made to treat and reuse all wastewater during all seasons.

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Section	Text	Commentary
9.4.4.4 Circumstances for Implementation	The SVRP modifications project is currently being planned and implemented by M1W as part of the Pure Water Monterey Groundwater Replenishment Project. No other circumstances for implementation are necessary.	Few comments: 1. The final title 22 Engineering Report April 2019 (Revised) of Pure Water Monterey states (p.28) that the recycled water supply for agriculture here "is subject to (1) Water Recycling Requirements issued to MRWPCA (Order 94-82) and (2) Recycled Water Used Requirements (Order No. 95-52) issued to MCWRA by the Central Coast Regional Water Quality Control Board." What is the status of meeting those requirements? 2. The recycled water is purified to the standard of drinking water quality with technologies that altogether produce excellent water for that purpose. Irrigation for most products would not need such a high level of purification, which might end up with higher costs of water for the farmers than necessary. If not done already, other alternatives for that portion of the recycled water intended for irrigation can be considered. 3.The recycled water coming out of the RO treatment skillfully includes a post-treatment stabilization step. The latter includes, among others, calcium addition, yet other minerals such as magnesium are missing in the water. That can deprive the plant from vital minerals and raise the water SAR to an undesirable level as well, which is totally unsustainable. Measures can be taken to get the situation right, though it might be costly and should be considered appropriately. 4. Providing direct recycled water for drinking purposes is still debated around the world and the water safety/quality standards are not really finalized nor agreed upon for that specific purpose. So the question here, which is not new, is why not allocating the recycled water as a major source for agriculture, and targeting the natural water plus necessary desalinated water for drinking?

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Section	Text	Commentary
9.4.4.4 Preferred Project 3: Modify Monterey One Water Recycled Water Plant – Winter Modifications; 9.4.4.5 Preferred Project 4: Expand Area Served by CSIP; 9.4.4.6 Preferred Project 5: Maximize Existing SRDF Diversion		These projects are highly interdependent and should be planned and managed as one project.
9.4.4.7 Preferred Project 6: Seawater Intrusion Pumping Barrier	The extracted water or a portion thereof could be conveyed to a new or existing desalination facility where it can be treated for potable and/or agricultural use.	This option of using extracted water seems promising and sustainable, yet depends on the sustainability of the barrier project as a whole.
9.4.4.7 Preferred Project 6: Seawater Intrusion Pumping Barrier	An optional barrier using injection instead of extraction was also considered. ... and advanced purified recycled water. Treated Salinas River water and desalinated ocean water would be preferentially delivered to growers and municipalities rather than injected. The only likely source of water for injection is therefore advanced purified recycled water	Could there be a situation where a good rainy season will drive the seawater intrusion front back enough that pumping of sweet water could be of interest? If and where such a case exists, dual-purpose wells could perhaps be of value.
9.4.4.7 Preferred Project 6: Seawater Intrusion Pumping Barrier	Implementation Schedule: 5 years to Start Up	By that time several other projects are planned to be completed. What will be the need then? A consolidated planning on a timeline of the water balance is missing.
9.4.4.7 Preferred Project 6: Seawater Intrusion Pumping Barrier		Missing: Impact on groundwater - Either extraction or injection will affect groundwater. This project is the only one with no Estimated Groundwater Level Benefit graphs.
9.4.4.8 Preferred Project 7: 11043 Diversion Facilities Phase I: Chualar	Proposes to construct extraction facilities at the Chualar location and pump the water to the Eastside Subbasin where the water can then be infiltrated or injected into the groundwater basin at known pumping depressions.	Could dual-pumping serve here (Preferred Project 7)?
9.4.4.9 Preferred Project 8: 11043 Diversion Facilities Phase II: Soledad	An infiltration basin that could be farmed in the summer and fallowed during the winter.	This option seems promising and sustainable.

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Section	Text	Commentary
9.4.5.1 Alternative Project 1: Desalinate Water from the Seawater Barrier Extraction Wells	The following plants are in various planning and design stages in the Monterey Bay Area: • Monterey Peninsula Water Supply Project desalination plant, 6.4 mgd (7,100 AF/yr.) • Deep Water Desalination Plant, 22 mgd (25,000 AF/yr.) • People's Water Supply Project desalination plant, 12 mgd (13,400 AF/yr.)	The desal plants (Alternative Project 1) are close to the coast so there should be no specific problem of disposing the brine.
9.5 Other Groundwater Management Activities	Although not specifically funded or managed by this GSP, a number of associated groundwater management activities will be promoted and encouraged by the GSAs as part of general good groundwater management practices.	Why are these not part of the GSP? The benefit of these projects could be similar to and higher than the programs included in the GSP. Is there more than one GSP?
9.5.1 Promote Agricultural Best Management Practices	Agricultural best management practices (BMPs) should be promoted throughout the basin to conserve water. BMPs include using efficient irrigation systems, such as drip irrigation, and replacing frost protection sprinklers with alternative frost protection methods.	Important: Why not plan and calculate the benefit of agricultural BMPs and compare them to the projects above mentioned, perhaps they will be found more economic and more sustainable than some of them? Inputs from agro-technology experts may be needed for assessing the potential.
Appendix 9c: Modeling and analytical tools for analyzing project benefits	Chapter 9 of the GSP includes a set of projects and management actions designed to achieve and maintain sustainability in the 180/400-Foot Aquifer Subbasin over the SGMA implementation horizon. To assess the benefits of individual projects, and combinations of projects, to achieve sustainability, quantitative analyses were performed through simplified groundwater model simulations. These simulations included predicted climate change conditions with and without the proposed projects. In addition, a simplified analytical analysis was developed to evaluate the potential design for a seawater intrusion barrier and its capability to stop seawater intrusion.	The GSP should present complete information on the process of assessing the projects and on the process of selecting the preferred and alternative projects.
9C.5 Seawater Intrusion Barrier Evaluation	A seawater intrusion barrier could be designed to either to extract groundwater and produce a hydraulic trough that would intercept seawater intrusion, or to inject groundwater and produce a hydraulic mound that would block seawater intrusion. A barrier project would transect the 180/400-Ft Aquifer Subbasin and the Monterey Subbasin, with an estimated length of 8.5 miles and approximately 75% of the barrier within the 180/400-ft Aquifer Subbasin.	The GSP should include an estimation of energy demand and cost for extraction and for injection. Destination and cost of extracted water should be presented, particularly alternatives of using the extracted water. In case of injection, alternative water resources should be presented with their costs and compared.

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Section	Text	Commentary
9C.5 Seawater Intrusion Barrier Evaluation	The seawater intrusion barrier sizing was developed in the absence of any of the other future projects included in the GSP. The effect of the other projects would be to improve the water balance in the Subbasin and decrease the rate of seawater intrusion, thereby decreasing the flow required at the barrier.	Not clear: "in the absence of any of the other future projects included in the GSP." What does this mean?

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ATTORNEY AT LAW

7 August 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Board of Directors

Re: August 8, 2019 meeting

Public comment

Agenda Item 7.e
Chapter 9 of 180/400 GSP

Agenda Item 8.a
Billing notice language

Public comment

I respectfully suggest that when the GSA revises or supplements its posted agendas and packets, it include a flag, notation, or other explicit signal. I have downloaded two versions of the agenda packet -- both of which claim to have been posted on August 2, 2019 (in the end notes of the agenda pages). The current packet as of 6 August 2019 is 196 pages long whereas the one available a day or so earlier is 165 pages. The GSA's postings have in general been well within the applicable public notice times (typically somewhat early), but on several occasions, I discovered after reviewing an agenda packet that a modified version was now on the GSA website. On at least one occasion the GSA sent a notice via email of the new posting. Nerveless, some sort of flag, marker, or other facial indicator to the public that there exists an earlier and a revised agenda or agenda packet would contribute to the GSA's goal of transparency.

Item 7.e. -- Chapter 9 draft

Draft Chapter 10 (implementation) was discussed during the Planning Committee meeting on 1 August 2019. Based on language in that draft, I asked how the water charges framework would be applied in the 180/400 where the overall goal of the current GSP direction is to stop pumping and instead provide water from various projects or sources. The current CSIP area, for example, relies on, and is charged various levies by the MCWRA for. water that is delivered via pipes. My query contributed to a discussion of the water charges framework by those present, including comments by GSA counsel Les Girard on the complications and intricacies of regulatory fees, SGMA statutory authority, Proposition 218, and other aspects of applying the proposed framework. The

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thrust of the discussion was that while a framework based on water extraction charges has certain merit, as a practical and legal matter, it may not be the only or most appropriate basis to finance projects under all circumstances. Mr. Williams suggested he would rewrite "that section" of presumably draft Chapter 10. The difficult decisions about financing and management will eventually come before the Board, but are not part of today's agenda. Nevertheless, Chapter 9, which introduces and explains the water charges framework, states that it is the "fundamental structure for managing groundwater pumping and funding projects" and will be implemented in "all Salinas Valley subbasins in Monterey County." § 9.2. The current draft fails to identify how the framework is geared to the 180/40, the focus of the GSP. The current Chapter 9 language may not be consistent with what one may expect in Chapter 10 about flexibility, the continuation of the current regulatory fee within or apart from the water charges framework, and how to charge extraction fees in areas (like the CSIP) that will not pump.

It may be best to hold Chapter 9 until the language in Chapter 10 is finalized so that the two do not clash.

Item 8.a -- billing notice

At the Planning Committee Meeting last week, I orally commented that the proposed billing notice and an assessor document both contained small nomenclature errors that could create confusion. In both cases, the draft language slightly misidentified the relevant state entity responsible for the interim/probationary management of a basin. It appears that the entity intended is the State Water Resources Control Board, which would manage a non-compliant basin.

Very truly yours,

Thomas S. Virsik

Thomas S. Virsik

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September 30, 2019

Gary Petersen
General Manager
Salinas Valley Basin Groundwater Sustainability Agency
peterseng@svbgsa.org

Dear Mr. Petersen:

CENTRAL COAST WATER BOARD COMMENTS ON THE SALINAS VALLEY 180/400 FOOT AQUIFER SUBBASIN GROUNDWATER SUSTAINABILITY PLAN DRAFT: CHAPTER 9, PROJECTS AND MANAGEMENT ACTIONS

The Central Coast Regional Water Quality Control Board (Central Coast Water Board) is a state agency that implements state and federal water quality laws within the Central Coast region. The Salinas Valley groundwater basin falls within the jurisdictional area of the Central Coast region and as such, the Central Coast Water Board has an interest in monitoring, preserving, and restoring water quality within the basin. The Central Coast Water Board has reviewed the draft Chapter 9 of the Salinas Valley 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (GSP) on *Projects and Management Actions* and would like to provide comments on the groundwater quality-related portions of this draft chapter.

The Central Coast Water Board supports efforts to increase the capacity of regional groundwater resources. We also support and appreciate the projects developed and implemented by agencies in the Salinas Valley to manage the existing groundwater resources in a sustainable manner, control overdraft, prevent seawater intrusion, and create a reliable water supply in the short and long terms. From our perspective, a safe and reliable water supply is essential to support all designated beneficial uses, including drinking water, for current and future generations.

Regarding water recharge and storage projects, issues and considerations associated with the chemical characteristics of the recharging and stored water itself, as well as the receiving aquifer, are well-documented. With regards to Chapter 9 of the GSP, the Central Coast Water Board has concerns that implementing such projects directly on agricultural lands could exacerbate a well-documented non-point source groundwater quality problem. Specifically, due to the widespread application of fertilizers and pesticides to agricultural lands, the use of these

lands for surface water storage basins and groundwater recharge areas have the potential to flush even more agriculture-related chemicals from the land surface and shallow soil zone to groundwater than would make it to groundwater via typical irrigation practices and precipitation alone – particularly if the land use seasonally alternates between active farming and water storage/recharge. On the other hand, we acknowledge that in some cases managed aquifer recharge results in the dilution of constituents of concern (COCs) in groundwater; however, in these instances, the recharge areas are not sited on actively farmed acres where the source of COCs continues to be applied on a seasonal basis. The Central Coast Water Board requests that the GSA clarify plans for recharge in areas of seasonal farming and areas of poor water quality (Projects 7 and 8). During the planning process, we recommend the GSA consider the potential permitting that the Central Coast Water Board's Waste Discharge Requirement program may require for such projects. We encourage initiation of permitting discussions with Central Coast Water Board staff as early as possible.

The Central Coast Water Board thanks the GSA for the work being done to sustainably manage groundwater resources in the Salinas Valley and appreciates this opportunity to provide comments. If you have questions or would like to discuss these comments in greater detail, please feel free to reach out to James Bishop, Daniel Pelikan, or Diane Kukol at the Central Coast Water Board:

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Engineering Geologist
Central Coast Water Board
James.Bishop@waterboards.ca.gov
805-542-4628

Daniel Pelikan, P.G., C.Hg.
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Sincerely,

for John M. Robertson
Executive Officer

cc:

Matt Keeling, Central Coast Water Board, Matt.Keeling@Waterboards.ca.gov
Diane Kukol, Central Coast Water Board, Diane.Kukol@Waterboards.ca.gov
Daniel Pelikan, Central Coast Water Board, Daniel.Pelikan@Waterboards.ca.gov
James Bishop, Central Coast Water Board, James.Bishop@Waterboards.ca.gov
Natalie Stork, State Water Resources Control Board, Natalie.Stork@Waterboards.ca.gov
Andrew Renshaw, State Water Resources Control Board, Andrew.Renshaw@Waterboards.ca.gov
John Ramirez, Monterey County Environmental Health Bureau, Ramirezj1@co.monterey.ca.us

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-----Original Message-----
From: Christopher Bunn <christopher@Generalfarminvestment.com>
Sent: Thursday, July 25, 2019 3:05 PM
To: Derrik Williams <dwilliams@elmontgomery.com>; Gary Petersen - SVBGSA (peterseng@svbgsa.org) <peterseng@svbgsa.org>
Subject: comments on chapter 9

Derrik and Gary,

Thank you for all your hard work on our local SGMA process. I'd like to submit a few comments on the chapter 9 draft. These are not in any order of importance.

1. De minimis users should be required to pay some sort of fee. While I realize they can't be charged according to usage, they shouldn't get a free pass as they are benefiting from the basin and all of our hard work and capital.

2. The fallow land program should allow for a landowner to lease the land for fallowing, as opposed to simply put it in permanent deed restriction. The fallow lease could either be held by the GSA/county or secured by another landowner in order for that landowner to gain a certain portion of the fallowed land's water credits. This open-ended approach to fallowing would allow such land to come back into production if the basin achieved balance and/or surplus.

3. Reservoir re-operation (and increasing winter flows, etc) would have an adverse effect on river vegetation. This would have to be mitigated (see # 5).

4. Before completely restricting drilling and pumping in the deep aquifer, the GSA will first have to create a viable alternative (CSIP expansion does not seem to be a viable alternative yet, if it is merely to benefit the book-end months), as the county's current regs prohibit new wells in the 400 west of Davis Road.

5. The invasive species eradication project as it is written, limited to arundo, tamarisk and other negligible non-natives is too limited. Chapter 9 should amplify that eradication to species overgrowth in general in the river, as willows and several other species are what create the larger problem in the river in terms of sucking up water and blocking flow. The Salinas River Maintenance Program has permits in place that allow for that kind of maintenance, in addition to eradicating the arundo. A change from invasive to species overgrowth in general will more effectively reduce the amount of water taken by plants, in addition to allowing better flow in the river from the dams to the SRDF, radial collectors, and recharge points in between. The permits allow willows less than the 6 inches diameter at chest height to be taken without mitigation. Furthermore, if larger willows are taken (which is rarely necessary), the 2-1 replanting mitigation can be done along riverbanks and up on the levees, which many landowners are happy to do. This project, as currently written, is missing a tremendous opportunity for creating water and enabling better control of river flows, in addition to being a critical action that virtually all landowners, farmers and valley cities would be happy to see. Furthermore, if one of the projects is going to be reservoir re-operation for increased winter flows, the river will become even more choked; amplifying species eradication would mitigate this problem caused by the GSP.

6. Chapter 9 should contain a blanket statement that all viable sewage should be pursued for capture and reclamation. Spreckels should be given priority in this regard. Also, a comfortable majority of the

residents in the Toro area would be in favor of their sewage going to M1. This would not shut down CUS completely, as they would still need to capture the sewage and pipe it. The dollars involved here would be only focused on diverting it from their plant to the M1 plant, shutting down CUS' spray fields (which are a food safety problem in themselves, let alone issue of being along the river and contaminating the water). Furthermore, as the Davis Rd bridge project is on the books, this is the time to influence that project and get a suitable pipe slung under the new bridge.

7. All old, unused wells in the CSIP area and then over to the city and Davis Road need to be destroyed. This needs to be down at landowner cost, rather than expecting MCWRA to pay for it. Set a date when it needs to be done. Sooner than later.

8. GSA needs to determine any and all pumping in the basin that is being exported out of the basin. If this is not done and policed, then the fee structures will not be honest and reflective of reality. Water export needs to stop.

9. The Salinas River Maintenance Program also includes a permit for sediment removal. This should be included in the project list as it would allow more efficient water movement in the river, either to get it to the SRDF, planned radial collectors, or to percolation points.

10. Lastly, the Jerrett Reservoir should be included on the list. Increasing water storage will allow us to move increased amounts of water more efficiently down the river to percolation points, radial collectors and the SRDF. I haven't spoken with a single farmer/landowner who disagrees with this. If we're going to include Nacimento/San Antonio re-operation on the project list, a new reservoir would be governed by the same logic: controlling storage means controlling flow means controlling perc/extraction points.

Regards,
Christopher Bunn

Thomas S.
Virsik
ATTORNEY AT LAW

17 July 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Advisory Committee

Re: July 18, 2019 meeting

Chapter 9 of the 180/400 GSP

This comment letter is submitted on behalf of the Orradre and Scheid interests.

DRAFTS LACK MANDATORY REGULATORY CONTENT

While in many respects draft Chapter 9 is innovative and strategic, it suffers from a fatal flaw. As numerous commentators have pointed out on multiple occasions with respect to Chapter 6 (water budgets), the GSP for the 180/400 fails to *quantify* the overdraft to be mitigated to achieve sustainability. In its current iteration, draft Chapters 6 and 9 do not meet minimum regulatory requirements.

Emergency Regulation § 354.44(b)(2) states:

> (b) Each Plan shall include a description of the projects and management actions that include the following:
>
> * * *
>
> (2) If overdraft conditions are identified through the analysis required by Section 354.18, the Plan shall describe projects or management actions, including a quantification of demand reduction or other methods, for the mitigation of overdraft.

Regulation § 354.18 is titled "water budget."

> (b) The water budget shall quantify the following, either through direct measurements or estimates based on data:
>
> * * *
>
> (5) If overdraft conditions occur, as defined in Bulletin 118, the water budget shall include a quantification of overdraft over a period of years during which water year and water supply conditions approximate average conditions.

Bulletin 118 (2003) provides a definition and discussion of overdraft at pages 96 and 97.

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> Groundwater overdraft is defined as the condition of a groundwater basin or subbasin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years, during which the water supply conditions approximate average conditions (DWR 1998).
>
> * * *
>
> For example, when groundwater levels decline in coastal aquifers, seawater fills the pore spaces in the aquifer that are vacated by the groundwater, indicating that the basin is being overdrafted.

Neither Chapter 6 nor Chapter 9 refer to the specific regulations above. The word "overdraft" is used in text a single time in Chapter 6 but no number/figure/quantity in any table is so labeled. The 180/400 basin is designated by the DWR as in a critical condition of overdraft, of course.

The current iteration of Chapter 9 also recites "overdraft" a handful of times -- section 9.7 is prominently labeled as a list of projects and actions for the "mitigation of overdraft" but one cannot find the quantity of overdraft to be mitigated, which renders of questionable value any projection of how much water is provided or mitigated by a given action or project. The current draft GSP for a basin in critical overdraft does not disclose the current quantity of overdraft. That lacuna will make the Plan non-compliant, no matter its other merits.

Absent the quantity of overdraft to be mitigated to achieve sustainability, one is hard-pressed to make intelligent fiscal decisions about choosing one project or action over the other. Chapter 9 (including the oral presentations at the Planning Committee) is explicit that the priority projects may be insufficient to meet sustainability and one or more alternative projects are needed. The total amount of water *just CSIP Projects 2, 3, 4, and 5* may develop appears to be 40,300 AF. By force of logic, one can *guess* the current overdraft in the 180/400 exceeds that 40,300 AFY figure. But the public should not need to guess or rely on back of cocktail napkin calculations. The total amount of overdraft to be mitigated to achieve sustainability must be explicitly identified for the GSP to meet minimum requirements.[1]

<u>ACCEPTING THE "FRAMEWORK" IS NOT APPROVAL OF THE LATER DETAILS</u>

Draft Chapter 9 and the oral presentation provided thus far acknowledge that many details need to be worked out at later stages. One concern for interests such as the Orradres and Scheid is that partial or full acquiescence to the proposed "framework" may be perceived or taken as a willingness to accept the later "details." Well before any GSP chapter was drafted, they reminded the GSA that in 2003/04 they and certain others from the southern parts of the Valley

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[1] Whether the quantification of overdraft is the best or most useful approach to planning for sustainability is beside the point. The regulations set minimum standards.

obtained judgments based on hard-fought settlements in multiple validation actions. Those validation judgments limit the fiscal contribution of certain lands to efforts addressing the northern coastal overdraft and seawater intrusion issues. That the GSA was created after the date of the judgments does not immunize it from honoring the judgment terms.

To put in somewhat practical terms, while the proposed slate of CSIP projects/actions in Chapter 9, may have certain merit, their fiscal aspects remain subject to the limitations of the prior judgments/settlements. The list of "details to be developed" may be expanded to include the "detail" that the Valley is not a *tabula rasa* when it comes to determining which lands are legally obligated/exempt from paying for what projects/benefits.

Very truly yours,

Thomas S. Virsik
Thomas S. Virsik

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From: **james sang** <sangjames@yahoo.com>
Date: Wed, Nov 13, 2019 at 1:51 PM
Subject: SVBGSA PLAN
To: Gary Petersen <peterseng@svbgsa.org>, BoardSVBGSA <board@svbgsa.org>
Cc: Ann Camel <camela@svbgsa.org>, james sang <sangjames@yahoo.com>

To General Manager Gary Peterson and the Board of Directors:

This my idea about how to make our groundwater sustainable.

We have to rehydrate our soil and thusly our groundwater levels will go up and our aquifers will refill.

We need to build swales or ditches that run against the slope of land. These swales will collect the rainwater. The swales will lead into a pond, that is close to a monitored well . As the rainwater fills in the pond, the rainwater will percolate into the ground and raise the water table and eventually the aquifers and the well water levels.

Example 1. You Tube video "#9 Fill your well using a trench- Groundwater recharge-Tropics"

Example 2. You Tube video "#9.1 pt ii Fill your well-Groundwater recharge-Tropics"

Swales leading to pond can be done on level ground. Mr. Jack Spirko in his You Tube video said that he collected 12,000 gallons of water from one inch of rainfall!!

Example. You Tube Video "Swales on so called "flat land" holding 12,000 plus gallons of water.

I would this idea to be tried on 10 currently monitored wells.

1. The ponds should be one or two acres. They should be about 36 inches deep. They should be deep enough to collect one year of rainfall.
2. The swales should be as long as possible. This will allow more rainwater to be collected. If the swales go up a hill, they should go as high as possible to rehydrate more ground. If the swales are on a hill, Vegetation should be grown behind the swales to prevent them from breaking in a heavy rain.
3. The ponds should have floating plants(azolla, duckweed} to absorb the nitrates and other toxins. The floating plants will help prevent excessive evaporation. Evaporation is a major cause of ground moisture loss. Maybe tarps put over the pond will work.
4. The pond water can be used for irrigation and thus prevent a draw down of groundwater.
5. The pond should be build about fifty feet away from the well to allow the soil to absorb any potential toxins from entering the well.

Thank you for reading this!

James Sang (sangjames@yahoo.com)

September 9, 2019

Steve McIntyre, Chairperson
Members of the Board of Directors
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Via email peterseng@svbgsa.org, camela@svbgsa.org

Subject: Comments on Groundwater Sustainability Plan (GSP) 180/400-foot Chapter 9 Projects and Management Actions

Dear Chair McIntyre and Members of the Board of Directors:

LandWatch appreciates the opportunity to comment on the 180/400-Foot Subbasin Groundwater Sustainability Plan, Chapter 9, Projects and Management Actions.

Summary of comments

LandWatch supports the conceptual Water Charges Framework, although much work remains to implement it. However, to attain sustainability the Salinas Valley Basin Groundwater Sustainability Agency (SVGBGSA) cannot rely on voluntary pumping reductions in response to water charges. The SVGBGSA does not currently have the information to set water charges at a level that would ensure demand does not exceed available supply. This would require knowing (1) the sustainable yield, (2) the cost, timing, and financing of new water projects sufficient to meet demand, and (3) the elasticity of demand, i.e., the total amount of new water supplies users would be willing to buy at the marginal price per acre-foot.

Instead, the SVGBGSA should limit water use in the 180/400-Foot Aquifer Subbasin by ordinance. The ordinance should allocate to users the total sustainable yield, as conservatively estimated today, plus the new water made available by specific Management Actions and Projects. That new water should only be allocated to users when it actually becomes available. There are various equitable methods to allocate newly produced water (e.g., auction, assignment by formula, with or without a secondary market). Regardless of the method chosen to allocate newly produced water, the SVGBGSA must ensure that total pumping does not exceed current sustainable yield plus the total of newly produced water.

The Water Charges Framework must be based on groundwater pumping, not on acreage. What matters in attaining sustainability is actual groundwater pumping, which

should be measured through an enforceable ordinance requiring well registration, annual reporting, flow meters, and annual calibrations.

The proposed Transitional Allowance should be ramped down as quickly as feasible unless there is substantial evidence that a longer period is consistent with attaining sustainability by 2040. And the Transitional pumping surcharge should be based on the best estimate of future supplemental fees since that Transitional surcharge is also intended to reduce pumping and provide funds for new projects.

The Plan proposes as a Management Action that SVGBGSA supports MCWRA's Deep Aquifer study. However, because MCWRA has not had the resources to complete that study, SVGBGSA should fund and undertake the study itself. Development of this information is part of SVGBGSA's mandate under SGMA to manage the Deep Aquifer sustainably**.** Until this study is completed, SVBGSA should restrict new wells; inspect existing wells to assure they are properly engineered to prevent seawater intrusion from the 180/400-foot aquifers; and decommission any well that is not so engineered.

Section 9.6 of Chapter 9 does not provide the mandated quantification of the mitigation of overdraft because it fails to quantify the benefits of Management Actions, assigns all of the Basin-wide Project benefits to the 180/400-Foot Aquifer Subbasin, double counts some benefits, and contains an arithmetic error. This must be corrected.

De minimis wells on fallowed land should be limited to only those wells needed to support the residential use that is currently permitted <u>by right</u>. Permitting more wells on fallowed agricultural land to support higher residential density would improperly interfere with general plan land use designations, which SGMA enjoins.

Finally, we look forward to more complete project descriptions and costs during implementation of the 180/400 Foot Subbasin GSP.

Our detailed comments follow.

1. **The SVGBSA cannot rely on voluntary reductions to ensure sustainability because it does not have the information needed to set water prices that would limit water demand to the available supply. The SVGBGSA should initially limit pumping to sustainable yield plus transitional allowance until new water supplies are firmly in place. When new water supplies are produced, the SVGBGSA should then limit pumping to sustainable yield plus those new water supplies.**

The water charges framework is based on different fees for pumping at three different levels. It distinguishes three levels of fees:

- A "regulatory" fee for pumping a user's "sustainable pumping allowance,"
- A "surcharge" for a user's "transitional pumping allowance," where the transitional pumping allowance is based initially on current pumping and then declines to zero over a period of time, and
- A "supplementary fee" for "supplemental pumping," i.e., pumping in excess of the sustainable and transitional allowance.

This water charge framework is “designed to achieve” two objectives: “to promote voluntary pumping reductions” and “to fund water supply projects.” (Chapter 9, § 9.2.)

However, there is no evidence that the fees can be or will be set at a level that attains sustainability if pumping reductions remain voluntary. A purely voluntary scheme can only work to attain sustainability if (1) the fees are set at a level that pays for water projects that make additional water available in excess of sustainable yield (“new water”) and (2) that fee level also happens to effectively incent users to limit their cumulative pumping to an amount equal to current sustainable yield plus that new water. Setting a fee for the new supplemental water that ensures that demand equals available supply would require SVGBGSA to know the incremental cost of new water from a suite of potential Projects and Management Actions, and the elasticity of demand, and the point at which the marginal cost of new water equals its marginal benefit.

In short, voluntary reductions would not work unless the SVGBGSA has a lot more information than it can possibly generate before this plan must be implemented.

Chapter 9 admits that most of the details of the water charges framework must be deferred due to lack of information. (See section 9.2.8 for a partial list of what has been deferred.) For example, there is no estimate of costs and benefits per acre/foot of new water for some of the Management Actions. There is no allocation of the estimated benefits of the Basin-wide Management Actions and Projects to users of the 180/400-Foot Aquifer Subbasin. There is no information as to the elasticity of demand that would enable the SVGBGSA to determine what feasible Projects and Management Actions, priced to users at an equitably determined cost per acre/foot, should be implemented in order to satisfy demand. However, in a voluntary pumping reduction regime in which users remain free to pump at any level, establishing the supplementary charges for new water that would limit pumping to sustainable levels would require this cost/benefit information and a determination as to how much supplementary water users will be willing to pay for, i.e., a determination as to when the supplementary water charges will become so high that users will not be willing to pump more water.

Implementation of the water charge framework will also require critical compromises about technical matters and benefit allocation among affected parties, with vastly different interests by subbasin and by the type of user. This information will not be available by 2020 or perhaps for many years thereafter.

In sum, there is no prospect to get to an agreement, especially by 2020, on supplementary water charges that would pay for needed projects and induce users to keep total pumping within the level of sustainable yield plus new water. Even if the SVGBGSA can determine the precise cost per acre/foot of new water, it is unlikely to know the point at which the benefits and costs of that next acre-foot of new water are equal. As long as pumping reductions remain voluntary, there is a significant probability that pumping will exceed sustainable yield.

Accordingly, as a practical matter, the Plan cannot rely on voluntary pumping reductions. Instead, the SVGBGSA **must restrict pumping** in excess of the user's allowance of sustainable yield (plus transitional allowance) unless and until there is an actual committed, funded Management Action or Project that will deliver the new water.

When new water is produced, the SVGBGSA should continue to restrict total pumping to the total of current sustainable yield plus new water. To ensure this, when a Management Action or Project is committed and funded, the SVGBGSA should distribute the new water by selling specific allowances of the new water to users.[1]

If demand for new water exceeds supply, the SVGBGSA could allocate the new water allowances through several means. For example, it could sell the new water by auction, e.g., a French auction in which the supply is sold at the lowest bid price above the cost of production that would clear the market. Alternatively, the right to purchase new water at the cost of production could be assigned to users according to some pre-determined formula, e.g. pro-rata, based on their initial allowances of the current sustainable yield.[2] There are other equitable ways to allocate new water. Regardless, the objective of the allocation system should be to recover at least its production cost, to dispose of all of the new water, and to prevent pumping in excess of the sustainable yield plus the amount of new water.

2. **Transitional Allowances should be ramped down as quickly as feasible because there is no substantial evidence that a longer period is consistent with attaining sustainability by 2040.**

The water charges framework proposes to allow "transitional" pumping in excess of sustainable yield for "10 to 15 years." (Chapter 9, § 9.2.3) Transitional pumping is apparently recent (2012-2017) actual pumping. Users would pay a "surcharge" fee for this pumping to the extent it exceeds sustainable yield.

Chapter 9 says that the transitional allowance "may" be reduced over time to get to sustainable pumping, implying that it may <u>not</u> be reduced and that users would not make any cuts at all, but simply continue existing overdraft pumping while waiting for water from new Projects or Management Actions. Permitting any future overdraft would increase the amount of cumulative overdraft in the 180/400 Foot Aquifer Subbasin, lowering groundwater levels and thereby inducing additional seawater intrusion. This is inconsistent with the sustainability mandate, which requires that the Plan avoid such an undesirable result and meet the measurable objectives. For example, any increase in the amount of cumulative overdraft would likely render it impossible to meet the seawater intrusion minimum threshold, which is set as the seawater intrusion line defined by MCWRA in 2017. (Chapter 8, § 8.8.1.) There is no evidence that seawater intrusion can be reversed, so if the Plan permits continued overdraft it cannot meet its adopted seawater intrusion minimum threshold.

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[1] A Management Action or Project should not be deemed funded and committed until it has been approved by the implementing agency and until all needed funding is in place, including fee ordinances and Proposition 218 votes as needed.

[2] Users with an allowance of the existing sustainable water supply or an allowance of new water could be permitted to sell an allowance to other users. This secondary market in water allowances would ensure the water goes to the most valued use and would establish price signals that would inform SVGBGSA of users' willingness to pay for future new water supply projects.

In the absence of any evidence that a 10-15-year transition period is consistent with attaining sustainability by 2040, and considering the evidence to the contrary, the transition period should be set as the minimum feasible period to ramp down existing pumping to sustainable yield. GSP should contain a firm commitment to phase out any transitional allowance as quickly as feasible. LandWatch suggests at most a 3-5-year time frame for elimination of transitional pumping.

3. **The Transitional pumping surcharge should be based on the best estimate of future supplemental fees. Supplementary allowances and supplementary fees should not be implemented until new water is developed, priced, and allocated.**

Whereas in theory the "supplementary" fees for new water could (or, under Prop 218, must) be determined with reference to an engineering study that looks at costs of delivering new water and who is benefitted by it, the Plan document now provides no basis whatsoever for setting the "transitional" pumping surcharge.

According to Chapter 9, both the supplementary fees for new water and the transitional surcharge are intended to discourage pumping in excess of sustainable yield and to fund future Projects and Management Actions. Accordingly, the transitional surcharge should be set at the best current approximation of the eventual supplemental fees so that users have proper incentives immediately and funding needed for projects and management actions is collected from inception of the GSP implementation period.

For example, Section 9.4 identifies 9 priority projects with a cost per acre-foot ranging from $90 to $880. Based on the data in Chapter 9, if all nine projects were completed, they would cost $49,702,000 and yield 81,600 acre-fee per year.[3] The average cost per acre-foot would come to $609. If this were the best estimate of the cost, the yield, and the need for projects to attain sustainability at the time the Plan is implemented, the SVGBGSA should set the transitional surcharge at $609 per acre-foot.

Figure 9-1 implies that the SVGBGSA will be able to separately assess regulatory fees, the transitional surcharge, and the supplementary fees from the first year of the GSP implementation. This is highly unlikely because it would require that SVGBGSA know at the first year of GSP implementation (1) the sustainable yield, (2) the total pumping allowed under the transitional pumping allowance, and (3) the total pumping allowed for sustainable yield plus new water, i.e., the amount of new water that will be provided and the allocation of its cost.

As discussed in section 1 above, SVGBGSA will not be able to determine supplementary fees until it evaluates and engineer the Projects and Management Actions. Furthermore, users should not be permitted to pump in excess of their transitional allowance level until new water has actually been developed and allocated. It is not at all clear that SVGBGSA will be in position to price, allocate, and deliver new water in 2020. Accordingly, as a practical matter, in the initial implementation years, the water charges should be limited to regulatory fees charged for the sustainable yield allowances plus the

[3] This calculation includes the $2,552,000 cost but not the 11,600 acre-feet/year yield from Project # 5, because the Project #5 yield is already included in Projects # 2 and #3. (Chapter 9, § 9.3.6, page 50.)

surcharge fee for the transitional water allowances. The surcharge fee should be set to approximate future supplementary fees, as discussed above.

4. **The Plan should not assume the Monterey County Water Resources Agency (MCWRA) will complete a Deep Aquifer study; MCWRA has no funding or authorization. Instead, SVGBGSA should fund and undertake the study because development of this information is part of SVGBGSA's mandate under SGMA.**

Section 9.3.6 proposes that, as a Management Action, SVGBGSA comments on MCWRA's study of the Deep Aquifer and support and strengthen MCWRA's restrictions on additional wells in the Deep Aquifer pending the results of that study.

MCWRA does not have any funding for, or a current commitment to undertake, the Deep Aquifer study recommended by its staff in its Recommendations to Address Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin. (MCWRA, Special Reports Series 17-01, dated October 2017.) After making that recommendation, MCWRA staff held meetings with stakeholders to identify data gaps and study parameters in February 2018. Staff recommended a budget of $1.2 to $1.5 million for this study and sought authorization at a joint meeting of the MCWRA Directors and the County Board of Supervisors on April 2, 2018. However, in response to LandWatch's recent request, MCWRA has not produced public records demonstrating that the Deep Aquifer study has been authorized or funded.

In light of MCWRA's apparent lack of resources to conduct the Deep Aquifer study, LandWatch recommends that SVGBGSA should itself undertake it. SGMA mandates that SVGBGSA provide a hydrologic model, characterize groundwater conditions, and provide a water balance for the aquifers within the Basin, which includes the Deep Aquifer. (23 CCR §§ 354.14, 354.16, 354.18.) Chapter 6 fails to provide this information for the Deep Aquifer, which is a fundamental defect in the Plan. There is no reason to defer or delegate the development of this mandatory information to MCWRA. Indeed, SVGBGSA cannot fulfill its obligation to identify sustainable management criteria, management actions, and projects to attain sustainability for the Deep Aquifer without this information.

SVGBGSA has a clear authority to fund the Deep Aquifer study. It can and should collect fees from groundwater pumpers for this purpose pursuant to Water Code section 10730.

The best currently available scientific information indicates that any pumping in the Deep Aquifer is not sustainable. There is no recharge except in geologic time. There is also good evidence that seawater-contaminated groundwater moved into the 400-foot aquifer from the 180-foot aquifer in locations where wells and drilling weren't properly regulated. Such contamination will likely also occur in the Deep Aquifer without much better regulation and oversight. Unless and until new scientific information is available on the Deep Aquifer capacity, well construction, and seawater contamination between aquifers, SVBGSA should restrict any new wells and develop a schedule to halt all pumping of the Deep Aquifer by 2040 when the Groundwater Sustainability Management Act requires sustainability.

5. **Chapter 9 fails to provide the mandatory quantification of the mitigation of overdraft: it fails to quantify the benefits of Management Actions, assigns all of the Basin-wide Project benefits to the 180/400- Foot Aquifer Subbasin, double counts some benefits, and contains an arithmetic error.**

SGMA requires that if overdraft conditions are identified in the Water Budget, the Plan must "describe projects and management actions, including a quantification of demand reduction or other methods, for the mitigation of overdraft." (23 CCR § 354.44(b)(2).) Section 9.6 purports to provide this quantification. However, the quantification has several flaws that must be corrected.

First, Section 9.6 fails to quantify the benefits of Management Actions. The discussion in Section 9.6 and Table 9-5 address only the benefits of proposed Projects, based on the estimated quantification of benefits of each proposed Project in the discussion of projects in Section 9.4. There are no such quantified estimates of the benefits of the proposed Management Actions in Section 9.3. It is likely that the benefits of some of the proposed Management Actions could in fact be estimated. For example, the benefit of a pumping ban in the CSIP area would presumably be equal to current pumping in that area, which should be ascertainable.

Unless the SVGBGSA is prepared to supply at least a preliminary estimate of the benefits of proposed Management Actions, it is not clear that there is evidence that they would have any meaningful or reliable benefits or that there is any way to evaluate those benefits, as required by 23 CCR § 354.44(b)(5). For example, the benefits of reservoir reoperations may be too speculative to include at this point in light of the revocation of the Biological Opinion and the unfunded priority obligation for safety repairs.

At any rate, it is clear that 23 CCR § 354.44(b)(2) mandates quantification of the benefits of Projects and Management Actions.

Second, Chapter 9 states that the proposed Management Actions and Projects "constitute an integrated management program for the entire Valley," not just the 180/400 Aquifer Subbasin. (Chapter 9, §§ 9.3.1, 9.4.3.) Despite this, Section 9.6 only discloses the overdraft for the 180/400 Aquifer Subbasin and then erroneously concludes that the mitigation proposed for the entire Valley's overdraft is sufficient because it is greater than the overdraft in the 180/400 Foot Aquifer Subbasin.

Third, Table 5 double counts the benefits of the proposed Projects #2, 3, 4, and 5, all of which are intended to "work together to improve and expand the performance of the CSIP system" and are identified as "part of an integrated CSIP strategy." (Chapter 9, page 31, "CSIP Projects."). For example, the discussion of the benefits of Project # 5, Maximize Existing SRDF Diversion, states that the "estimated project yield is 11,600 AF/year. The yield for this project is the same yield that is identified in Priority Project #2 and a portion of the yield identified in Priority Project #3." (Chapter 9, § 9.4.4.6.) Despite this, Table 9-5 lists 11,600 AF/year as additional potential yield for Project #5, over and above the yield for Projects # 2 and #3.

Fourth, Table 9-5 is not added correctly. The "total" for Table 9-5 is stated as "-58,201." However, the sum of the elements listed in the table is 40,800 acre-feet per year of potential water available for mitigating overdraft. Eliminating the double counted 11,600 acre-feet per year for Project # 5, the total would be 29,200 AF/year.

6. **De minimis wells on fallowed land should be limited to those needed to support the residential use that is currently permitted <u>by right</u> in order not to interfere with general plan land use designations.**

Section 9.3.2 provides that the SVGBGSA be permitted to buy out agricultural pumping allowances. Any provision in its fallowing program that permits sellers who convert their land to rural residential use to retain "de-minimis wells" should be qualified to limit the de minimis wells to just those wells needed to support the existing rural residential densities permitted <u>by right</u> for agricultural lands under the County General Plan and Zoning Ordinance. No de minimis wells should be permitted on fallowed land to support subdivision of that land for residential use.

It is not sufficient that the plan states that land conversions must comply with the County General Plan. Sellers of water allowances who are fallowing land to convert to residential uses may seek higher residential densities through amendments to the General Plan, conditional use permits, or subdivisions. Water Code section 10726.4(a)(2) requires the SVGBGSA to respect the “land use designated in the city or county general plan.” Section 10726.8 also precludes interference with city and county general plans. Monterey County’s General Plan is intended to concentrate future residential development in so-called “focused growth areas,” consisting of Community Areas and Rural Centers, not in land designated for agricultural use. (Monterey County General Plan, Land Use Element, Introduction, available at https://www.co.monterey.ca.us/home/showdocument?id=45800.)

If a fallowing program were to permit sellers to establish de minimis wells to support pumping in excess of the residential uses now permitted by right on agricultural lands, it would create an inducement for more intense residential development, in part by creating a financing mechanism for that development. Accordingly, the GSP should restrict de minimis wells to those required to support the residential densities now permitted by right for agriculturally designated land under the existing general plans.

7. **Agricultural Best Management Practices (BMP) provisions are redundant.**

As drafted sections 9.3.3 and 9.5.1 both call for promotion of BMP for agricultural water use. One section should be deleted.

Sincerely,

Michael DeLapa
Executive Director

To: SVBGSA Board

From: Robin Lee, SVBGSA Advisory Committee

Re: Comments on GSP draft

Date: 11/14/2019

It is my opinion that the ground water level of sustainable yield has been set at an unsustainable level. The level for sustainable yield should be set at the average depth of domestic wells. This would assure a majority of residential water users would be assured of access to ground water. Ground water depths set near the end of the worst drought in California will not give ground water access to the majority of residential systems. Also, the lower level would put tremendous strains on ground water connected ecosystems.

For projects, a scalping plant should be used for the east side of Salinas. This plant would be closer to connecting the much disrupted hydrologic cycle on the east side, making the scalping plant both an economical and efficient project.

Looking at and correcting the ordinances that prevent the recommendations stated in the GSP from being implemented, should be listed as an administrative project in GSP.

Thank you.

Robin Lee, Environmental Caucus seat, Advisory Committee

M1W Comment Matrix Draft SVBGSA GSP Chapter 9		
Page	**GSP Chapter 9 Section**	**Text edits are shown in strike-out and underline; blue text indicates a general comment or question; red text indicates text edit which must be clarified and made by the author.**
10	9.3.2.8 Priority Management Action 1: Estimated Cost	Land more expensive towards ocean and generally uses less water (ie. CSIP growers use about 2.0 AF/ac although they have rights to 3 AF/ac).
16-17	9.3.5.2: Priority Management Action 4: Expected Benefits and Evaluation of Benefits	A second benefit is either halting the decline of, or raising, groundwater elevations from the reduced pumping. • MCWRA has issued waivers to greenhouses within CSIP to not use recycled water. Will those waivers be rescinded? • MCWRA already requires all growers within CSIP (Ordinance 3790) to use recycled water within 30 days except for MCWRA Supplement Wells or Standby wells used within requirements of the Ordinance. • GSA should list acreage involved and reduced groundwater pumping assuming 2 AF/ac.
18	Priority Management Action 5: Support and Strengthen MCWRA Restrictions on Additional Wells in the Deep Aquifer	Priority Management Action 5: Support and Strengthen MCWRA
	9.3.7 Priority Management Action 6: Destroy Abandoned, Dual Perforated, Improper Seals, and other Improper Construction Wells in Salinas River Basin	M1W proposes that the following new Priority Management Action be explored within this chapter; MCWRA staff insight would assist in analysis. 9.3.7 Priority Management Action 6: Destroy Abandoned, Dual Perforated, Improper Seals, and Other Improper Construction Wells in Salinas River Basin Propose that abandoned, dual perforated and other improperly constructed or maintained wells be destroyed. Existing provisions of MCWRA Ordinance 3790 cover CSIP area wells • Previously (prior to CSIP certification (1.01.11 Ordinance 3790) abandoned wells shall be destroyed by the owner, or if not within two years, then by MCWRA at owner's expense (1.03.03 Ordinance 3790). • Contaminated and Cross-Contaminating Wells shall be destroyed by MCWRA within 2 years of CSIP startup (1.03.04 Ordinance 3790). • Non-exempt wells to be destroyed within three years after project start-up at MCWRA's cost (1.03.05 Ordinance 3790). • MCWRA should "start the clock" (1.01.11 Ordinance 3790). • Connected with this ordinance, all CSIP growers are required to destroy their wells.
25	9.4.4.4.2 Preferred Project 1: Invasive Species Eradication	Please explain how 6,000 AFY to 36,000 AFY left in reservoirs results in 890 AFY reduction in Seawater Intrusion and a project yield of 20,000 AFY. Please explain clearly the difference between sustainability and seawater intrusion.
22	9.4.2.1 General Project Provisions:	Additionally, any project must receive approval from an agency or an authorization, decision or may require NEPA documentation.

	Summary of Permitting and Regulatory Processes	
23	9.4.2.2 General Project Provisions: Public Noticing	Explain the need for the formal process described in bullet points- i.e. why not just carry out the CEQA review process?
23	9.4.2.3 General Project Provisions: Legal Authority Required for Projects	What privileges does CWC 10726.2 provide GSA?
25	9.4.4.1 General Project Provisions: Assumptions used in developing projects	Third Paragraph: Land acquisition depends on type of land and PCE vs TCE Fourth Paragraph: No repair and replacement costs, or admin overhead (17%) included in cost estimates?
31	9.4.4.3 Preferred Project 2: Optimize CSIP Operations	The CSIP system is operated and maintained by M1W under a contract with MCWRA. MCWRA and M1W have ~~has~~ started evaluating opportunities to optimize the CSIP distribution system. • M1W is unaware of any formal plans for MCWRA to complete hydraulic modeling per #1 under general list of activities for CSIP optimization; has this been established in communications with MCWRA? • This is one of the only projects where it is stated that MCWRA and SVBGSA will fund. • **Figure 9-7** and the first full paragraph on page 33 should be moved to 9.3.5 Priority Management Action 4. The 2,000 AFY should be removed from the subsequent paragraph and from the cost calculation at the bottom of page 38. • **Figure 9-8** and the first three sentences in the second full paragraph on page 33 are only valid if Project 3 is implemented (9.4.4.4), otherwise you are double counting water. • Add priority management action #5 to fast-track existing MCWRA planned well destructions to slow vertical migration occurring from the 180- to 400-Foot Aquifers.
32	9.4.4.3 Preferred Project 2: Optimize CSIP Operations	Additional storage reservoirs will allow the CSIP system to store water produced by SVRP or diverted by SRDF during low demand periods for later delivery when demand is high. Reservoirs would also assist in maintaining adequate pressure in the existing system and provide more flexibility in the timing of SVRP and SRDF deliveries.
32	9.4.4.3 Preferred Project 2: Expected Benefits and Evaluation of Benefits	First paragraph, last sentence: • Is it true that the project would benefit other areas (Monterey and Eastside subbasins) by reducing pumping that impacts neighboring subbasins? Is there flow towards the 180/400 ft aquifers?
39	9.4.4.4 Preferred Project 3: Modify Monterey one Water Recycled Water Plant – Winter Modifications	First paragraph: M1W has completed a preliminary design of this project. During the wet winter months, M1W cannot ~~efficiently~~ produce the reduced demand for tertiary treated water to supply the growers. As a result, growers turn to the groundwater basin for their irrigation needs during these months. Modifications are required at the M1W RTP in order to efficiently treat ~~and store~~ recycled water during these months.

		• With less than 5 mgd of demand SVRP must shut down; it also must shut down for chlorine scrubber maintenance. • To be fully functional, this project should include chlorine dry scrubbers so that the system would not need to be shut down for service each year. Third paragraph: The demand for water during the winter months from SVRP will also increase with the ~~expanded CSIP zone~~ Preferred Project 4; increasing the potential Project Yield from 1,100 AF/year to an estimated 1,300 AF, year.
40	9.4.4.4 Preferred Project 3: Expected Benefits and Evaluation of Benefits	First paragraph: Eastside subbasin is not an anticipated beneficiary of the project?
40	9.4.4.4 Preferred Project 3: Circumstances for Implementation	M1W is not planning nor implementing this project at this time; environmental review was conducted as part of the 2015 PWM/GWR FEIR and at such time as implantation becomes feasible (financially and through necessary agreements with partner agencies) the project may move forward.
40	9.4.4.4 Preferred Project 3: Legal Authority	See comment above.
41	9.4.4.4 Preferred Project 3: Implementation Schedule	• Revise Figure 9-10 to note that CEQA is completed and there is no anticipated permitting required. • The project could be completed ½ year faster.
41	9.4.4.4 Preferred Project 3: Estimated Cost	• There are no identified sources/mechanisms for funding this project at this time. Costs quoted in second paragraph are incorrect. • Should include $12.9M for dry scrubber system • Base project capital cost to be paid 45.1% MCWRA and 54.9 M1W. • O&M costs to be paid for through MCWRA assessments.
41	9.4.4.5 Preferred Project 4: Expand Area Served by CSIP	• If PWM expansion does not move forward, additional source waters could be provided for CSIP, pending appropriate agreements and capital investment. • If Project 4 is implemented it will increase the amount of water saved by Project 3.
42	9.4.4.5 Preferred Project 4: Expand Area Served by CSIP	Second paragraph: A new 48" transmission main would extend from the existing SVRP storage pond to the expanded service area; with the exception of a smaller diameter pipeline serving an area southwest of the M1W ~~SVRP~~ RTP.
45	9.4.4.5 Preferred Project 4: Expected Benefits and Evaluation of Benefits	Much of the expanded service area may be within the Marina SGMA area per map in figure 9-12 and existing pumping is in the deep aquifer.
48	9.4.4.5 Preferred Project 4: Implementation Schedule	It will take more than 5 years. The Agreements/ROW (which is assumed to include Ordinances) will easily take two year.

48	9.4.4.5 Preferred Project 4: Estimated Cost	At 3,500 acres a better number for water savings would be 7,000 AFY. Capital cost may be high. O&M costs should be within MCWRA assessment and/or water use fee.
50	9.4.4.7 Preferred Project 6: Seawater Intrusion Pumping Barrier	Use would, not will. The intrusion barrier would comprise~~s~~ 18 extraction wells; although this number may change as the project is refined.
51	9.4.4.7 Preferred Project 6: Seawater Intrusion Pumping Barrier	Third paragraph, last sentence: Assuming the 400~~0~~ – Foot Aquifer has an average depth of 550 feet, and using the same relationships, the injection mound in the 400-Foot Aquifer at the coastline would need to be 13.75 feet above mean sea level to fully stop seawater intrusion Fourth paragraph, second sentence: Of this 46,500 AF/yr., 3,4500 AF/yr. would be injected into the 180/400-Foot Aquifer Subbasin. • Likely infeasible. • 30,000 AFY is given as a conservative withdrawal whereas the 180-foot number is 8,100 AFY and the 400-foot is 16,200 AFY. No estimate is given as to how much of the 24,300 AFY or 30,000 AFY is groundwater from the 180/400 aquifers and how much is seawater. What would this project do to sustainable yield? • The project seems to assume replacement of some or all of the extracted water. If replacement is required, it should be part of this project. If not, it should be a separate project. • Bottom two paragraphs on page 51 should be moved to Alternate Project #1.
52	9.4.4.7 Preferred Project 6: Circumstances for Implementation	The seawater intrusion barrier project is a preferred project and will be implemented as soon as ~~are~~ it is financially and legally possible.
52	9.4.4.7 Preferred Project 6: Estimated Cost	Capital cost is supposed to include rehabilitation of the existing M1W outfall. Please describe that work and the cost associated with it. Did O&M costs include the cost to use M1W's outfall and for CCLEAN fees?
55-56	9.4.4.8 Preferred Project 7: 11043 Diversion Facilities Phase I: Chualar	P. 55 fourth bullet point: • Should discuss this concept with the SWRCB Division of Drinking Water. Surface water treatment plant? • Infiltration basins are poor use of land that does not percolate well. Surface water treatment plants are expensive and will need to have backwash basins for injection wells. • Please explain difference between injecting or percolating 6,000 to 10,000 AFY and only reduce seawater intrusion by 660 AFY. P. 56 second bullet point: No Injection wells or treatment?

56	9.4.4.8 Preferred Project 7: Expected Benefits and Evaluation of Benefits	Why is there no direct benefit to the 180/400-Foot Aquifer Subbasin? Why not inject on the west side of Salinas?
59	9.4.4.8 Preferred Project 7: Estimated Cost	Cost estimates are too low; no treatment or injection well costs are included. Additionally, the $45,000/acre land cost seems very low.
59	9.4.4.9 Preferred Project 8: 11043 Diversion Facilities Phase II: Soledad	• Infiltration basins are poor use of land that does not percolate well. Surface water treatment plants are expensive and will need to have backwash basins for injection wells. • Please explain difference between injecting or percolating 6,000 to 10,000 AFY and only reduce seawater intrusion by 100 AFY.
60	9.4.4.9 Preferred Project 9: 11043 Diversion Facilities Phase II: Soledad	Fourth bullet point: No chlorination treatment. Please explain difference between injecting or percolating 12,900 AFY and only reduce seawater intrusion by 1,600 AFY.
60	9.4.4.9 Preferred Project 9: Expected Benefits and Evaluation of Benefits	The primary expected benefit of Preferred Project ~~6~~ 7 is to provide an alternative water supply source to recharge the Eastside groundwater basin, thereby either raising groundwater levels or lowering the rate of groundwater level decline.
64	9.4.4.9 Preferred Project 9: Estimated Cost	Estimate is low; cost should include surface water treatment plant.
65	9.4.4.10 Preferred Project 9: SRDF Winter Flow Injection	First paragraph: The Biological Opinion was revoked in 2019 and the terms/flow prescriptions will likely change. Third paragraph: Would this proposed expanded surface water treatment plant be located at M1W's RTP? Existing SRDF filtration is single-pass. Fourth paragraph: The uppermost aquifer is saturated in the vicinity.
69	9.4.4.10 Preferred Project 9: Estimated Cost	Anticipate approximately $2m/well. Additionally, costs should include the expanded surface water treatment.
	9.4.4.11 Preferred Project 10: Salinas Industrial Pond Extraction of MCWRA SRDF Water Right or 11043 Water Right Relocation	M1W Proposes the addition and analysis of the feasibility of implementing the below Preferred Project 10: • Project described in cover letter. • Water could be used for City of Salinas drinking water, additional source water for SVRP/CSIP, and/or City of Salinas ASR water.

	9.4.4.12 Preferred Project 11: City of Salinas ASR Wells	M1W Proposes the addition and analysis of the feasibility of implementing the below Preferred Project 11: • Add on to New Project 10 to allow excess winter drinking water to be injected into new wells to allow extraction during the summer.
71	9.4.5.1 Alternative Project 1: Desalinate Water from the Seawater Barrier Extraction Wells	Third Paragraph: Why is the recovery efficiency so low? The 180-Foot Aquifer is less than ¼ of the salinity of ocean water; one could anticipate a much higher efficiency rate. Much lower than 12,700 gpm of brine would be generated from brackish groundwater desalination. Fourth paragraph: An additional 9 miles of 24" pipeline would be needed to convey this desalinated water to an injection well field or recharge basin. ~~Relevant Measurable Objectives.~~
73	9.4.5.1 Alternative Project 1: Estimated Cost	As a point of comparison, the 6.4-mgd Cal-Am MPWSP ~~project~~ has an estimated capital cost of $226,900,000; equivalent to approximately $35 million/mgd. Recommend using Cal Am current estimates as they have the most complete design and environmental package.
73	9.4.5.2 Alternative Project 2: Implementation Schedule	Anticipate obtaining water rights to be most time consuming activity.
	9.4.5.2 Alternative Project 2: Cost Estimate	Costs are very low. On farm recharge might be more expensive.
77	9.4.5.3 Alternative Project 3: Winter Potable Reuse Water Injection	First paragraph: Or why not include construction costs since they are understood to not substantial. Second paragraph: Pure Water Monterey Groundwater Replenishment Project is under construction and a Supplemental EIR for an expanded PWM Project ~~is being considered~~ is being developed. • If Cal Am does not take the AWPF Expansion water there will be no expansion and no water. • It is impossible to get 2,250 AFY only during November through March. The Pure Water Monterey Expansion Project is 2,250 AFY with delivery every month of the year. • Associated injection well facilities include backwash basins. The locations for the well are in areas where percolation is very slow. An alternate to basins, such as Blanco Drain or Reclamation Ditch might be necessary.
78	9.4.5.3 Alternative Project 3: Winter Potable Reuse Water Injection	Under this expansion, the project would provide up to 5,750 AF/yr. (2,250 AF/yr. more than the base PWM Project) for groundwater recharge in the Seaside Basin, 200 AF/yr. for drought reserve, and 600 AF/yr. for groundwater recharge…

		Second paragraph: For example ~~In particular~~, MCWD is currently conducting a feasibility study on injecting purified recycled water into the Monterey Subbasin. Third paragraph: This project would involve the treatment of an additional 2.6 mgd at the ~~SVRP~~ AWPF. Fifth paragraph: Siting backwash percolation basins could be problematic in some areas.
79	9.4.5.3 Alternative Project 3: Expected Benefits and Evaluation of Benefits	The AWPF may provide up to approximately ~~2,200~~ 2,250 acre-feet of water for direct recharge to the Subbasin.
79	9.4.5.3 Alternative Project 3: Circumstances for Implementation	The Winter Potable Reuse Water Injection ~~recharge of winter AWPF water~~ project is one of four alternative projects that may provide additional water to the Subbasin.
79	9.4.5.3 Alternative Project 3: Estimated Costs	Construction cost for the expanded AWPF should be included. The unit cost of water from the AWPF is not $1,450/AF. $2,300 should be included.
80	9.4.5.4 Alternative Project 4: Seasonal Water Storage in 180/400 Aquifer	• New Preferred Project 10 seems to be related to Alternate Project 4. • Additional studies are needed.

MARINA COAST WATER DISTRICT

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Dear Mr. Peterson and Mr. Williams,

Thank you for taking the time to meet with us and our SGMA consultant EKI Environment & Water, Inc. regarding Draft Chapter 9 (Projects and Management Actions) of the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (180/400 Subbasin GSP) on 10 July 2019. Based upon further review of Draft Chapter 9, we have expanded our comments beyond those discussed during the meeting. This letter provides MCWD GSA's initial comments on Draft Chapter 9. We realize that the actions and projects described in Chapter 9 will be refined and new actions and projects added through an iterative process involving all of the stakeholders.

1. Pumping Allowance (Section 9.2.2)

As written, the document implies that municipalities may not receive a sustainable pumping allowance and will need to pay more than agricultural users to pump their base amount. Municipal water purveyors, such as MCWD, have acquired appropriative rights through pumping, which pumping has prescripted against overlying rights. The GSP needs to provide that MCWD's MCWRA groundwater allocations are the sustainable pumping allowances for Fort Ord Lands and Marina Area Lands pursuant to the annexation agreements described below.

<u>1993 Fort Ord Lands Annexation Agreement</u>: On September 21, 1993, the U.S Government, as represented by the U.S. Army, entered into the Agreement between the United States of America and the Monterey County Water Resources Agency concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency (1993 Annexation Agreement). The annexed Fort Ord Lands consisted of all lands within the then existing boundaries of Fort Ord, which included all of the lands that were later transferred to the Fort Ord Reuse Authority. MCWRA allocated 6,600 AFY of groundwater within the then defined Salinas Basin for use within the Fort Ord Lands and recognized withdrawals from the Seaside Basin by Fort Ord of 424 AFY. In consideration for the annexation, the U.S. Government paid MCWRA an annexation fee of $7,400,000. Federal lands were exempt from Zone 2 and 2A assessments, but lands transferred for non-Federal uses, such as for Base Reuse, were required to pay those assessments.

The MCWRA Backstop: Section 4g stated, "Should future litigation, regulation or other unforeseen action diminish the total water supply available to the MCWRA, the MCWRA agrees that it will consult with the Fort Ord/POM Annex Commander. Also, in such an event, the MCWRA agrees to exercise its powers in a manner such that Fort Ord/POM Annex/RC shall be no more severely affected in a proportional sense than the other members of the Zone."

Section 4i recognized that the Federal Government was "considering transferring the ownership and operation of the Fort Ord wells and water distribution system to a successor water purveyor, utility, or agency. Under such a transfer, the MCWRA agrees that the ***Government, in its sole discretion, may transfer its applicable water rights under this agreement to the successor water purveyor, utility, or agency***." [Emphasis added.] By quitclaim deed dated October 23, 2001, the Federal Government transferred all of the Government's ownership in the Fort Ord water system infrastructure and 4,871 AFY of 6,600 AFY of groundwater under the 1993 Annexation Agreement to the Fort Ord Reuse Authority (FORA). On October 24, 2001, FORA in turn quitclaimed all of that infrastructure and the 4,871 AFY of groundwater to MCWD.

MCWD intends to use the 4,871 AFY of groundwater to provide water service to those jurisdictions within MCWD's Ord Community Service Area, which are entitled to water service under those rights pursuant to the Fort Ord Base Reuse Plan.

1996 Marina Area Lands Annexation Agreement: In March 1996, the Monterey County Water Resources Agency, MCWD, the J.G. Armstrong Family Members, RMC Lonestar (now CEMEX), and the City of Marina entered into the Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands. Section 1.1 states,

> "The purpose of this Agreement and Framework is to help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin through voluntary commitments by the Parties to limit, conserve and manage the use of groundwater from the Salinas River groundwater basin, and to provide the terms and conditions for the annexation of certain territory in the Marina area to the Monterey County Water Resources Agency's benefit assessment Zones 2 and 2A as a financing mechanism providing additional revenues to the Monterey County Water Resources Agency to manage and protect the groundwater resources in the Salinas River Groundwater Basin and to reduce seawater intrusion."

The agreement provided for a potable groundwater allocation of 3,020 AFY for use by MCWD for its Central Marina service area. The agreement also provided for 920 AFY for non-agricultural use on the Armstrong Ranch upon annexation to Zones 2 and 2A. Under the 1996 Annexation Agreement, Lonestar agreed to limit its overlying groundwater right to not more than its historic use of 500 AFY of non-potable water on the overlying CEMEX property in exchange for MCWRA agreement on specified annexation fees when Lonestar requested annexation to the Zones.

The 1996 Annexation Agreement established "a contractual process for the exercise of regulatory authority by the MCWRA under Water Code App. Section 52-22, and the MCWD under Water Code section 31048." (MCWRA Negative Declaration re: Annexation of Marina Area Lands to Zones 2/2A, dated February 21, 1996, at p. 4.)

The 1996 Annexation Agreement (Sec. 5.9) required MCWD to pay a $2,849,410 annexation fee to MCWRA less a credit of $400,000. Standby charges and assessments were then levied and collected by the MCWRA on an annual basis on all Marina Area Lands. Section 8.4, Use of Annexation Fees, states,

"Annexation fees from the MCWD service area, the Armstrong Ranch and the Lonestar Property shall be used by MCWRA to pay the costs of a BMP [Salinas River Basin Management Plan] process that includes mitigation plans for the Marina Area based on the planning guidelines contained in this Agreement and Framework. Such annexation fees shall also be used for management and protection of the '900-foot aquifer.'"

In 2003, Zones 2 and 2A were replaced by a new Zone 2C to collect assessments for the operation and maintenance of Nacimiento and San Antonio Dams to reduce flooding impacts on the Salinas River and provide water conservation with consideration given to recreation, and for dam administration, Salinas River Channel maintenance, construction of the Salinas River Diversion Facility (rubber dam), and cloud seeding.

The Fort Ord Lands and the Marina Area Lands have yet to receive any direct benefits from the Nacimiento and San Antonio Reservoirs.

<u>MCWRA's Obligation to Protect the Deep Aquifer for MCWD's Use</u>: Section 5.3, Management of 900-foot aquifer, provides, "The Parties agree that the '900-foot' aquifer should be managed to provide safe, sustained use of the water resource, and to preserve to MCWD the continued availability of water from the '900-foot' aquifer." Section 5.9 further stated that the annexation fees paid by MCWD "shall also be used for management protection of the '900-foot aquifer.'"

Section 8.1, Equal treatment by MCWRA and MCWD, provides in part, "MCWRA shall not at any time seek to impose greater restrictions on water use from the Basin by MCWD, Armstrong or Lonestar than are imposed on users either supplying water for the use or using water within the city limits of the City of Salinas."

For the above reasons, the SVBGSA needs to assign as the sustainable pumping allowances for Fort Ord Lands and Marina Area Lands the groundwater allowances provided in the 1993 and 1996 Annexation Agreements.

As agreed upon during our meeting, the GSP should state that the appropriative and prescriptive groundwater rights of municipal water purveyors, previous water management agreements with the MCWRA, as well as previous payments to zones of benefit will be considered in the development of sustainable allowances for municipalities.

2. Water Charges Framework (Section 9.2)

The water charges framework outlined in Section 9.2 states that:

> *A similarly structured water charges framework will be implemented in all Salinas Valley subbasins in Monterey County. However, details such as pumping allowance quantities, pumping fees, and tier structures will be different for each subbasin. These differences will reflect the fact that each subbasin's water charges framework is based on the specific hydrogeology and conditions of that subbasin.*

> *Sustainable Pumping Allowances are a base amount of groundwater pumping assigned to each non-exempt groundwater pumper. The sum of all sustainable pumping allowances is the sustainable yield of the subbasin after all projects have been implemented.*

The sustainable pumping allowances cannot be tied to "sustainable yield of the subbasin after all projects have been implemented", because some projects will have more localized benefits and/or losses to certain subbasins versus others. For example, if water is recharged or extracted from a given subbasin as part of a large-scale basin-wide project, that project will significantly impact the sustainable yield of that subbasin. Therefore, SVBGSA could effectively determine the sustainable yield of a subbasin depending upon which projects are implemented. Further, given existing inland cross boundary flows, subbasins such as the Monterey Subbasin, could be allocated no sustainable yield. We recommend that SVBGSA consider using some estimate of the "natural safe yield" within each subbasin (i.e. pre-groundwater extraction) to determine the sustainable pumping allowance for each basin. This methodology has been used in multiple adjudications throughout California and is being utilized as part of SGMA within the Kern Subbasin.

3. Management Actions, Projects, and Alternative Projects (collectively, Actions/Projects); Replenishment Water

It is universally agreed that a major key to achieving groundwater sustainability within an overdrafted subbasin is Replenishment Water to the extent Replenishment Water can be made available.

It is recommended that the primary objectives of the Actions/Projects should be:

(1) Provide Replenishment Water to North County in substitution for groundwater. For example, a 10% substitution by 2030 and a 25% substitution by 2040.

(2) Repeal seawater intrusion – a mission that the MCWRA has had since the 1940's.

The Chapter 9 list of Actions/Projects are a good start. However, there are combinations of Actions/Projects that appear to produce greater synergy, i.e., Actions/Project when implemented in combination appear to be more water-efficient and cost-effective in reducing undesirable results and producing Replenishment Water for use within the 180/400 Foot Aquifer Subbasin with benefits for the Monterey, Eastside, and potentially Seaside Subbasins. In other words, synergistic combinations of Actions/Projects, consisting of Chapter 9 and other projects, could produce "more bang for the buck." The "bang" is producing and delivering Replenishment Water and reducing undesirable results.

Draft Chapter 9 mentions implementing combinations of Actions/Projects. The following are first cut, suggested combinations of Actions/Projects for consideration for inclusion in Chapter 9:

3.1. Direct Replenishment Water - Actions/Projects #1: The following are suggested combinations of Actions/Projects to reduce groundwater pumping in the 180/400 Foot Aquifer Subbasin by the direct use of recycled water and surplus Salinas River water during the irrigation season (Direct Replenishment Water):

- MA2: Reservoir Reoperation
- PP1: Invasive Species Eradication
- PP2: Optimize CSIP Operations

- PP3: Improve SRDF Diversion (including installing Radial Collectors to increase ability to divert more water when water is available)
- PP5: Expand Area Served by CSIP
- PP6: 11043 Diversion Facilities
- PP5: Expand Area Served by CSIP

The Salinas Valley has evolved over time to become dependent upon groundwater for approximately 95% of the water use within the Salinas Valley and upon the Salinas River and the Nacimiento and San Antonio Reservoirs to provide river flows to seep into the groundwater aquifers for recharge and not for direct irrigation and municipal and industrial uses. As stated in MA2, that type of operation mostly benefits the Upper Valley and Forebay Subbasins, which are closest to the reservoirs, and with little benefits to either the East Side (subbasin with the highest CASEGEM score) or the Critically Overdrafted 180/400 Foot Aquifer Subbasins, yet all non-Federal landowners within the Pressure Zone pay benefit assessments to the MCWRA for Nacimiento and San Antonio Reservoirs.

Salinas River water operations to provide seepage flows for groundwater recharge is diametrically different from water operations in the Sacramento Valley and the North San Joaquin Valley where direct delivery of surface water for irrigation is the core agricultural water source for farms within agricultural water districts. For example, within the Modesto Subbasin and Turlock Subbasin, the Modesto, Turlock, and Oakdale Irrigation Districts in average water years will divert approximately 1,000,000 AF of Tuolumne and Stanislaus River water for delivery to their farmers. MCWD's general counsel Griffith & Masuda is also general counsel to the Turlock Irrigation District.

The synergy of Reservoir Reoperation, Invasive Species Eradication, Improve SRDF Diversion, and 11043 Diversion Facilities could efficiently and effectively provide additional river Replenishment Water for the 180/400 Foot Aquifer Subbasin thereby reducing pumping and assisting in halting seawater intrusion without reducing benefits to the Upper Valley and Forebay Subbasins.

Section 9.4.4.7, Preferred Project 6: 11043 Diversion Facilities, incorrectly states that diversions under this permit can only occur at the two diversion locations (near Soledad (within Forebay Aquifer) and Chualar) identified in the original July 11, 1949 Water Rights Application 13225. Points of diversions under a permit can be changed or a new point of diversion added with the filing of a change petition pursuant to Water Code Sections 1701.2, et seq. MCWRA's Amended Water Rights License 7543, Amended License 12624, and Amended Permit 21089 already designate the SRDF Diversion as an authorized point of rediversion. Those licenses and permits were amended to comply with the NMFS' Biological Opinion. Therefore, water stored under those water rights is already authorized to be diverted at the SRDF. The Reservoir Reoperation Management Action already has the stated goal of operating the two reservoirs so as to "Allow both natural and surplus flows to better reach the SRDF diversion." Adding the SRDF as an additional point of diversion under Permit 11043 would conform that permit with the authorized points of redivision in MCWRA's other water rights licenses and permit and comply with the Biological Opinion. As the result of the SWRCB's action to revoke Permit 11043, under new permit terms granted by the SWRCB on September 18, 2013, the MCWRA has submitted a petition for an extension of time to put the water under the permit to beneficial use. A petition to add a new point of diversion could be added to that petition.

3.2. Indirect Replenishment Water - Actions/Projects #2: The following are the Actions/Projects that would use winter treated sewer flows and winter Salinas River flows for groundwater recharge to be later extracted for agricultural and municipal uses:

- PP3: Improve SRDF Diversion
- PP6: 11043 Diversion Facilities
- PP5: Expand Area Served by CSIP
- AP2: Winter Potable Reuse Water Injection
- AP3: Extract Winter Flows Using Radial Collector(s) and Inject into 180- and 400-Foot Aquifers
- AP5: Use the Upper Portion of the 180/400 Foot Aquifer Subbasin for Seasonal Storage

These are complementary projects to Actions/Projects #1. This synergy of these Actions/Projects is to use winter water, e.g., treated sewer flows and winter Salinas River flows, for groundwater recharge during the winter and to later extract that water for delivery in the summer. Any water to be injected must be treated. MCWD has performed a feasibility study on constructing a water treatment plant and spreading basins at its Armstrong Ranch property near the SRDF. That study will be made available to the SVBGSA. Treated water could also be conveyed north across the river to the Castroville area.

3.3. Seawater Intrusion/Replenishment Water - Actions/Projects #3: The following are suggested combinations of Actions/Projects to stop and reverse seawater intrusion and to produce Replenishment Water:

- PP8: Seawater Intrusion Pumping Barrier
- AP1: Desalinate water from the Seawater Barrier Extraction Wells

Combined Projects PP8 and AP1 are discussed in detail in Section 4 below.

3.4. Regulatory - Actions/Projects #4: The following are the regulatory Actions/Projects listed in Chapter 9:

- MA1: Agricultural Land and Pumping Allowance Retirement
- MA3: Restrict Pumping in CSIP Area
- MA4: Support and Strengthen MCWRA Restrictions on Additional Wells in the Deep Aquifer

MA1 is a "willing seller, willing buyer" program, which MCWD GSA can support. Proposed MA3 as described is to prevent all agricultural pumping in the CSIP Area. We would observe that during the 25% driest water years, some agricultural pumping may very well be necessary. Formation of pump improvement districts or private community pumps for designated areas within CSIP could be considered for use during the driest water years. MCWD GSA comments on MA4 is in Section 5 below.

4. **Combined Seawater Intrusion Pumping Barrier (PP8) with Desalinate Water from the Seawater Barrier Extraction Wells (with or without reinjection) (AP1) Project**.

a. **Combined Project Description from draft Chapter 9**:

Chapter 9 describes the combined project as follows:

[PP8] Seawater intrusion will be arrested using a pumping barrier along the coast. The barrier will be approximately 8.5 miles in length between Castroville and Marina. The intrusion barrier comprises 22 extraction wells; although this number may change as the project is refined. Supplemental water to replace the extracted water would come from one or a number of other sources such as those identified in Preferred Project 3 or Alternative Projects 1, 2, 4, and 5.

* * * Alternatively, the extracted water or a portion thereof could be conveyed to a new or existing desalination facility where it can be treated for potable and/or agricultural use. The water extracted from these wells will be brackish due to historical seawater intrusion, therefore, the extraction will serve to remove the brackish water and allow replacement for fresh water from other sources, most likely a combination of desalinated water, excess surface water from the Salinas River, and/or purified recycled water.

* * * The project will stop and reverse seawater intrusion, helping to remediate and restore the 180/400-foot aquifer subbasin.

* * * [AP1] This project would treat water extracted from the seawater intrusion barrier and allow for its reinjection in the 180-Foot Aquifer and 400-Foot Aquifer.

Injection barriers are the most common method employed to halt seawater intrusion. Injection barriers have been used in Southern California basins to control saltwater intrusion for over 30 years. They are the most common, technically demonstrated method employed to stop seawater intrusion around the world. But they add another layer of costs and infrastructure.

A pure extraction barrier project with no reinjection of treated water, with similar groundwater hydrology to North County, may not exist. Alameda County Water District's Newark Desalination Facility could be studied to determine if it can possibly be used as a model for the Pumping Barrier. ACWD's Desalination Facility is part of ACWD's Aquifer Reclamation Program which began in 1974 with the goal of reclaiming those portions of the Niles Cone Groundwater Basin affected by saltwater intrusion from San Francisco Bay in the early 20th century. The District pumps brackish water from the groundwater basin so that freshwater from other parts of the basin can move in to take its place. A key component of this project has been the addition of replenishment water to the basin, which brought mean water levels above sea level prior to the initiation of extraction. Since 2003, brackish water which was once allowed to flow back into San Francisco Bay is now diverted to the Desalination Facility so that it can be put to beneficial use in the Tri-City area.

b. **Project Phasing**:

There is a lot of uncertainty relating to costs, who pays, where are the optimum locations for the extraction wells, and whether an injection barrier would also be needed as envisioned in AP1. It is suggested that the combined project be broken up into possibly 4 phases with each phase consisting of 4 to 6 extraction wells and a modular brackish water desalination plant with the 1st Phase starting at the northern end of the 180/400-Foot Aquifer Subbasin.

A study would be performed during 2020 and 2021 to determine the specific depths, locations, spacing and rates of extraction of the brackish water extraction wells to make the project most effective, and to assess, among other things, (1) the effectiveness of these wells to halt salt-water intrusion, (2) evaluate other potential subbasin impacts, and (3) the best location for the brackish water desalination plant.

A majority of the project area has been the subject of intense hydrogeological study within the last decade and most recently the focus of a high-quality Airborne Electromagnetic (AEM) survey (data-collection effort) that has generated valuable information about subsurface conditions over a significant section of the coastline and inland areas and is available for use in project design and implementation. MCWD conducted its first AEM overflight in May 2017 (AEM 1.0) and its second in April 2019 (AEM 2.0). Both AEM studies covered the North County area and should be used to focus well locations and well design that would target the main pathways of seawater intrusion into and within the multi-aquifer system of the 180/400 Foot Aquifer Subbasin. The use of this technology has grown to be an effective tool in California as shown by other AEM studies that have been conducted in Tulare County, Eastern Kern County, and Butte and Glenn Counties.

The MCWD GSA plans to request Proposition 68 funding to facilitate the development of a numerical model that can account for variable density of seawater and fresh water to further evaluate the Pumping Barrier project. The modeling will be utilized to evaluate the potential effects of the barrier on groundwater flow within the Monterey Subbasin. The model will be used to evaluate alternative well spacing and design within the Monterey Subbasin to allow independent removal of groundwater containing lower concentrations of total dissolved solids (TDS) from the Dune Sand Aquifer and Upper 180-Foot Aquifer for potential treatment and potable use. Prioritizing treatment of groundwater with lower concentrations of TDS is likely to be more cost effective and reduce brine discharge quantities. Salinity information obtained from the AEM Study and Fort Ord well sampling will be utilized in the development of the numerical model and aid in the design of the barrier wells within the Monterey Subbasin. The results of these numerical analyses will be shared with SVBGSA to aid in the evaluation and potential design of the Pumping Barrier.

c. **Potential Project Benefits**: The potential project benefits could be considerable, including: (1) stop and reverse seawater intrusion within the 180/400 Foot Aquifer Subbasin and Monterey Subbasin; (2) provide supplemental drinking water to Castroville; (3) provide supplemental drinking water to the City of Salinas to decrease the known pumping depressions within the Eastside Subbasin and to help restore seaward gradients and groundwater flow within the 180 Foot Aquifer and 400 Foot Aquifer; (4) provide supplemental drinking water to Marina, Fort Ord and the Monterey Peninsula, and potentially groundwater recharge within the Seaside Subbasin; (5) provide desalinated water for an injection barrier located landward of the extraction barrier and inland of the seawater intrusion front to increase the benefit of the extraction barrier and halt the further inland movement of seawater; and (6) avoid pumping and building new infrastructure within Environmentally Sensitive Habitat Areas (ESHA).

d. **Project Elements**:

<u>Location of Brackish Water Extraction Wells</u>:

PP8 proposes a Pumping Barrier of approximately 8.5 miles in length between Castroville and Marina. Assuming that the project will be phased, it is recommended that the Phase 1 extraction wells be located west of Castroville for the protection of the area that suffers both seawater intrusion and the counter flow of groundwater east to the East Side pumping depressions.

Location of Brackish Water Desalination Plant: The location of the desalination plant will need to be determined by an optimization study using various factors, including identified Project Benefits and their prioritization. For example, a plant located north of the Salinas River would be located (1) nearer to Castroville, (2) nearer to the City of Salinas and the East Side pumping depressions, and (3) within the North County agricultural area. However, it would be further away from the Monterey Peninsula. In contrast, a plant located south of the Salinas River would be located nearer to the Monterey Peninsula but further away from, Castroville, City of Salinas, and the North County agricultural area. AP1 lists the following possible desalination plants: Monterey Peninsula Water Supply Project (MPWSP) (6.4 mgd/ 7,100 AFY); Deep Water Desalination Plant (22 mgd/ 25,000 AFY); and People Water Supply Project (12 mgd/ 13,400 AFY).

Desalination Capacity of Brackish Water Plant: The desalination capacity of the brackish water plant will initially depend upon the pumping capacity of the extraction wells and how the plant's product water will be allocated among Project Benefits c(2) through (5) or any other uses. It is common for these types of facilities to be constructed for future expansion in a modular design that will allow for incremental growth as additional feedwater is made available. The design capacities of the pipelines bringing brackish water in and of the pipelines carrying product water out will need to take into consideration future expansion for the ultimate project buildout.

e. **Groundwater Rights Issues**: Because the 180/400-Foot Aquifer Subbasin has been designated as a Critically Overdrafted Subbasin, the necessary groundwater rights that would support the project will need to be assessed. Returning water to the Salinas Valley Groundwater Basin to comply with the Monterey County Water Resources Agency Act's export prohibition does not confer a groundwater right, only compliance with the Agency Act.

5. Restriction on Additional Wells in the Deep Aquifer (Priority Management Action 4)

MCWD supports implementation of Priority Management Action 4: Support and Strengthen MCWRA Restrictions on Additional Wells in the Deep Aquifer. As presented in our comments for Chapter 8, groundwater elevations in the Deep Aquifer are below sea level and declining, suggesting that extraction from this aquifer exceeds the sustainable yield of this aquifer zone.

This issue is very important to MCWD because in the 1996 Annexation Agreement, MCWRA agreed to protect the Deep Aquifer for MCWD's use, but MCWRA did not take any protective action until the recent adoption of Ordinance 5302. Section 5.3, Management of 900-foot aquifer, of the 1996 Annexation Agreement provides, "The Parties agree that the '900-foot' aquifer should be managed to provide safe, sustained use of the water resource, and to preserve to MCWD the continued availability of water from the '900-foot' aquifer." Section 5.9 further stated that the annexation fees paid by MCWD "shall also be used for management protection of the '900-foot aquifer.'"

MCWD will work with MCWRA pursuant to the 1996 Annexation Agreement on MCWRA's Deep Aquifer study.

6. Winter Potable Reuse Water Injection (Alternative Project 2)

For Alternative Project 2: Winter Potable Reuse Water Injection, the document should include an option (or separate alternative) for year-round potable reuse water injection by MCWD, as described in its Grant Application, provided to SVBGSA on 20 June 2019. MCWD has rights to recycled water on a year-round basis. Per discussions during the meeting on 11 July 2019, MCWD provided the following language for inclusion in the GSP:

> *"MCWD is currently conducting a feasibility study on injection of purified recycled water into the Monterey Subbasin. The project proposes to use purified recycled water available to MCWD from the AWPF, some of which is available year-round per the district's agreement with M1W, for indirect potable reuse and prevention of further seawater intrusion. This project is consistent with and can readily be implemented in conjunction with the winter potable reuse project identified herein."*

7. Extract Winter Flows using Radial Collectors and Inject into 180- and 400-Foot Aquifers (Alternative Project 3)

Alternative Project 3 is the winter extension of Preferred Project 3, Improve SRDF Diversion. While under Alternative Project 3, the new radial collector system would only operate from November through March, the system would be operated from April through October under Preferred Project 3. There may be even steelhead benefits to also operating the system during April through October in conjunction with the SRDF.

Section 9.4.5.3 correctly observes that a significant volume of water may be available for diversion or extraction from the Salinas River during the winter. However, securing and clarifying water rights is not a constraint on this proposed project. As discussed above, MCWRA's Amended Water Rights License 7543, Amended License 12624, and Amended Permit 21089 already designate the SRDF Diversion as an authorized point of rediversion. Those licenses and permits were amended to comply with the NMFS' Biological Opinion. Therefore, water stored and released under those water rights is already authorized to be diverted at the SRDF. The Reservoir Reoperation Management Action already has the stated goal of operating the two reservoirs so as to "Allow both natural and surplus flows to better reach the SRDF diversion." Adding the SRDF as an additional point of diversion under Permit 11043 pursuant to a change petition under Water Code Sections 1701.2, et seq., would conform that permit with the authorized points of redivision in MCWRA's other water rights licenses and permits and comply with the Biological Opinion.

Salinas River provided to CSIP is not required to be treated, but river water to be injected must first be treated and those costs must be included where applicable.

Additionally, an alternative should include direct piping of SRDF radial collector water to MCWD during winter months. This alternative may be less expensive than injection. We suggest that benefits discussion of this project to be slightly modified to:

> *"This project could benefit other subbasins, such as the Monterey and East Side subbasins by providing treated potable water to these subbasins for direct recharge and/or municipal potable use."*

Thank you for this opportunity to provide these comments. We look forward to working with you to discuss, evaluate, and refine the proposed Chapter 9 actions and projects.

Sincerely,

Keith Van Der Maaten
General Manager, Marina Coast Water District

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Dear Mr. Peterson and Mr. Williams,

Thank you for taking the time to meet with our SGMA consultant EKI Environment & Water, Inc. on 15 August 2019. This letter

(1) Provides MCWD GSA's comments on draft 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (GSP) Public Review Draft Chapter 9 (dated 2 August 2019) and Draft Chapter 10 (dated 28 July 2019); and
(2) Summarize agreements reached regarding coordination with MCWD GSA representatives Proposition 68 grant application for the 180/400 Foot Aquifer Subbasin and Monterey Subbasin.

COMMENTS TO CHAPTER 9 PROJECTS AND MANAGEMENT ACTIONS

1. Water Charges Framework (Section 9.2)

The sentence below was added to Public Review Draft Chapter 9, Section 9.2 Water Charges Framework:

> *"The fee structures in each subbasin will be developed in accordance with all existing laws, judgements, and established water rights."*

We understand that SVBGSA will further revise this sentence to include existing water management agreements as part of the basis for developing fee structure and pumping allowances, pursuant to our discussion during the 10 July 2019 meeting and MCWD's comment letter for Chapter 9 dated 1 August 2019. We understand that SVBGSA has received the comment letter but have yet to incorporate those comments into Chapter 9.

Additionally, it appears that this sentence and the associated paragraph discuss the fee structure as well as the sustainable pumping allowance. Therefore, the sentence should be revised to begin with "The fee structures and pumping allowance in each subbasin…"

2. Pumping Barrier Extraction Rate Calculation (Appendix 9-C)

Appendix 9-C mentions that the estimated pumping rates of the barrier project is calculated based on an analytical solution published by Javandel and Tsang (1987). This analytical solution assumes a constant background gradient. However, it is highly unlikely that a constant background gradient will be maintained over the project lifetime, because once sea water intrusion is stopped water levels inland of the barrier will begin to decline as seawater stops recharging the basin. As recognized in the GSP, numerical modeling is needed to assess rates of groundwater extraction that will be required to halt saltwater intrusion.

As discussed in Comment #5 to Chapter 10 below, the SVIHM will likely not have the resolution or adequate calibration in proposed project area and cannot be used to model density driven flow. Therefore, the GSP should acknowledge that alternative models will likely be required to evaluate the proposed pumping barrier project.

3. Estimated Pumping Barrier Extraction from Monterey Subbasin (Appendix 9-C)

Appendix 9-C estimates that the pumping barrier will have a total extraction volume of 30,000 AFY; 22,500 AFY of which would be extracted from the 180/400 Foot Aquifer Subbasin. Per discussion, it is understood that the remaining 7,500 AFY would be extracted from the Monterey Subbasin.

4. Mitigation of Overdraft (Section 9.6 and Table 9-5)

Section 9.6 discusses the overdraft estimated in Chapter 6 and stated that "[t]he priority projects include more than ample supplies to mitigate existing overdraft, as presented in Table 9-5." As agreed during the meeting, SVBGSA should add a discussion that Section 9.6 is included per requirements of GSP Regulations (and cite relevant sections) and that mitigating the overdraft as estimated does not meet all of the basin's sustainable management criteria. Specifically, without a hydraulic barrier, seawater intrusion will continue to occur if groundwater extraction within the basin occurs at the identified sustainable yield. As SVBGSA stated in Chapter 6, "simply reducing pumping to within the sustainable yield is not proof of sustainably, which must be demonstrated via Sustainable Management Criteria (SMC)."

Additionally, given the technical uncertainties of the proposed seawater intrusion pumping barrier project and the potential project cost that may not be approved by groundwater basin users, the GSP should provide an estimate of the sustainable yield of the 180/400 Foot Aquifer Subbasin (or the larger Salinas Valley Basin) without the pumping barrier project. This estimate is required under SGMA, which defines "Sustainable Yield" as "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result."

We understand that due to modeling limitations and data gaps, SVBGSA is reluctant to provide an estimate the "sustainable yield" of the basin when sustainable management criteria for seawater intrusion are considered. However, analytical methods, similar to those used to estimate extraction rate of the pumping barrier project, could be utilized to provide a preliminary estimate of the Sustainable Yield of the basin if the extraction barrier is not installed. For example, previous studies conducted on this topic by Geoscience (2013), *Protective Elevations to Control Sea Water Intrusion in the Salinas Valley,* estimated that approximately 60,000 AFY would be needed for the Salinas Valley Water Project to recharge the Salinas Valley Basin sufficiently to stop seawater intrusion. Alternatively, the GSP could compare and discuss the volume of water needed for an injection barrier, as presented in Appendix 9-C.

COMMENTS TO CHAPTER 10 GSP IMPLEMENTATION

5. Additional Data Gaps and Analyses to be Addressed (Section 10.3)

As discussed in our comments to the previous chapters, the following additional data gaps and analyses should be identified Chapter 10:

- Seawater intrusion cross-sections (Chapter 5 comments dated 18 April 2019)
  Per GSP Regulations Section 354.16 (c), a GSP should provide "seawater intrusion conditions in the basin, including maps and cross sections of the seawater intrusion front for each principal aquifer". The GSP should commit to development of such cross-sections, once data gaps have been filled. These data are needed to inform placement of seawater intrusion barrier wells.

- Groundwater extraction within individual aquifers (Chapter 6 comments dated 2 July 2019)
  We suggest that SVBGSA collect information needed to identify groundwater extraction from each principal aquifer, to allow the development of a water budget for each aquifer. As discussed in MCWD's Chapter 6 comments dated 2 July 2019:

  "Water budget information for each principal aquifer is necessary to verify that proposed future operations of the basin, including implementation of projects and management actions, will not lead to undesirable results in each principal aquifer. Seawater intrusion is occurring in both the 180 Foot Aquifer and the 400 Foot Aquifer, and inland gradients exist within the Deep Aquifer. In order to reach sustainability, hydraulic gradients in each of these aquifers will need to be reversed either through decreasing groundwater extraction and/or future supply augmentation projects. As such, water budgets for each aquifer must be established to verify that undesirable effects do not occur.

  We understand that information related to groundwater extraction within individual aquifer zones is currently limited and that water budgets cannot be developed for each principal aquifer zone. As such, we recommend that the GSP acknowledge this uncertainty and identify it as a data gap. The GSP should provide a plan to further assess rates of extraction and inflows within principal aquifer zones so undesirable results, such as seawater intrusion can be mitigated. This information is critical, as achieving sustainability in the basin requires implementation of projects and management actions, which will need to be evaluated against sustainable management criteria in each principal aquifer."

  However, as discussed and agreed upon during the meeting, this data gap may be extremely difficult to fill and water level data/gradients in each aquifer may serve as a proxy for evaluating the effectiveness of projects and management actions to address saltwater intrusion within each of these zones. However, given the uncertainties associated with groundwater recharge and groundwater levels within the Deep Aquifer (consistent with data gaps identified in Section 10.3), quantification of all groundwater extraction from the Deep Aquifer, should be clearly identified as a Data Gap that will be filled as under the GSP.

We further recommend that the GSP identify actions that will be implemented to allow:

- Development of Sustainable Management Criteria for the deep aquifer; and

- Development of Sustainable Management Criteria that consider project implementation. For example, alternative groundwater elevation Sustainable Management Criteria will be required near the coast if a pumping barrier is constructed.

6. Plans to Refine and Evaluate the Seawater Intrusion Barrier Project (Sections 10.6 and 10.7)

The GSP should acknowledge that alternative models will likely be required to evaluate certain projects, such as the pumping barrier or injection wells, because the SVIHM does not have the resolution or adequate calibration in proposed project areas and cannot model density driven flow.

Further, The GSP states that SVIHM model will be available for use within one year. Per discussion during the meeting, we understand that within one year, the SVIHM model will be released for public use by USGS. Additionally, we understand that the model will be made publicly available consistent with GSP Regulations Section 352.4 (f)(3), "[g]roundwater and surface water models developed in support of a Plan after the effective date of these regulations shall consist of public domain open-source software."

PROPOSITION 68 GRANT COORDINATION

MCWD is considering applying for Proposition 68 Grant (SGM Grant Round 3) for Monterey Subbasin. We understand that SVBGSA is also planning to apply for this grant for other basins under its jurisdiction. As agreed, both parties will coordinate and support each other in grant funding processes.

Thank you for this opportunity to provide these comments. We look forward to working with you to discuss, evaluate, and refine the proposed Chapter 9 actions and projects.

Sincerely,

Keith Van Der Maaten
General Manager, Marina Coast Water District

River Management Unit Association, Inc.

December 9, 2019

Gary Petersen, General Manager
Members of the Board
Salinas Valley Basin Groundwater Sustainability Agency

Gary and Members of the Board,

The River Management Unit Association is in charge of overseeing the Salinas River Channel Stream Maintenance Program. Our city, farming and landowner members conduct annual maintenance activities in the river under the allowance of several river-wide permits administered by various government agencies.

While we appreciate all the work and time put into the 20-year Groundwater Sustainability Plan for the 180/400, we believe there is an easily correctable flaw in the projects in Chapter 9.

Preferred Project 1, found in section 9.4.3.2, is Invasive Species Eradication. This project will continue the work of eradicating arundo and "other invasive species" (which is basically just tamarisk) that the Resource Conservation District is already doing. According to the plan, this project "will reduce evapotranspiration from these invasive plants, leaving more water in the Salinas River and increasing aquifer recharge or reducing the amount of water required to be release from Nacimiento and San Antonio Reservoirs."

The flaw in this project is its limited scope. Arundo and tamarisk are not the only things causing evapotranspiration and and reducing water in the river. All vegetative overgrowth in the river contributes to these problems. 9.4.3.2 should be changed so that all vegetative overgrowth shall be managed, not just invasives, in order to reduce evapotranspiration and leave more water in the river. According to 9.4.1.3, indirect recharge through decreased evapotranspiration is a specific goal of the plan.

We believe this correction should be made for the following reasons:

1. Evapotranspiration reduction. Brown & Caldwell's 2015 report states that up to 50,000 acre/feet of water are lost every year due to evapotranspiration from river vegetation overgrowth.
2. Increase conveyance of water in the river. This will benefit other GSP projects, such as water diversion for the Eastside Canal and operation of the SRDF.
3. Increase water available for percolation in the river.
4. Reduce likelihood of breaching sewer ponds along the river. Multiple cities maintain sewer ponds beside the river (Salinas, etc). In addition to environmental pollution issues, loss of these ponds will harm water recycling projects.
5. Operation and re-operation of the reservoirs (9.3.4, #2 "Allow summer flows to better reach the SRDF") directly contribute to vegetation overgrowth in the river. The SVBGS needs to mitigate the negative side-effects of its projects and actions.
7. River vegetation management would be cheap in comparison to the plan's other projects. Chapter 9 estimates water cost from Invasive Species Eradication at $160 AF/year, which is theoretically higher than non-invasive vegetation management, as invasives require pesticides. Other projects' water costs are even higher: CSIP Optimization is $270 AF/year, CSIP Expansion is $630 AF/year, SRDF Maximization is $220 AF/year, Extraction Barrier is $590 AF/year and the Chualar Diversion is $750 AF/year. In context with these expensive water sources, leaving cheaper water on the table is poor fiscal stewardship.
8. We doubt landowners and farmers will vote for high-cost 218s when they know an inexpensive project like river vegetation maintenance is being ignored.

In addition to the fact that practically everyone in the farming and landowner community agrees with river maintenance, it is for these seven preceding reasons that we believe Preferred Project #1, Invasive Species Eradication, should be amended so that it includes maintenance of all vegetative overgrowth in the river.

Sincerely,

Christopher Bunn

President, River Management Unit Association, Inc.

Monterey One Water, City of Salinas, and California Water Service (Cal Water) request that the following be considered by the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) Board of Directors with respect to DRAFT Chapter 9 of the 180/400-Foot Aquifer Sub-basin Groundwater Sustainability Plan.

It has been noted that over 90% of the extraction of groundwater from the Salinas Valley is for agricultural use or benefit. While urban demand uses less than 10% of the extracted volume basin wide. Implementing a project that benefits the urban sector while helping reduce pumping and potentially helping to serve as a seawater intrusion barrier in the 180/400-Foot Aquifer is certainly a win-win for the basin and the SVBGSA.

We suggest that the Projects and Management Actions in Chapter 9 be listed in order of their feasibility and effectiveness for protecting groundwater elevations and water quality in the 180/400-Foot Aquifer. One measure of feasibility is the utilization of existing infrastructure which lowers project costs. Also, multiple project benefits and beneficiaries allow both a means to spread costs and attract additional grant funding.

The largest water supplier for the City of Salinas is Cal Water with a portion also served by ALCO Water Service. These utilities rely solely on groundwater to supply urban customers. If they could utilize a portion of Salinas River water to augment their supply, it would relieve some of the need for extractions from the 180/400 and deep aquifers.

We wish for the SVBGSA Board to consider a project concept with overlapping components and benefits with a number of those currently listed under the Projects section (namely, projects 4,5,6, 7 and 9). Hence, we propose adding an additional Priority Project: Extraction of River Flows at Salinas Industrial Wastewater Treatment Facility (IWTF) as described in the Attachment.

The City of Salinas owns infrastructure, land, and easements which could be leveraged to capture and convey Salinas River flows. These flows could be sent to a surface water treatment plant and then injected as seawater intrusion barrier on the west side of the City, put into aquifer storage or utilized directly in the domestic distribution system.

The benefits include protecting the existing groundwater from higher salinity water approaching municipal wells, suppling new influent to the Regional Treatment Plant to expand the Castroville Seawater Intrusion Project.

Currently water that could be put to beneficial reuse is now flowing down the river. Extracting a small portion of this flow would provide the necessary source waters to realize this project and make existing diversions more predictable overall by stabilizing flows.

Thank you for considering our proposal and suggestions. We believe that this project can help meet the integrated water resources goals of the region and could provide the ability to leverage financing. Each entity would realize multiple benefits from this project while potentially spreading the costs among the various beneficiaries. We are interested in exploring this project further and continuing discussions on its feasibility.

Sincerely,

Granillo, Brenda
Digitally signed by Granillo, Brenda
Date: 2019.10.09 11:34:08 -07'00'

Paul A. Sciuto	Brenda Granillo	Ray Corpuz
General Manager	District Manager	City Manager

Attachment - Priority Project: Extraction of River Flows and the Salinas Industrial Wastewater Treatment Facility

Attachment

Priority Project: Extraction of River Flows and the Salinas Industrial Wastewater Treatment Facility

The City of Salinas owns infrastructure, land, and permanent pipeline easements previously part of the abandoned wastewater treatment plant which discharged treated wastewater into the Salinas River. The City also owns and operates the Industrial Wastewater Treatment Facility (IWTF), a 200-acre facility north of the Salinas River and west of Davis Road with pumping facilities, aeration basin, three large percolation/evaporation ponds, and smaller drying beds. In addition, the site contains a solar array which generates enough power to offset over half the current consumption at the facility.

The proposed project would leverage these existing facilities and include the following:

1) Radial wells (commonly called Ranney wells) to capture and convey underflow of the Salinas River. A location near the IWTF would be sited with adequate space for up to five such wells.
2) Rehabilitation and/or slip-lining of the City's existing 18- and/or 33-inch pipelines, that originate near the Treatment Plant Site 1 (TP1) located on Hitchcock Road near the Animal Shelter. These pipelines could convey the water collected from radial wells at the IWTF back to TP1.
3) A surface water treatment plant at, or adjacent to, the TP1 site. The plant could be owned and operated by a stakeholder with the treated water used for multiple purposes.
4) Water collected from the radial wells could also be stored in the IWTF ponds as storage allows. A new pump station is currently under construction that will enable stored water to be diverted to M1W's Regional Treatment Plant (RTP) during the summer months for beneficial reuse in the Castroville Seawater Intrusion Project (CSIP) system.
5) Water collected from the radial wells in the winter months could be also be sent through the surface treatment facility for potential injection as a seawater intrusion barrier on the west side of the City of Salinas or into aquifer storage and recovery well anywhere near the City. This component would protect the existing groundwater supplies from becoming contaminated by the higher salinity water approaching City municipal wells from the west. The flows from the winter diversion could also be utilized directly in the distribution system.

River extractions would be either Monterey County Water Resources Agency (MCWRA) Salinas River Diversion Facility (SRDF) or 11403 water rights. If the diversion location was changed from Chualar or if another diversion location was added to take advantage of the existing infrastructure, Permit 11043 water could be captured. Utilizing Permit 11043 flows by way of the radial wells is a more efficient use of the water. This is because a more consistent flow could be diverted for immediate urban use in the winter as well as using some of the peak winter river flows for potential injection as a barrier.

As noted, this project could help supply new influent to the RTP to expand Castroville Seawater Intrusion Project by enabling the use of new, filtered excess Salinas River flows during the summer months. As of this writing, the MCWRA were making releases totaling 700 cubic feet per second (cfs) from the two south county reservoirs. The USGS gauge at Spreckels measured flows over 30 cfs in late August 2019. The Salinas Valley Water Project Biological Opinion states that only 2 cfs is needed at the SRDF after July 1. According to M1W SRDF monitoring equipment, over 7 cfs was passing over/through the SRDF in late August 2019. Hence, water that could be put to beneficial reuse is flowing down the river. Extracting just 4 cfs from the river after July 1, would equate to 8 acre feet (AF) a day of water being used for urban use or additional ag supplies. This could bring the total extracted to 238 AF per month or more.

Using the radial wells to divert water from the Salinas River would allow the SRDF to work at the maximum capacity during the summer. Flows reaching the SRDF would be more predictable and excess release water would not flow past the SRDF, which is the intended destination of the dam releases.

The project would require a change to add another point of diversion for a portion of the 12,000 AF SRDF water right of the San Antonio and Nacimiento reservoir releases. Extracting excess release flows during the late summer can better utilize river water if it can be stored at the IWTF or placed into a water supply or an injection barrier. The project will also aim to extract water on Sundays from the IWTF location when water orders are rarely filled. Unused river water flows past the SRDF and eventually to the ocean.

Salinas Valley Water Coalition

33 El Camino Real • Greenfield, CA 93927
(831) 674-3783 • FAX (831) 674-3835

September 10, 2019

Dear

Thank you for this opportunity to comment on Chapter 9 of the Salinas Valley Basin Groundwater Sustainability Agency's ("SVBGSA") Groundwater Sustainability Plan ("GSP") for the 180/400 Foot Aquifer Subbasin ("180/400 Subbasin"). Our comments are summarized below and detailed in the body of this letter.

- This GSP should not set forth any basin-wide commitments since the other subbasins within the Salinas Valley Groundwater Basin ("SVGB") have not benefited from any thorough analysis.
- Water charges framework should require voter approval for funding of projects consistent with Proposition 218.
- All of the Priority Management Actions in Chapter 9 can be supported by the Coalition for further consideration and analysis to address seawater intrusion and overdraft in the 180/400 Subbasin. That said, these Priority Management Actions should be evaluated for their appropriateness for the other Subbasins of the SVGB *only* at the time the respective GSPs are prepared for these Subbasins.
- The Coalition strongly supports further consideration and analysis of Priority Management Action 3, Reservoir Reoperation. This Management Action should be evaluated not only for valley-wide benefits but also for environmental (fishery flow) benefits.
- The Coalition supports further evaluation and analysis of the following Priority Projects in Chapter 9 in order to address seawater intrusion and overdraft in the 180/400 Subbasin: invasive species eradication; optimize Castroville Seawater Intrusion Project ("CSIP") operations; maximize existing Salinas River Diversion Facility ("SRDF") diversion; modify Monterey One Water recycled water plant; and expand area served by CSIP.
- The Coalition supports further evaluation and analysis of the following Priority and Alternative Projects in Chapter 9 for consideration and potential implementation to address sustainability issues, if any, in the Subbasins other than the 180/400 Subbasin: winter releases (coupled with reservoir infrastructure upgrade) and 11043 Diversion Facilities Phase 1 and Phase II.
- Any "new water" the Salinas Valley Water Project ("SVWP") generates as part of any related projects such as "optimize CSIP operations" and "maximize existing SRDF diversion" must be shown to be over that amount already produced by the previously approved SVWP and must not be double counted. The SVWP is currently funded by special assessments which must be taken into consideration when determining a Prop 218 vote for its expansion or optimization.
- Nitrate issues are already addressed through other governmental processes, and those processes should be referenced to avoid duplicative efforts.

A. The GSP Should Not Set Forth Any Basin-Wide Commitments Since the Other Subbasins Have Not Benefited from Any Thorough Analysis.

The GSP is solely for the 180/400 Subbasin, which is the only basin within the SVGB that has been determined to be in critical overdraft. Accordingly, this Subbasin requires particularly focused analyses and management actions to mitigate the overdraft and halt seawater intrusion. The other subbasins do not have the same challenges. In fact, the consultants preparing the GSPs for SVBGSA have repeatedly stated in public forums that the Upper Valley Subbasin is currently sustainable.

Each Subbasin within the SVGB was identified as being hydrologically distinct by the Department of Water Resources ("DWR") in Bulletin 118. For the purposes of the Sustainable Groundwater Management Act ("SGMA"), each subbasin within the SVGB falls within the definition of "basin". Specifically, "basin" is defined under SGMA as "a groundwater basin or subbasin identified and defined in Bulleting 118…" (Water Code §10721(b).) In the GSP for each basin, specifically-tailored analysis and management actions must be developed in order to meet the objective of achieving "the sustainability goal for the basin for the long-term beneficial uses of groundwater." (Water Code §10727.1) Projects and Management Actions in Chapter 9

should focus on what actions and projects are needed to provide sustainability for the critically overdrafted 180/400 Subbasin. Discussions of basin-wide actions and projects are inappropriate at this time until futher analyses have been performed for each Subbasin.

Specifically, the water charges framework set forth in Chapter 9, which includes pumping allowances and fees, may be appropriate for the 180/400 Subbasin, but may not be appropriate for the other Subbasins within the SVGB which haven't had the benefit of any thorough analysis. For example if any one of those Subbasins is already determined to be sustainable, as has been stated regarding the Upper Valley Subbasin, pumping allowances and fees may not be appropriate for that Subbasin. We request that all references in the GSP for basin-wide water charges and pumping allowances be stricken. Such sentences as "A similarly structured water charges framework will be implemented in all Salinas Valley subbasins in Monterey County" is inappropriate since the other Subbasins have not had the benefit of a thorough analysis in order to determine the proper management actions needed for those Subbasins. The appropriate time to discuss the management actions for these other Subbasins is at the time a GSP is being prepared for these Subbasins.

B. Water Charges Framework Requires Voter Approval.

Chapter 9 sets forth extraction fees in a tiered system, and the revenues generated from the fees would be used either for projects or for administration, which includes the development and maintenance of a complicated banking system to keep track of extractions, hold overs and transfers. We appreciate that Chapter 9 recognizes and states that the fee structure and allowances "will not be uniform across the Salinas Valley subbasins", and that "different subbasins in the Salinas Valley will be subject to different fee and pumping allowance structures". However, Chapter 9 also states that "a similarly structured water charges framework will be implemented in all Salinas Valley subbasins in Monterey County." As previously stated, the water charges framework may not be appropriate for all subbasins. While it might be appropriate to state that "a similar structured water charges framework will be considered for implementation in all Salinas Valley subbasins", it is NOT appropriate to say that they will be, in fact, implemented. That said, in order to implement the water charges framework, the SVBGSA must seek voter approval pursuant to Proposition 26 or Proposition 218.

In general, Proposition 26 prohibits a local government from enacting, increasing, or extending any levy, charge, or exaction of any kind without voter approval unless an exception can be identified. An applicable exception may be any charge imposed for a specific benefit conferred or privilege granted or service or product provided directly to the payor that is not provided to those not charged, and which does not exceed the reasonable costs to the local government of conferring the benefit or granting the privilege. Proposition 218, on the other hand, allows for special assessments to be charged to those property owners who receive (proportional) special benefits which are not received by the public at large.

Since portions of the extraction fees would be used to fund projects and to administer a banking system, there must be voter approval of the fees and taxes pursuant to Proposition 26 and Proposition 218, with fees allocated proportionate to the benefit received. To make this manageable and to reduce the risk of voter rejection, each subbasin requiring projects or extraction fees should be a separate assessment district.

C. All of the Priority Management Actions in Chapter 9 can be supported by the Coalition for further consideration and analysis to address seawater intrusion and overdraft in the 180/400 Subbasin. That said, these Priority Management Actions should be evaluated for their appropriateness for the other Subbasins of the SVGB *only* at the time the respective GSPs are prepared for these Subbasins.

Many of the Priority Management Actions outlined in Chapter 9 are key to addressing seawater intrusion and overdraft in the 180/400 Subbasin. The following are specific comments to the Management Actions proposed in Chapter 9.

- Priority Management Action 3: Reservoir Reoperation - The reservoirs must be reoperated to provide benefits for the entire Salinas Valley, and the reoperation must be done in a manner that considers, and is consistent with, the benefits promised to the rate payers in the Subbasins for the voter approved SVWP. Under SGMA, management actions taken for one basin cannot result in harm to an adjacent basin. Thus, in determining the proper reoperation of the reservoirs, consideration must be made to share the resource: (1) to recharge of Upper Valley and Forebay subbasins; (2) for delivery to CSIP; and (3) for fishery flows. We support the stated two goals of this Management Action, with the following recommended revision:

    1. Allow surface flow release to recharge groundwater in the various Salinas Valley subbasins ~~almost~~ **every** winter
    2. Allow summer flows to better reach the SRDF diversion

We believe the implementation of this Priority Management Action could be expedited as it was evaluated in the original SVWP's EIR.

- Priority Management Action 4: Restrict Pumping in CSIP Area – Chapter 9 states that the primary benefit received from restricting CSIP pumping is to manage extractions from the Subbasin. It goes on to state that a second benefit received from restricting CSIP pumping is to halt the decline or raise of groundwater elevations. It then goes on to state that "CSIP pumping restrictions will only be implemented after the CSIP optimization projects are implemented, providing a reliable supply of water to growers in the CSIP area." That statement fails to recognize the restrictions and regulations that are already in place to reduce groundwater pumping in the CSIP area. These existing regulations have failed to be enforced; thus, exacerbating seawater intrusion in the 180/400 Subbasin. According to the Engineer's Report for the SVWP, the project was intended to deliver up to 12,800 AFY via SRDF to CSIP based on an additional capture of 29,000 afy (average over hydrologic record) from spillway modifications of the Nacimiento Dam and reoperations of the reservoirs. In exchange for providing surface water at the SRDF to CSIP, individual wells in the CSIP area were to be destroyed, and the MCWRA's supplemental wells were to be used only occasionally. Instead, only about ¼ of the maximum delivery to the SRDF has occurred, individual wells continue to be used in addition to MCWRA supplemental wells; thus, resulting in the continued advancement of seawater intrusion.

  Individual actions that also caused the SVWP/CSIP projects to fail to slow down seawater intrusion include the rejection of the recycled water from Monterey One Water by growers in the CSIP area and the continued pumping of individual wells and MCWRA's supplemental wells. Regulations, which includes destruction of individual wells, and regulatory enforcement are key to restricting pumping in the CSIP area.

  Immediate implementation and enforcement of these regulations must be considered rather than delayed. It is shortsighted to state that the CSIP pumping restrictions will only be implemented after the CSIP optimization projects are implemented. What if the CSIP optimization projects fail to be implemented and/or fail to be implemented in a timely manner so that seawater intrusion is further exacerbated? What are the potential impacts of proceeding in this manner?

D. The Coalition Supports MCWRA's Restrictions on Additional Wells in the Deep Aquifer, Which Restrictions Must be Enforced.

Similar to the management actions for restricting pumping in the CSIP area, regulations, which not only prohibit new wells but also replacement wells in the deep aquifer, along with regulatory enforcement, are key to stopping the depletion of groundwater in the deep aquifer.

E. The Coalition supports further evaluation and analysis of the following Priority Projects in Chapter 9 in order to address seawater intrusion and overdraft in the 180/400 Subbasin: Invasive Species Eradication; Optimize CSIP Operations; Maximize Existing SRDF diversion; Modify Monterey One Water Recycled Water Plant; and Expansion Area Served by CSIP.

Several of the Priority Projects discussed in Chapter 9 have already been analyzed and approved by Monterey County Water Resources Agency and Monterey County and should be implemented based on prior analysis and approvals. The Priority Projects supported by the Coalition are discussed below.

- Optimize CSIP operations; improve SRDF diversion, modify Monterey One Water Recycled Water Plant; and expand area served by CSIP – As stated before, the SVWP was intended to deliver up to 12,800 AFY via SRDF to CSIP based on an additional capture of 29,000 afy (average over hydrologic record) from the spillway modifications of the Nacimiento Dam and reoperations of the reservoirs. In exchange for providing surface water at the SRDF to CSIP, individual wells in the CSIP area were to be destroyed, and the MCWRA's supplemental wells were to be used only during those times when surface water wasn't available. The SRDF has failed to be utilized to the maximum extent as intended, and instead, only about ¼ of the maximum delivery to the SRDF has occurred, individual wells continue to be used in addition to MCWRA supplemental wells-- thus, resulting in the continued advancement of seawater intrusion.

  We appreciate the discussion and identification of the need to look at the timing of supply and demand for the use of recycled water. One of the reasons why maximum delivery has not been achieved is due to physical constraints of the developed project. The physical constraints include an 80-acre pond which receives as first priority the recycled water from Monterey One Water before the pond can then receive surface water, even if the surface water is readily available. Additional limitations include the sizes of pumps and pipelines

and the extent of the pipelines in the CSIP area which make the maximum delivery infeasible. These physical constraints (as well as the management actions discussed above) need to be addressed.

Many of the Priority Projects in Chapter 9 (i.e., optimize CSIP operations, improve SRDF diversion, expand area served by CSIP) related to the SVWP were not only analyzed and approved as part of the SVWP, but also included as policies in the Monterey County's 2010 General Plan and analyzed in its EIR; therefore, these Priority Projects can be implemented in an expedited manner

F. The Coalition Supports Further Evaluation and Analysis of the Following Priority and Alternative Projects in Chapter 9 for Consideration and Potential Implementation to Address Sustainability Issues, if any, in the Subbasins Other Than the 180/400 Subbasin (Except as Noted): SRDF Winter Flow Injection, Winter Releases (coupled with reservoir infrastructure upgrade) and 11043 Diversion Facilities Phase 1 and Phase II.

- 11043 Diversion Facilities - The MCWRA has not taken proper actions to protect their water rights under Permit #11043, and it is our understanding that the permit is currently subject to a notice of proposed revocation by the State Water Resources Control Board ("SWRCB"). This is despite the extensive stakeholder involvement in 2013___ to determine the proper projects for utilizing the water rights. The SVBGSA should consider the recommendations made by the Regional Advisory Committee ("RAC") when determining the appropriate projects to be developed under Permit #11043. We believe the use of Permit #11043 is better suited for the Eastside Subbasin rather than the 180/400 Subbasin. The RAC's recommendations are included as Exhibit A.

- SRDF Winter Flow Injection - This Priority Project should be considered for potential implementation in the GSP for the 180/400 Subbasin as well as other Subbasins' respective GSPs, such as for the Eastside Subbasin. During the presentation to the SVBGSA BOD, your consultant stated that the largest issue with implementing this project will be water rights related issues and that the water rights held by the MCWRA need to be better understood. The MCWRA's water rights are clearly set forth in the SWRCB permits. MCWRA has an obligation to bypass natural inflow of the Nacimiento and San Antonio rivers to satisfy the superior downstream riparian and overlying water right holders. Bypassing natural flows until the river reaches the lagoon prior to storage in the reservoirs would allow the SVGB to be full, reducing waste through evaporation. Storage in the aquifer also allows for ready releases to the SRDF. Bypassing natural inflows would not require a change in the MCWRA's water rights permits. However, there may need to be clarification of the MCWRA's water right permit as to timing and amount of diversion at the SRDF.

- Winter Releases (Coupled with Changes to Reservoir Operation Infrastructure) – As discussed above, the reservoirs must be reoperated to provide benefits for the entire Salinas Valley, which includes not only delivery to the CSIP area, but also recharge to the Upper Valley and Forebay subbasins. Winter releases would allow water to be stored in the aquifers, thus, reducing waste through evaporation, and allowing for ready releases to the SRDF in the Spring.

  Additionally, modifications to the Nacimiento Dam could also benefit releases to CSIP. Of particular interest are the low-level gates at the Nacimiento Reservoir, which we are told have an operating capacity of 460 cfs. Because San Antonio and Nacimiento reservoirs are operated together, increasing the capacity of these low-level gates at the Nacimiento Reservoir would allow for greater flow capacity in order to provide conservation releases and releases to the SRDF while meeting the mandatory release to the lagoon as required in the MCWRA's water rights permits.

  Any "new water" generated as part of any project related to the SVWP (e.g., "optimize CSIP operations", "maximize existing SRDF diversion", etc.) must be shown to be over that amount already generated by the previously approved SVWP and not be double counted. The SVWP is currently funded by special assessments which must be taken into consideration when determining a Prop 218 vote for its expansion.

  As stated previously, the Engineer's Report for the SVWP stated that the project was intended to deliver up to 12,800 AFY as part of the CSIP based on an additional capture of 29,000 afy (average over hydrologic record) from spillway modifications at Nacimiento Dam and reoperations of the reservoirs. The additional water generated by the SVWP of 29,000 afy should not be considered "new water" for the purposes of this GSP since that water is already accounted and paid for by Zone 2C landowners.

The SVWP was successfully approved by the landowners within Zone 2C, an assessment district. Yet, the project that was analyzed for the purpose of determining the special assessments in its Engineer's Report is not the same project as the project that was constructed and implemented. As described previously, the SVWP was downsized, and the operations of the reservoirs from that described in the Engineer's Report and EIR were significantly modified. Simply stated, the special assessments that continue to be paid by Zone 2C landowners do not match the special benefits conferred onto the landowners as analyzed in the Engineer's Report. This issue should be addressed before any expansion of the SVWP is considered.

E. Nitrate Issues Are Already Addressed Through Other Processes.

Although water quality issue, in particular nitrate, was raised during the meeting you held on July 18, 2019, we would like to note that this particular issue is being addressed through: (1) installation of treatment systems; (2) Irrigated Lands Program of the Regional Water Control Board ("RWQCB"); and (3) basin-wide Settlement Agreement with the RWQCB and SWRCB, which requires providing replacement water to water systems with nitrate issues. The GSP would only need to reference the above actions when addressing the water quality problems associated with nitrates. Seawater intrusion, on the other hand, requires management actions and projects.

Thank you for your consideration,

Nancy Isakson, President

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

December 12, 2019

Gary Petersen
General Manager
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, California 93924

Re: NOAA's National Marine Fisheries Service comments on the October 1, 2019 Salinas Valley: 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan Volume 3, Chapter 9

Dear Mr. Petersen:

NOAA's National Marine Fisheries Service (NMFS) is the federal agency responsible for managing, conserving, and protecting living marine resources in inland, coastal, and offshore waters of the United States. We derive our mandates from numerous statutes, including the Federal Endangered Species Act (ESA). The purpose of the ESA is to conserve threatened and endangered species and their ecosystems. The Salinas River watershed, including portions within the Salinas Valley Basin Groundwater Sustainability Agency's (SVBGSA) boundary, supports federally threatened South-Central California Coast steelhead (*Oncorhynchus mykiss*). Below are our comments on the SVBGSA's *October 1, 2019 Salinas Valley: 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan Volume 3 Chapter 9* (GSP). The following comments echo comments on issues we raised in two previous comment letters (May 10, 2019, and July 26, 2019) that were not addressed in the October 10, 2019 plan.

9.3.4 Priority Management Action 3: Reservoir Reoperation

The text in this section refers to working on developing a "revised [habitat conservation plan]." This language implies there is an existing habitat conservation plan (HCP)—which there is not. Additionally, another goal of reservoir reoperation (which is expected to be an integral part of the HCP) is habitat management for threatened and endangered species.

It appears here that the SVBGSA is partly relying on: (1) a non-existent HCP; and (2) the Monterey County Water Resource Agency (MCWRA) to reduce or optimize local groundwater use and achieve groundwater sustainability through their future HCP. We believe this approach is speculative and requires further explanation and justification.

Section 9.3 should address how depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water is avoided, but there is no discussion. In fact, none of the projects or management actions address this issue. We expressed our concerns regarding depletion of interconnected surface waters in our July 26, 2019 comment letter (see excerpt below).

9.4.3.10 Preferred Project 9: SRDF Winter Flow Injection

This section states "[t]he operation of the SRDF is subject to the environmental flow prescriptions outlined in the Biological Opinion issued by [NMFS] in 2007 and incorporated into MCWRA's water diversion permit 21089..." Relying on the biological opinion is flawed for the reasons we explained in our July 26, 2019 comment letter:

> *...we withdrew the referenced biological opinion and associated incidental take statement by letter to the U.S. Army Corps of Engineers and MCWRA on February 20, 2019. This means that MCWRA has no ESA take coverage for their ongoing releases. It is inappropriate for the GSP to rely on the moot flow prescriptions of the withdrawn biological opinion to suggest that steelhead flow requirements are being met or that current surface water depletion rates are not unreasonable. Regardless of the biological opinion's standing, relying on MCWRA's reservoir releases to mitigate groundwater use impacts within the SVBGSA's jurisdiction will simply perpetuate current management practices and their detrimental environmental outcomes. Such an approach has and will result in excessive groundwater pumping that has become reliant on reservoirs to replenish the resulting overdraft conditions. We strongly urge the SVBGSA to quantify the impacts of water diversions along the river (including permitted and any unpermitted wells), including assessing shallow alluvial extraction in and around the river, and develop a plan that independently mitigates these impacts. NMFS is hopeful the SVBGSA's GSP will result in a clear path to changing this paradigm."*

Thank you for considering our comments. If you have any questions, please do not hesitate to contact William Stevens, North-Central Coast Office in Santa Rosa, California at (707) 575-6066, or via email at William.Stevens@noaa.gov.

Sincerely,

A. Ingham

Amanda E. Ingham
Central Coast Branch Chief
North-Central Coast Office

cc: Copy to ARN File # 151416WCR2019SR00162
Briana Seapy, California Department of Fish and Wildlife (Briana.Seapy@wildlife.ca.gov)
Benjamin Gooding, Department of Water Resources (Benjamin.Gooding@water.ca.gov)

Thomas S.
Virsik
ATTORNEY AT LAW

11 September 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA)

Re: September 12, 2019 meeting

Agenda Item 3.b
Chapter 10 of 180/400 GSP

Agenda Item 3.c
Chapter 11 of 180/400 GSP

Draft Chapter 10 of the 180/400 GSP

In my prior oral comments and comment letters, I noted that draft Chapter 10 asserted that the "water charges framework" would be the only approach to funding, contrary to presentations made by GSA staff and consultants. The current draft, page 157, includes a revised explanation that now reflects more flexibility, consistent with the various public presentations. Section 10.2. The "framework" will be developed in the first three years of GSP implementation, and may also include fiscal tools other than water charges. From page 158:

> Details of the GSP implementing finance framework for all six subbasins will be developed during the first three years of this GSP's implementation through a facilitated, Valley-wide process. This process will be similar to the successful facilitated process that resulted in the SVBGSA serving as the GSA for some or all parts of all six subbasins. The result of this facilitated process will be an agreement on the financing method approved by the SVBGSA. The facilitation will be complete by January 31, 2023, and the financing method will be implemented in all six subbasins immediately following.

Among the other notable differences in the prior draft is section 10.8. First, the cost estimate of implementation over the next five years rose over $500,000 between the two drafts, with some $300,000 of the increase in the "refine water charges framework" at Tables 10-1 (Advisory committee draft) and 10-2 (current draft), $330,000 v. $632,000.

The most notable change to section 10.8, however is the "conceptual" or "estimated" allocation of which implementation tasks are unique to the 180/400 and which are not. The most striking entry in the current draft at Tables 10-1 and 10-2 is that the task "refine projects and actions" is allocated to the Valley (multiple sub basins) and not to the 180-400. The amount estimated is $460,000 -- a substantial portion of the total annual costs. If one credits section

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10.2, projecting which implementation tasks are allocable to which sub basin is premature, i.e., well before the three-year process for negotiation and analysis has commenced. In fact, a cursory review of Chapter 9's recommendations show that, by design, numerous of the management actions and projects benefit the 180/400, thus the cost of "refining" those actions and projects should also be allocated to that sub basin, rather than shared (in a yet unknown ratio) among all. The following appear to be priority actions and preferred projects from GSP Chapter 9 identified as impacting/benefiting the 180/400: Action 4 (restrict CSIP pumping); Action 5 (MCWRA restrictions on deep aquifer); Projects 2 (optimize CSIP); 3 (Monterey Water One additional flows); 4 (expand CSIP); 5 (SRDF diversions); and 6 (SWI barrier).

While the conceptual or estimated division of some implementation costs into Valley-wide and 180/400 headings is facially rational, making such allocations (1) before the process around the "negotiation" described in section 10.2 has started and (2) ignoring Chapter 9's identification of certain Actions and Projects subject to "refinement" as uniquely 180/400 ones, skews expectations, fears, or concerns about who pays for "regulatory" programs. As acknowledged in the materials relied upon by the Board of Directors when approving the Administrative Fee, while the Valley was generally supportive of a modest fee to do what SGMA requires (the GSP's), the GSA was not being given carte blanc to increase fees.

> No concerns about the level of the fee today, but concerns it could escalate dramatically in the future

Hansford Economic Consulting, bullet point in presentation deck, page 106, March 14, 2019 GSA packet for Administrative Fee item. Tables 10-1 and 10-2, inadvertently or otherwise, create the impression that the GSA has default expectations for the three-year refinement process of the water charges framework of Section 10.2.

<u>Draft Chapter 11 of the 180/400 GSP</u>

In my comment letter to the Advisory Committee dated 14 August 2019 I noted that Appendix 11E was obviously a legacy document. In part, my letter noted the following:

> The text [of draft Chapter 11] explains the role of the Integrated Sustainability Plan (ISP) and takes care to refer to the 180/400 as a "sub basin" rather than "the basin."[footnote omitted] The draft states that Appendix 11E "has been developed to support the preparation and implementation of a well-informed GSP and ISP." Appendix 11E, however, appears to be an outdated and materially inaccurate document that omits any mention of the ISP. Referring to the Salinas Valley, it states that "our groundwater basin is officially designated . . . as "Critically Over-Drafted."" See 1/109. The Appendix refers to "seven"

> sub-basins with "two" in critical overdraft. See 2/110. Only one GSP is contemplated for the entire "basin." 2-3/110-111 [page references to pagination in Advisory Committee packet]

The bottom margin date of August 12 suggests that Chapter 11 has not been edited at all since its presentation to the Advisory Committee. At a minimum, a substantial caveat needs to be added in Chapter 11 text and at the head/footers of Appendix 11E identifying it as a no-longer accurate early draft that should be understood as a legacy staff document, not authorized by Board action. Otherwise, Appendix 11E will simply sow confusion and may cause the public to misunderstand the true status of the 180/400 GSP, the other GSP's to come, and the ISP.

Very truly yours,

Thomas S. Virsik
Thomas S. Virsik

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October 7, 2019

Ron Stefani, Chairperson
Members of the Board of Directors
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Via email peterseng@svbgsa.org, camela@svbgsa.org

Subject: Comments on Groundwater Sustainability Plan (GSP) 180/400-foot Chapter 10, Implementation, and on need for interim pumping restrictions

Dear Chair Stefani and Members of the Board of Directors:

LandWatch appreciates the opportunity to comment on the 180/400-Foot Subbasin Groundwater Sustainability Plan, Chapter 10, Implementation.

Summary of comments

LandWatch's detailed comments follow.

1. **The proposed implementation fails to recognize the urgency required for action to address the critically overdrafted 180/400 Foot Aquifer Subbasin.**

SGMA requires more urgent action for critically overdrafted basins than for other overddrafted basins. The Chapter 10 GSP Implementation proposal fails to recognize this urgency because it defers substantive action for the critically overdrafted 180/400 Foot Aquifer Subbasin until the SVGBGSA is prepared to implement the GSP for the rest of the Salinas Valley Groundwater Basin (SVGB). Because the remainder of the SVGB is merely overdrafted rather than critically overdrafted, its GSP is not due until 2022.

In particular, section 10.7 postpones implementation of projects and management actions in order to coordinate with the timetable for the rest of the Basin:

> The projects and management actions identified in Chapter 9 are sufficient for attaining sustainability in the 180/400-Foot Aquifer Subbasin as well as the other five subbasins in the Salinas Valley. The projects and actions will be implemented in a coordinated fashion across the entire Salinas Valley to ensure Valley-wide sustainability. Because five of the subbasins in the Valley will not complete GSPs until January 31, 2022, many of the projects and actions will be implemented only after this time.

Indeed, the only action proposed for projects and management actions prior to completion of the GSP for the rest of the SVGB in 2023 is some water rights studies, cost refinement, preliminary design ("if projects adequately defined"), and some initiation of environmental permitting (CEQA?). (GSP section 10.7.)

GSP Figure 10-1, "General Schedule of 5-year Start-Up Plan," represents that the SVGBGSA will "Implement Priortized Projects" between 2023 and 2025. However, any implication that the nine priority projects identified in Chapter 9 will actually start up in 2026 is inconsistent with the detailed project timelines in Chapter 9, which call for 3 to 9+ years to implement projects once the SVGBGSA has committed itself to them.

Furthermore, there is no reason to suppose that the SVGBGSA can or will actually commit itself to the basin-wide projects in 2023 as soon as the SVGBGSA submits the GSP for the rest of the SVGB. First, DWR may not approve the Basin-wide GSP for several years. Second, many of the projects will require complex Proposition 218 compliance after SVGBGSA decides to pursue them in order to determine whether fees can be assessed to actually build them.[1] (Water Code, § 10730.2(c)). The Proposition 218 processes, typically requiring engineering studies and benefit allocations based on a completed design and hydrological assessment, may add years to each major project. The SVGBGSA cannot actually commit itself to commence a project until it has completed the Proposition 218 process.

Finally, section 10.2 defers the implementation of a financing method for projects and management actions to coordinate with the timetable for financing for the rest of the Basin:

> Details of the GSP implementing finance framework for all six subbasins will be developed during the first three years of this GSP's implementation through a facilitated, Valley-wide process. This process will be similar to the successful facilitated process that resulted in the SVBGSA serving as the GSA for some or all parts of all six subbasins. The result of this facilitated process will be an agreement on the financing method approved by the SVBGSA. The facilitation will be complete by January 31, 2023, and the financing method will be implemented in all six subbasins immediately following.

The GSP is apparently describing the adoption of a financing "method," not an actual financing plan or capital budget. As noted, the actual budget and financing plan will require the completion of Proposition 218 processes for the projects.

In effect, the proposed GSP Implementation improperly treats the actual management of the critically overdrafted 180/400 Foot Aquifer Subbasin as if it were on the same timetable as the rest of the SVGB. This does not meet the mandate of SGMA, which requires more than a plan by 2020. SGMA requires that critically overdrafted

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[1] The GSP identifies a proposed "regulatory fee" for pumping a "Sustainable allowance" and an "interim base fee" pending completion of the "GSP financing framework." (GSP, sections 9.2 and 10.2.) However, before Proposition 218 compliance, those fees could not be used for projects but only for the activities related to developing and managing the GSP. (Compare (Water Code, §§ 10730 and 10730.2.)

basins "shall be *managed* under a groundwater sustainability plan" by January 31, 2020. (Water Code, § 10720.7(a)(1), emphasis added.)

If the development and financing of projects must await completion of the GSP for the remainder of the SVGB, or if delay is required to negotiate financing and develop projects, then the SVGBGSA should consider all feasible interim measures to manage the 180/400 Foot Aquifer Subbasin pending the implementation of basin-wide projects and financing.

LandWatch proposes that this interim management should include pumping restrictions for the reasons set out below.

2. **The SVGBGSA should impose pumping restrictions pending start-up of new water projects in order to restore and maintain the protective groundwater elevations needed to attain the adopted minimum threshold for seawater intrusion.**

In previous comments LandWatch has explained that seawater intrusion must be addressed by taking steps to increase and then maintain groundwater levels at protective elevations.

THE PROPOSED GROUNDWATER LEVEL MINIMUM THRESHOLDS DO NOT COMPLY WITH SGMA BECAUSE THEY DO NOT PREVENT SEAWATER INTRUSION: In comments on Chapter 8, LandWatch explained that the section 8.6.2 minimum threshold for groundwater levels must be set at a level that is sufficient to prevent further seawater intrusion. The section 8.8.2 minimum threshold for seawater intrusion is the "2017 extent of the 500 mg/L chloride concentration isocontour as mapped by MCWRA," i.e., the existing line of seawater intrusion advancement. SGMA mandates that the "basin conditions at each minimum threshold will avoid undesirable results for *each* of the sustainability indicators." (23 CCR § 354.28(b)(2), emphasis added.) Thus, it would not comply with SGMA to set the minimum threshold for groundwater levels at a level that does not actually halt seawater intrusion.

As LandWatch's Chapter 8 comments and the technical studies referenced in those comments explain, existing groundwater levels are currently far from the levels required to prevent further seawater intrusion. This is readily apparent from the technical study on which the GSP relies for the historic water budget in Chapter 6.[2] That study establishes that as of 2013 there was a *cumulative* storage deficit in the Pressure Subbasin (aka, 180/400 Foot Aquifer Subbasin) of 110,000 acre-feet.[3] That study concludes that this cumulative storage deficit would increase by 10,000 to 20,000 afy under continued dry conditions. Since the drought did not end until 2019, the cumulative deficit has grown. The relation between cumulative deficit, insufficiently protective groundwater levels, and seawater intrusion is also evident from the rapid advances of seawater intrusion through 2017.

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[2] Brown and Caldwell, *State of the Salinas River Groundwater Basin*, January 2015, available at https://www.co.monterey.ca.us/home/showdocument?id=19586.

[3] Id, p. ES-11.

The minimum threshold for groundwater elevations adopted in section 8.6.2 do not comply with SGMA's requirement that each minimum threshold be coordinated to ensure that *all* undesirable results be avoided. The section 8.6.2 groundwater level thresholds are set at only one foot above the 2015 levels, which were entirely insufficient to prevent seawater intrusion advancement.

THE PROPOSED STORAGE REDUCTION MINIMUM THRESHOLD DOES NOT COMPLY WITH SGMA BECAUSE IT DOES NOT PREVENT SEAWATER INTRUSION: SVGBGSA must also revise its section 8.7.2 minimum threshold for annual reduction of groundwater storage (i.e., groundwater pumping of natural recharge amounts). The GSP sets this threshold at 112,000 afy, representing the "future long-term sustainable yield of the Subbasin under reasonable climate change assumption."

As LandWatch explained in comments on Chapter 6, until SVGBGSA has a validated groundwater model that reconciles historic and modeled future conditions, it should adopt the most conservative estimate of sustainable yield for this minimum threshold, i.e., the 95,700 afy estimated using the historic model. (See GSP Table 6-31.)

Adopting a conservative estimate of sustainable yield might be sufficient to *maintain* protective groundwater elevations, but pumping the sustainable yield will not *restore* protective groundwater elevations. It is evident that the cumulative storage deficit from prior years of overdraft conditions must also be addressed.

The GSP's announced rationale for setting the storage reduction minimum threshold (maximum natural recharge pumping threshold) at 112,000 afy was that stakeholders "suggested a preference for increasing groundwater storage, but not a preference for restricting average year pumping." (GSP, section 8.7.2.) In short, stakeholders want to see the problem solved, but are not willing to do what is needed to solve it.

However, to meet its adopted minimum threshold for seawater intrusion, SVGBGSA must immediately reduce pumping in the 180/400 Foot Aquifer Subbasin. The pumping reduction must not merely avoid overdraft conditions; it must also replace the historic storage depletion that has resulted in lowered groundwater levels. Regardless whether the SVGBGSA has 20 years to attain overall sustainability, it must take immediate action to meet the seawater intrusion minimum threshold because there is no evidence that seawater intrusion can be reversed once the aquifer is contaminated.

The necessary pumping reductions may eventually be matched by deliveries of additional water from new projects. But even if there is no new water in the short term, SVGBGSA cannot consistently reconcile its obligation to halt seawater intrusion at the current line of advancement with its proposed adoption of minimum thresholds for groundwater levels and storage reductions that would continue to induce seawater intrusion.

3. **Chapter 10 does not disclose realistic project start-up projections.**

The GSP identifies various timelines for the nine identified priority water projects in Chapter 9 that include necessary actions in a necessary sequence, such as studies and preliminary engineering, obtaining agreements and right of way, CEQA, permitting, design, bid and construction, and startup. Some projects might be implemented in 3 years from commitment; but most are projected to take from 5 to 9 years from commitment to start-up. Chapter 9 does not disclose when the timelines for each project would *commence* running, so it is impossible to determine when these projects would actually deliver results.

The Chapter 10 implementation schedule proposes that no projects commence "implementation" before the adoption of the GSP for the remainder of the SVGB in 2023 so that the projects can be coordinated on a basin-wide basis. As noted above, Chapters 9 and 10 do not include realistic estimates of proposition 218 compliance.

Furthermore, Chapter 10 does not even purport to identify project start up dates. As discussed above, it is not reasonable to assume that the SVGBGSA will be able to "implement" all nine projects between 2023 and 2025, as might be implied by Figure 10-1.

Chapter 10 should be revised to reflect realistic timelines for each project and management action that provide a best current estimate of start-up.

4. **Unlike projects, pumping restrictions are feasible in the very near term.**

It is evident that the development, permitting, and financing of water projects to replace reliance on current levels of groundwater pumping will take years. It is unlikely that any actual or substantial results toward halting seawater intrusion can be expected from the proposed projects and management actions by 2025, when Figure 10-1 indicates that the projects will be implemented.

Pumping restrictions are legally feasible because they could be imposed based on the regulatory authority of GSAs to "control groundwater extractions by regulating, limiting, or suspending extractions from individual groundwater wells or extractions from groundwater wells in the aggregate, construction of new groundwater wells, enlargement of existing groundwater wells, or reactivation of abandoned groundwater wells, or otherwise establishing groundwater extraction allocations." (Water Code, § 10726.4(a)(2).)

SVGBGSA could adopt pumping restrictions much more quickly than it could actually complete a project. In particular, SVGBGSA would not need to complete the proposed three-year negotiation of a water charge framework and would not need to conduct a multi-year Proposition 218 process. And it is likely that pumping restrictions would be exempt from CEQA as a measure to protect natural resources and the environment.[4] (14 CCR §§ 15307, 15308.)

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[4] And if the SVGBGSA could not or would not adopt needed pumping restrictions through such an exemption, then the SWRCB could do so. (Water Code, § 10736.2.)

5. **Unlike projects, pumping restrictions do not require extensive additional data acquisition.**

Pumping restrictions could be imposed on the basis of readily available information. For example, the Brown and Caldwell report has already been used to in Chapter 6 to identify the historic sustainable yield of 95,700 afy. (GSP, section 6.8.4.) The Brown and Caldwell Report also provides an estimate of the cumulative storage deficit, which should be retired through pumping reductions. In its 2013 study for MCWRA, *Protective Elevations to Control Seawater Intrusion in the Salinas Valley*, Geoscience quantified the needed reductions in groundwater pumping (via in lieu recharge) to control seawater intrusion in the northern Salinas Valley.[5]

Although more precise data may eventually be available to closely calibrate the needed pumping reductions, there is no reason not to require some reductions in pumping immediately. Furthermore, there is simply no question that some pumping reductions are essential to halt sweater intrusion. Again, the only rationale advanced in the GSP for avoiding a pumping restriction is that stakeholders did not express a "preference for restricting average year pumping." (GSP, section 8.7.2.) SGMA neither requires nor permits the SVGBGSA to honor a mere preference when that precludes meeting the mandates to meet the minimum thresholds, including the minimum threshold for seawater intrusion.

The GSP already proposes some pumping restrictions in the form of an immediate moratorium on pumping the Deep Aquifer pending completion of a study. There is no reason that the GSP should not also address the need for immediate measures to address seawater intrusion.

6. **Comment responses are required.**

LandWatch has appreciated the opportunity to provide comments on draft chapters of the GSP as they have been released and looks forward to review of a revised plan document that takes its comments into account.

SGMA provides that, in evaluating the sufficiency of a Groundwater Sustainability Plan, DWR should consider "[w]hether the Agency has adequately responded to comments that raise credible technical or policy issues with the Plan." (23 CCR § 355.4(b)(10).) LandWatch asks that the revised Plan to be issued for final public review address the comments LandWatch has already made, explaining how the GSP was revised to address those comments or, if not, why not.

Sincerely,

Michael DeLapa
Executive Director

[5] Available at https://www.co.monterey.ca.us/home/showdocument?id=19642.)

MARINA COAST WATER DISTRICT

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16 September 2019

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Mr. Derrik Williams
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1232 Park Street, Suite 201B
Paso Robles, CA 93446

Dear Mr. Peterson and Mr. Williams,

Thank you for taking the time to meet with our SGMA consultant EKI Environment & Water, Inc. on 15 August 2019. This letter

(1) Provides MCWD GSA's comments on draft 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (GSP) Public Review Draft Chapter 9 (dated 2 August 2019) and Draft Chapter 10 (dated 28 July 2019); and
(2) Summarize agreements reached regarding coordination with MCWD GSA representatives Proposition 68 grant application for the 180/400 Foot Aquifer Subbasin and Monterey Subbasin.

COMMENTS TO CHAPTER 9 PROJECTS AND MANAGEMENT ACTIONS

1. Water Charges Framework (Section 9.2)

The sentence below was added to Public Review Draft Chapter 9, Section 9.2 Water Charges Framework:

> *"The fee structures in each subbasin will be developed in accordance with all existing laws, judgements, and established water rights."*

We understand that SVBGSA will further revise this sentence to include existing water management agreements as part of the basis for developing fee structure and pumping allowances, pursuant to our discussion during the 10 July 2019 meeting and MCWD's comment letter for Chapter 9 dated 1 August 2019. We understand that SVBGSA has received the comment letter but have yet to incorporate those comments into Chapter 9.

Additionally, it appears that this sentence and the associated paragraph discuss the fee structure as well as the sustainable pumping allowance. Therefore, the sentence should be revised to begin with "The fee structures and pumping allowance in each subbasin…"

2. Pumping Barrier Extraction Rate Calculation (Appendix 9-C)

Appendix 9-C mentions that the estimated pumping rates of the barrier project is calculated based on an analytical solution published by Javandel and Tsang (1987). This analytical solution assumes a constant background gradient. However, it is highly unlikely that a constant background gradient will be maintained over the project lifetime, because once sea water intrusion is stopped water levels inland of the barrier will begin to decline as seawater stops recharging the basin. As recognized in the GSP, numerical modeling is needed to assess rates of groundwater extraction that will be required to halt saltwater intrusion.

As discussed in Comment #5 to Chapter 10 below, the SVIHM will likely not have the resolution or adequate calibration in proposed project area and cannot be used to model density driven flow. Therefore, the GSP should acknowledge that alternative models will likely be required to evaluate the proposed pumping barrier project.

3. Estimated Pumping Barrier Extraction from Monterey Subbasin (Appendix 9-C)

Appendix 9-C estimates that the pumping barrier will have a total extraction volume of 30,000 AFY; 22,500 AFY of which would be extracted from the 180/400 Foot Aquifer Subbasin. Per discussion, it is understood that the remaining 7,500 AFY would be extracted from the Monterey Subbasin.

4. Mitigation of Overdraft (Section 9.6 and Table 9-5)

Section 9.6 discusses the overdraft estimated in Chapter 6 and stated that "[t]he priority projects include more than ample supplies to mitigate existing overdraft, as presented in Table 9-5." As agreed during the meeting, SVBGSA should add a discussion that Section 9.6 is included per requirements of GSP Regulations (and cite relevant sections) and that mitigating the overdraft as estimated does not meet all of the basin's sustainable management criteria. Specifically, without a hydraulic barrier, seawater intrusion will continue to occur if groundwater extraction within the basin occurs at the identified sustainable yield. As SVBGSA stated in Chapter 6, "simply reducing pumping to within the sustainable yield is not proof of sustainably, which must be demonstrated via Sustainable Management Criteria (SMC)."

Additionally, given the technical uncertainties of the proposed seawater intrusion pumping barrier project and the potential project cost that may not be approved by groundwater basin users, the GSP should provide an estimate of the sustainable yield of the 180/400 Foot Aquifer Subbasin (or the larger Salinas Valley Basin) without the pumping barrier project. This estimate is required under SGMA, which defines "Sustainable Yield" as "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result."

We understand that due to modeling limitations and data gaps, SVBGSA is reluctant to provide an estimate the "sustainable yield" of the basin when sustainable management criteria for seawater intrusion are considered. However, analytical methods, similar to those used to estimate extraction rate of the pumping barrier project, could be utilized to provide a preliminary estimate of the Sustainable Yield of the basin if the extraction barrier is not installed. For example, previous studies conducted on this topic by Geoscience (2013), *Protective Elevations to Control Sea Water Intrusion in the Salinas Valley,* estimated that approximately 60,000 AFY would be needed for the Salinas Valley Water Project to recharge the Salinas Valley Basin sufficiently to stop seawater intrusion. Alternatively, the GSP could compare and discuss the volume of water needed for an injection barrier, as presented in Appendix 9-C.

COMMENTS TO CHAPTER 10 GSP IMPLEMENTATION

5. Additional Data Gaps and Analyses to be Addressed (Section 10.3)

As discussed in our comments to the previous chapters, the following additional data gaps and analyses should be identified Chapter 10:

- Seawater intrusion cross-sections (Chapter 5 comments dated 18 April 2019)
  Per GSP Regulations Section 354.16 (c), a GSP should provide "seawater intrusion conditions in the basin, including maps and cross sections of the seawater intrusion front for each principal aquifer". The GSP should commit to development of such cross-sections, once data gaps have been filled. These data are needed to inform placement of seawater intrusion barrier wells.

- Groundwater extraction within individual aquifers (Chapter 6 comments dated 2 July 2019)
  We suggest that SVBGSA collect information needed to identify groundwater extraction from each principal aquifer, to allow the development of a water budget for each aquifer. As discussed in MCWD's Chapter 6 comments dated 2 July 2019:

  "Water budget information for each principal aquifer is necessary to verify that proposed future operations of the basin, including implementation of projects and management actions, will not lead to undesirable results in each principal aquifer. Seawater intrusion is occurring in both the 180 Foot Aquifer and the 400 Foot Aquifer, and inland gradients exist within the Deep Aquifer. In order to reach sustainability, hydraulic gradients in each of these aquifers will need to be reversed either through decreasing groundwater extraction and/or future supply augmentation projects. As such, water budgets for each aquifer must be established to verify that undesirable effects do not occur.

  We understand that information related to groundwater extraction within individual aquifer zones is currently limited and that water budgets cannot be developed for each principal aquifer zone. As such, we recommend that the GSP acknowledge this uncertainty and identify it as a data gap. The GSP should provide a plan to further assess rates of extraction and inflows within principal aquifer zones so undesirable results, such as seawater intrusion can be mitigated. This information is critical, as achieving sustainability in the basin requires implementation of projects and management actions, which will need to be evaluated against sustainable management criteria in each principal aquifer."

  However, as discussed and agreed upon during the meeting, this data gap may be extremely difficult to fill and water level data/gradients in each aquifer may serve as a proxy for evaluating the effectiveness of projects and management actions to address saltwater intrusion within each of these zones. However, given the uncertainties associated with groundwater recharge and groundwater levels within the Deep Aquifer (consistent with data gaps identified in Section 10.3), quantification of all groundwater extraction from the Deep Aquifer, should be clearly identified as a Data Gap that will be filled as under the GSP.

We further recommend that the GSP identify actions that will be implemented to allow:

- Development of Sustainable Management Criteria for the deep aquifer; and

- Development of Sustainable Management Criteria that consider project implementation. For example, alternative groundwater elevation Sustainable Management Criteria will be required near the coast if a pumping barrier is constructed.

6. Plans to Refine and Evaluate the Seawater Intrusion Barrier Project (Sections 10.6 and 10.7)

The GSP should acknowledge that alternative models will likely be required to evaluate certain projects, such as the pumping barrier or injection wells, because the SVIHM does not have the resolution or adequate calibration in proposed project areas and cannot model density driven flow.

Further, The GSP states that SVIHM model will be available for use within one year. Per discussion during the meeting, we understand that within one year, the SVIHM model will be released for public use by USGS. Additionally, we understand that the model will be made publicly available consistent with GSP Regulations Section 352.4 (f)(3), "[g]roundwater and surface water models developed in support of a Plan after the effective date of these regulations shall consist of public domain open-source software."

PROPOSITION 68 GRANT COORDINATION

MCWD is considering applying for Proposition 68 Grant (SGM Grant Round 3) for Monterey Subbasin. We understand that SVBGSA is also planning to apply for this grant for other basins under its jurisdiction. As agreed, both parties will coordinate and support each other in grant funding processes.

Thank you for this opportunity to provide these comments. We look forward to working with you to discuss, evaluate, and refine the proposed Chapter 9 actions and projects.

Sincerely,

Keith Van Der Maaten
General Manager, Marina Coast Water District

COMMUNITY WATER CENTER
EL CENTRO COMUNITARIO POR EL AGUA

San Jerardo Cooperative, Inc.

November 25, 2019

Salinas Valley Basin Groundwater Sustainability Agency
Attn: Gary Peterson, General Manager
1441 Schilling Place
Salinas, CA 93901

Submitted electronically to:

Salinas Valley Basin Groundwater Sustainability Agency

Gary Peterson, General Manager

Salinas Valley Basin Groundwater Sustainability Agency Board of Directors

Ron Stefani, Castroville CSD

Adam Secondo, Secondo Farms

Bill Lipe, Rava Ranches

Tom Adcock, Alco Water Service

Colby Pereira, Costa Farms

Janet Brennan, LandWatch

Supervisor Luis Alejo, Monterey County

Mayor Joe Gunter, City of Salinas

City Manager Mike McHatten, City of Soledad

Steve McIntyre, Monterey Pacific/McIntyre Vineyards

Caroline Chapin Hodges, The Don Chapin Company

cc'd:

Department of Water Resources Director, Karla Nemath

Department of Water Resources Deputy Director, Taryn Ravazzini

Department of Water Resources, 180/400 Ft Aquifer Subbasin, Thomas Berg

State Water Resources Control Board Chair, Joaquin Esquivel

State Water Resources Control Board, Natalie Stork

CalEPA Deputy Secretary, Kristin Peer

Central Coast Regional Water Quality Control Board, John Robertson

Re: Comments on the Draft 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan

Dear Salinas Valley Basin Groundwater Sustainability Agency:

The Community Water Center (CWC) and the San Jerardo Cooperative would like to offer several comments and recommendations in response to the draft Groundwater Sustainability Plan (GSP) for the 180/400 Foot Aquifer Subbasin that was released on October 10, 2019 by the Salinas Valley Basin Groundwater Sustainability Agency (SVB GSA).

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Community Water Center (CWC) is a 501(c)3 nonprofit that acts as a catalyst for community-driven water solutions through organizing, education, and advocacy. CWC seeks to build and enhance leadership capacity and local community power around water issues, create a statewide movement for water justice in California, and enable every community to have access to safe, clean, and affordable drinking water. San Jerardo Cooperative is a housing cooperative, built and owned by farmworkers, located in the Salinas Valley that has faced many drinking water quality challenges. CWC and San Jerardo Cooperative have worked to facilitate effective Sustainable Groundwater Management Act (SGMA) implementation that meets the needs of vulnerable communities through San Jerardo Cooperative serving on the GSA advisory committee and through both of our participation in SVB GSA meetings (board, advisory, and planning). Many of our comments are reflected in the public record. We have also connected SVB GSA staff directly via email and in person to publicly available resources and data sources to fill the current data gaps in the plan related to disadvantaged community boundaries, state and local small water system data (collected and maintained by the Monterey County Environmental Health Bureau), and private domestic well data (collected by the Central Coast Regional Water Quality Control Board as part of their Irrigated Lands Regulatory Program). We co-hosted two community workshops - on July 31, 2019 and October 24, 2019 - to share information about groundwater planning in the Salinas Valley and to receive feedback on how community members would like to see groundwater managed and get involved in the process.[1]

The comments and recommendations contained in this letter are provided in an effort to protect the drinking water sources of the vulnerable, and often underrepresented, groundwater users. These beneficial users of groundwater include: domestic well owners, community water systems, public water systems, severely disadvantaged communities (SDAC), and disadvantaged communities (DAC). The submitted comments are intended to assist the SVB GSA in developing a groundwater sustainability plan that accomplishes the following objectives:

1. Understands disadvantaged communities' unique vulnerabilities and adequately addresses their drinking water needs;
2. Avoids developing groundwater management actions that cause negative impacts to drinking water supplies or cause a disparate impact on low-income and communities of color;
3. Achieves the objectives required by the SGMA regulations and California's Human Right to Drinking Water in order to ensure the 180/400 Foot Aquifer Subbasin GSP adequately addresses the requirements necessary for GSP approval by the Department of Water Resources (DWR); and
4. Achieves the goals required by SGMA without negatively affecting the implementation of the Newsom Administration's newly passed Safe and Affordable Drinking Water Fund (SB 200, Monning, 2019), by limiting or preventing further contamination (or salinization) of drinking water sources or the dewatering of wells that serve low-income communities of color.

The Department of Water Resources (DWR) will be considering AB 685, which established the Human Right to Water as state law, when reviewing and approving GSPs. The Human Right to Water is a

[1] Notes and materials from the July 31, 2019 *Protecting Drinking Water and Groundwater Planning in the Salinas Valley Workshop* co-hosted by Community Water Center, San Jerardo Cooperative, and the Union of Concerned Scientists are available online:
https://www.communitywatercenter.org/salinas_gsp_workshop

California law that recognizes that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." GSPs that do not support access to sufficient and affordable quantities of drinking water, or GSPs that impact access to safe drinking water, may require costly and time-consuming revisions prior to approval from DWR, if not outright or eventual rejection of the GSP.

We are unfortunately very concerned that, without significant changes which we lay out in this comment letter, the proposed GSP will have significant negative impacts for access to safe and sustainable drinking water in our most vulnerable populations within the GSA -- low-income communities and domestic well owners. Here is a summary of some key comments and recommendations:

The GSP Should Include Immediate Actions To Take Effect in 2020 While Projects Are Being Developed
The GSP should be revised to lay out a clear and robust plan to achieve sustainability. The GSP delays any decisions on approving projects or actions to address conditions of critical overdraft in the 180/400 foot aquifer subbasin until 2023 and later. This is not acceptable as a significant portion of the drinking water supplies in the subbasin, including drinking water systems serving disadvantaged communities in Castroville and Moss Landing, are already impacted or are at imminent risk of seawater intrusion impacts. The GSA should immediately adopt management actions to slow seawater intrusion and protect vulnerable communities and drinking water supplies.

Chapter 9 Projects and Management Actions: Well Impact Prevention/Mitigation Program
Given delays in described in the plan and negative impacts to drinking water wells, the SVB GSA should develop a robust drinking water well program to prevent or mitigate impacts (e.g. dewatering, increases in contaminant levels, increases in salinity). This should include a vulnerability analysis of DACs and drinking water supplies in order to protect drinking water for these vulnerable beneficial uses and users.

Chapter 3 Description of Plan Area
Include a map of all disadvantaged communities (DACs) (census block groups, census designated places, and census tracts) in the subbasin. Include a map of service areas for all drinking systems that depend on groundwater in the subbasin. This map should include all state small water systems (SSWS), local small water systems (LSWS), and public water systems.

Chapter 5: Groundwater Conditions
Include spatial and temporal water quality data trends in the subbasin based on publicly available, historic drinking water well data from SSWS, LSWS, public water systems, and private wells. Include all known constituents that impact public health that have been found in groundwater in the subbasin including (but not limited to) hexavalent chromium, arsenic, and 123-trichloropropane.

Chapter 6: Water Budget
Revise the basin setting and water budget of the draft 180/400 Foot Aquifer Subbasin GSP to better articulate and quantify the needs of drinking water users within the GSA, and address key missing information and assumptions about drinking water users. The water budget and sustainable yield calculation must take into account the proposed project(s) to address sea water intrusion as well as the significant uncertainty inherent in these projects.

Chapter 7 Monitoring Network

Provide the locations and depths of all public water systems, state and local small water systems, and private domestic wells in the subbasin using the best available information, and present this information on maps along with the proposed SGMA-compliance monitoring network so that the public can evaluate how well the monitoring network addresses these key beneficial users. Expand water quality monitoring network with currently available data to better capture impacts to domestic wells and state and local small water systems who rely on the shallow aquifer.

Chapter 8 Measurable objectives, minimum thresholds, and undesirable results
Clearly identify and describe the current level of contamination and salinity at each representative monitoring well and attribute specific numeric values for MTs/MOs for each contaminant of concern. Revise sustainable criteria to be protective of drinking water users.

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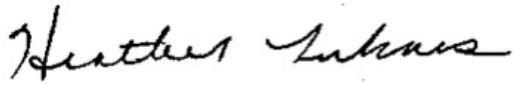
We urge SVB GSA to make changes to better protect the beneficial uses for low-income and communities of color that live within the GSA. Detailed comments and recommendations for individual sections of the GSP developed are included below. We also conducted a focused technical review of certain sections of the GSP. Figures and maps from this review are included as attachments and are referenced in this comment letter. We have also included comments and reflections throughout this comment letter from the SVB GSA public meetings we have attended as well as the GSP workshops we have hosted.

Thank you for reviewing this letter and for the consideration of our comments on the draft GSP. We look forward to working with the SVB GSA to ensure that the 180 / 400 Foot Aquifer Subbasin GSP is protective of the drinking water sources of vulnerable, and often underrepresented, groundwater stakeholders. Please do not hesitate to contact us with any questions or concerns, or if you would like to meet to further discuss these important sets of issues.

Sincerely,



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GSP Chapter 1: Introduction

Sustainability Goal

We encourage the GSA to move the Sustainability Goal section from Chapter 8 to the start of this first chapter. It is important to start the plan with the sustainability goal to set the stage for why this plan matters. We agree that part of the sustainability goal is to "ensure long-term viable water supplies" as you say in Chapter 8. The "sustainability goal" should be revised to explicitly state and include a commitment to the Human Right to Water in the Salinas Valley - that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes."

At public workshops hosted by CWC, community members have commented that their vision for water in the Salinas Valley Basin includes:

- "Water is for everyone. This is why we passed the human right to water resolution and we are fighting to defend it."
- It is not contaminated ("No contaminada"),
- We are not contaminating the earth, that it is clean for all ("No estamos contaminada la tierra - limpiar para todos")
- The water is like it was in the past, no filters needed, so fresh ("Fuera el agua como pues años atrás. Sin filtros o nada. Tan fresca.)

Our shared vision for groundwater is groundwater that is free of contaminants, available for both private and public uses, available without the need for in-home filtration, and available 24-hours a day. We reject a definition of "sustainability" which allows domestic or municipal wells to become salty, go dry, or become contaminated before management actions are enacted. This vision for the future of groundwater in the Salinas Valley is not currently captured in the draft GSP. In order to improve this section, we recommend the following:

- **Revise the opening paragraph in Section 1.1 to clearly state that the 180/400 Foot Aquifer Subbasin has been designated by the California Department of Water Resources as a "Critically Overdrafted Basin."** This designation means that "the continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts. (DWR 2019)."[2] It is important that the SVB GSA explain clearly to the public why this GSP is needed, that current practices are resulting in critical overdraft, and that the status quo is unacceptable.
- **Revise introduction to clearly describe why this GSP matters and clearly articulate the current challenges.** The Subbasin should be described in a manner that clearly explains baseline conditions for all sustainability criteria and the significant challenges facing Salinas Valley groundwater managers in terms of sea water intrusion, lowering groundwater levels, and extensive water quality contamination.
- **Include a reference for the following comment on page 1-2**: "There is some, although potentially limited, hydraulic communication between the Eastside Aquifer Subbasin and the 180/400-Foot Aquifer Subbasin." This has potentially significant implications for the relationship

[2] California DWR (2019) Critically Overdrafted Basins. Accessed November 17, 2019. https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118/Critically-Overdrafted-Basins

between pumping that is causing the significant cone of depression in the East Side aquifer and seawater intrusion impacting the 180/400 foot aquifer.

GSP Chapter 2: Agency Information

Clarify the legal authority Monterey County has as a GSA eligible entity and JPA signatory to take over the management of the 180/400 foot aquifer sub-basin(Section 2.3.1.1). Given recent public comment (both written and oral) in October and November 2019 regarding SVBGSA authority, it is requested that the SVB GSA clarify this authority.

GSP Chapter 3: Description of Plan Area

The description of the plan area can be improved by clarifying the descriptions of the drinking water users in the area. In order to develop a GSP that addresses the needs of all beneficial users, it is critical that the location and groundwater needs of DACs and domestic well communities are explicitly addressed early on in the GSP. The plan should be updated to include DAC boundaries and service areas for all drinking water systems including all state small water systems (SSWS), local small water systems (LSWS), and public water systems. Our comments in this section identify key data sources and recommended terminology. We have shared information with the GSA directly on this topic during public meetings and also via emails on December 6, 2018 and then again on April 5, 2019, which included information and a link to an online map viewer with all of these data layers.[3] In order to improve this Chapter, we recommend the following:

- **Clearly define all drinking water system types and use those terms consistently in this chapter and plan.** A straight-forward and concise explanation of drinking water system definitions and how drinking water systems are regulated can be found in the *Integrated Plan to Address Drinking Water and Wastewater Needs of Disadvantaged Communities in the Salinas Valley and Greater Monterey County IRWM Region (2017).*[4] We recommend using the following terms consistently throughout the plan:
    - Public Water Systems - this includes community water systems (as discussed in the GSP) and also non-transient, non-community water systems (e.g. schools), as well as transient non-community water systems (e.g. restaurants, gas stations).[5]
    - State Small Water Systems (SSWS) - serve 5-14 service connections.
    - Local Small Water Systems (LSWS) - serve 2-4 service connections.

[3] The Greater Monterey Community Water Tool (Database and Map Viewer) has been created to show the locations of disadvantaged and suspected disadvantaged communities, geographic areas with water quality contamination (including nitrate, arsenic, and hexavalent chromium contamination), and the boundaries of nearby water districts. More information and a link to the tool is available here: http://www.greatermontereyirwmp.org/documents/disadvantaged-community-plan-for-drinking-water-and-wastewater/

[4] See Chapter 3, Pages 3-1 to 3-3 of the Plan by the Greater Monterey County Regional Water Management Group, which is downloadable: http://www.greatermontereyirwmp.org/documents/disadvantaged-community-plan-for-drinking-water-and-wastewater/

[5] See EPA's website with helpful classification information for public water systems: https://www.epa.gov/dwreginfo/information-about-public-water-systems

- **Include a map of all disadvantaged communities (DACs) and their drinking water sources in the subbasin including Castroville, Moss Landing, and private wells.** Disadvantaged communities are on the front lines of the sea water intrusion front with the public water supplies of Castroville and Moss Landing right on the sea water intrusion minimum threshold line for the 400 foot aquifer (see CWC Figure 1- Attached). What these maps do not show is the number of wells already lost due to sea water intrusion and the ways in which these DACs have already been adapting to poor groundwater management. Castroville, the City of Salinas, and numerous other drinking water users in the subbasin have lost wells due to sea water intrusion. In setting the stage for the plan area, it is important to include the location of all DACs in the subbasin as determined both by census data (block groups, census designated places, and census tracts) and median household income surveys conducted in accordance with state and federal agency guidelines. DACs are defined by California Water Code §79505.5 as communities with an annual median household income that is less than 80 percent of the statewide annual median household income[6].

- **Revise description of plan area to include the sources of water for all DACs, percentage of groundwater dependance, type of water system, current groundwater quality conditions, and number of people served.** Adequately characterizing the other public water systems, state and local small water systems, DACs, and domestic well communities in the GSA is important in order to better identify areas that are vulnerable to groundwater level, groundwater quality, or sea water intrusion challenges in order for the SVB GSA's actions to respond accordingly. Table 3.2 Well Count Summary could be a good place to list the names, ID numbers, populations served, and other key attributes of the over 40 public supply systems in the subbasin.

  We estimate that approximately 50,000 DAC residents in the 180/400-Foot Aquifer Subbasin are entirely dependent on groundwater for their drinking water needs (See CWC Figure 1 - Attached).[7] Clarifying the different types of systems that provide drinking water (private domestic well, public water system, or state or local small water system), population served by each system, and current groundwater quality conditions is important context to set the stage to: (1) quantify drinking water demand in the subbasin for both the current and projected water budget, (2) provide a basis for the monitoring network of drinking water supplies, and (3) ensure inclusive and representative engagement of DACs in the planning process.

- **Describe highly vulnerable drinking water systems, including Castroville and Moss Landing, in more detail to better explain the challenges that groundwater management must address.** Castroville Community Services District (CSD) owns and operates an extremely vulnerable

[6] The DWR DAC Mapping Tool can be used to help identify the locations of these communities and their populations: https://gis.water.ca.gov/app/dacs/.

[7] Several Census Block Groups and Tracts extend beyond the boundary of the subbasin, and thus not all of the population represented by the Tract lies within the basin. In addition to the DACs identified through the DWR-provided DAC Mapping tool (based on 2011-2016 estimates), the community of Moss Landing, which had insufficient data when the tool was developed, has been determined to be a DAC. Thus, the total population based on DWR-provided census data for the Block Groups and Tracts located within and across subbasin boundaries, and Moss Landing is 49,244.

drinking water system (CA2710005) that serves approximately 7,250 residents in the unincorporated community of Castroville. A median household income (MHI) survey was completed by the Rural Community Assistance Corporation in 2017 in accordance with California state standards that qualifies Castroville as a Severely Disadvantaged Community, with a MHI of $35,000. Castroville CSD has wells that have already been impacted by sea water intrusion - making them unusable. They have one well in the deep aquifer that must be blended with another more shallow well in order to reach acceptable temperature levels for potable water. Water levels in this deep well are declining. The CSD has installed an award winning arsenic treatment system due to levels of arsenic in one well water with source water exceeding 20 parts per billion (ppb), which is more than double the drinking water standard. Recent science demonstrates that the way groundwater is managed (groundwater levels and pumping rates) can cause inert arsenic to be released from sediments into groundwater in its aqueous form.[8]

Moss Landing is another extremely vulnerable disadvantaged community located in the sea water intrusion zone. Pajaro Sunny Mesa CSD owns and operates the Moss Landing Harbor Water System which is a community water system (CA2701515) that serves approximately 400 residents. The drinking water supply well for this water system, located inland from its service area, is in close proximity to the 2017 extent of the 400 foot sea water intrusion line, thus making it vulnerable to any further sea water intrusion beyond that point. Castroville CSD owns and operates the Moss Landing County Sanitation District (MLCSD), which is located in the unincorporated town of Moss Landing. California Rural Water Association conducted an MHI survey in 2018 which found Moss Landing to be a Disadvantaged Community (DAC) with an MHI of $47,600. Census data shows insufficient data in the Moss Landing area to determine median household income, thus the State has required the MHI survey in order to determine funding eligibility for state grants.

- **Revise Chapter 3 and Figure 3.4 to include a map of the service areas of the over 100 state and local small water systems in the 180/400 foot aquifer subbasin.** The Monterey County Environmental Health Bureau (EHB) maintains publically available data which includes shape files of state and local small water system service areas (e.g. polygons of all parcels served by each state or local small water system) to water system IDs. Lists of state and local small service areas and out-of-compliance water systems are available online on their state and local small water

[8] Stanford, 2019. A Guide to Water Quality Requirements Under the Sustainable Groundwater Management Act.

Community Water Center, 2019. Guide to Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act. https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858

Community Water Center and Stanford University, 2019. Factsheet "Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium" for more information.https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896

system webpage.[9] Monterey County EHB also maintains individual files for each SSWS and LSWS in the County, which often contain well completion reports for each system. All water quality data, location data, and well completion reports are publically available upon request from the Monterey County EHB.

- **Revise Figure 3.6 to add table to clearly define and identify service areas of all drinking water systems *that depend on groundwater in the subbasin*.**
    - **Clarify the definition of "municipal areas" used in Figure 3-6.** We recommend changing "municipal areas dependent on groundwater" to "public water system service areas dependent on groundwater."
    - **Add the Moss Landing water system, which is groundwater dependent, to this map as well as any other water systems that are missing.**
    - **Include groundwater dependent private domestic wells, SSWS, and LSWS.**

  DACs and other communities receive their drinking water from hundreds of domestic wells located within the subbasin, over 100 state and local small water systems, and numerous public water systems, including approximately 30 separate community water systems. We request that all public water system service areas and state and local small service areas be included in this chapter as well as a list of all these system names, water system ID numbers, and number of service connections (or population served).[10] Private wells should also be identified as being groundwater-dependent drinking water supplies. Figure 3.4 includes cities, community service districts and water districts, but does not but does not include smaller public water systems. Figure 3.6 includes "municipal areas" but does not clearly define these areas as "public water system" service areas. All smaller public water systems including Dolan Road Mutual Water Company (CA2700548), Green Acres Water Association (CA2701647), Hidden Valley WA (2700594), Elkhorn Rd WS #4 CA 2700579), and Strawberry Road Water System #06 (CA2700766) should be clearly listed and labeled maps in this chapter. All public water systems and state/local small water systems are important to identify and include in this chapter because all are reliant on groundwater, many are highly vulnerable to water level and water quality changes, and all will be impacted by the way groundwater is managed in the basin.

- **Move Section 3.8.5 Title 22 Drinking Water Program from its current location under "Groundwater Regulatory Program" to a new section - which could be titled "Drinking Water Regulatory Programs."** This could eliminate redundancy in current Section 3.6.3.2 which describes "municipal and community water purveyors" and the section on Title 22 Drinking Water Program which is more extensive and discusses public water systems. The "Drinking Water Regulatory Programs" section could detail the differences between water systems overseen by Monterey County Environmental Health which include state and local small water systems (e.g. those that serve 2-14 connections) and public water systems serving 15-199 connections. It could also discuss requirements for all public water systems serving more than 15 connections.

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[9] https://www.co.monterey.ca.us/government/departments-a-h/health/environmental-health/drinking-water-protection/state-and-local.

[10] All of the drinking water wells and small water systems mentioned in Chapter 7, page 7-24 of the 180/400-Foot Aquifer Draft GSP (October 1, 2019) should be included in a map and have an associated list with key information. The GSP mentions: "Small water system wells, regulated by Monterey County Department of Public Health include a total of 136 wells in the current network." All 136 water systems should be clearly mapped, labelled, and named.

- **List domestic water use under the Water Use Section (Section 3.4.2).**This section indicates that, "Domestic use outside of census-designated places is not considered urban use." Even if MCWRA does not report rural residential use, it is an important beneficial use and should be listed as a "water use sector."
- **Revise Chapter 3 (Section 3.6.3.1) to recognize and incorporate MCWRA research and recommendations related to seawater intrusion.** In addition to the MCWRA Seawater Intrusion Monitoring, it is vital that the GSP acknowledge the large body of MCWRA research and recommendations compiled over decades related to sea water intrusion.[11] At least the following reports should be summarized and referenced in Chapter 3:
    - Recommendations To Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin (October 2017)
    - State of the Salinas River Groundwater Basin Report (January 2015)
- **Revise Section 3.6.5 to include Ag Order 3.0 reporting data as well as the forthcoming Ag Order 4.0 data.** This data should be included in the final draft of the plan as it is readily and publically available. It important to include to understand the current state of the basin. We again recommend that section be revised to use the same terminology as other sections for drinking water supply systems for consistency and completeness.
- **Include date and complete reference (including website link) for the Integrated Regional Water Management Plan referenced in Section 3.7.2.**
- **Revise Section 3.8.2 on the Agricultural Order for the following:**
    - The Ag Order 4.0 will not longer be available in early 2020, it is recommended that this is corrected to "2020."
    - The Ag Order 4.0 is for the "entire central coast region, including the Salinas Valley Groundwater Basin area." We recommend adding this text.
    - If the GSA uses Ag Order data as part of the monitoring network, it is critical that this GSP includes a more in depth information about the data (historic and most recent data), how it is collected, reporting requirements, enforcement procedure, and a plan to ensure that all wells are monitored and that reporting is required and enforced.
- **Define "replacement well" and also define and include map of "area of impact" and in Section 3.8.6 on the County Moratorium on Accepting and Processing New Well Permits.** Because the GSA will likely need to build upon or extend the ordinance, a map of the area of impact should also be included.

GSP Chapter 4: Hydrogeologic Conceptual Model

- **Revise Section 4.6 on Water Quality to acknowledge that "natural groundwater quality in the Subbasin" can be influenced by pumping and the way groundwater is managed.**[12] In particular,

[11] See Monterey County Water Resources Agency, Hyrdrogeologic Reports. Accessed November 21, 2019. https://www.co.monterey.ca.us/government/government-links/water-resources-agency/documents/hydrogeologic-reports#wra

[12] Stanford, 2019. A Guide to Water Quality Requirements Under the Sustainable Groundwater Management Act.

Community Water Center, 2019. Guide to Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act.
https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/G

contaminants like arsenic, uranium, and chromium (including hexavalent chromium) are more likely to be released under certain geochemical conditions influenced by pumping rates, geological materials, and water level fluctuations.

- **Include the spatial extent of arsenic and hexavalent chromium in all drinking water supply wells in the subbasin.** Data sources should include those described previously in this comment letter (public water system data, state/local small water system data) as well as data available on GAMA from the Central Coast Regional Water Quality Control Board's private well testing program.

GSP Chapter 5: Groundwater Conditions

- **Include the MCWRA management area data layer on all maps that use MCWRA data in order to make the data gaps transparent when presenting data on groundwater conditions.** To make the data gap very clear to the reader, the data layer in Figure 5-21 MCWRA Management Area should be included in all figures that use MCWRA data. For example, Figure 5-1 CASGEM Well Locations should include this as a data layer to illustrate the significant data gap in the north part of 180/400 Foot Aquifer Subbasin where the highest concentrations of domestic wells are located. Same with Figures 5-23 and 5-24 that illustrate the extent of sea water intrusion.
- **Clearly identify data gaps on existing maps and in Section 5.1 on Groundwater Elevations.** Figure 5-21 MCWRA Management Area is a very helpful illustration that the MCWRA areas do not include the northern part of the 180/400 foot aquifer as well as the vast majority of the Langley basin.
- **Revise Section 5.1.2 to present all currently available monitoring data and hydrographs of deep aquifer wells from CASGEM, from public water system water level monitoring (e.g. from Castroville CSD and others), and from other sources.** CASGEM data and also reports from groundwater users themselves demonstrate that groundwater levels are dropping in the deep aquifer. In addition, the GSA should include a report in this section of all data that has been submitted to the GSA and MCWRA as required by Monterey County Ordinance 5302. On page 7-12 of the GSP, it states: "This ordinance, adopted in 2018, limits the number of wells that can be drilled into the Deep Aquifers and requires that all new wells in the Deep Aquifers meter groundwater extractions, monitor groundwater levels and quality, and submit all data to MCWRA and SVBGSA." Clarify if wells in the deep aquifer that replace former wells in the 400 foot aquifer are also required to submit all their data, and include such data if and when available.

Sea Water Intrusion

- **Revise Figures 5-23 and 5-24 to add MRCWA management area boundaries and specific monitoring points to better understand data gaps and uncertainties in sea water intrusion**

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uide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858

Community Water Center and Stanford University, 2019. Factsheet "Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium" for more information.https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896

contours. Data from vulnerable drinking water supply wells, including Castroville CSD and Moss Landing Harbor Water System, located both in and around the sea water intrusion contours should also be included in this section as there is a margin of error in the contour data.

- **Revise the first paragraph on page 5-40 to discuss the limitations of Ordinance 5302 and what the GSA plans to do to address these limitations.** This is the same comment we provided on Section 3.8.6 —it is our understanding that this ordinance is limited in the geographic scope of the "area of impact." This ordinance is also limited in that there are many new wells being permitted in the deep aquifer because of an allowance for wells in the 400 foot aquifer to be replaced by wells in the deep aquifer when the 400 ft aquifer wells become unusable (due to sea water intrusion). This is of utmost importance as there are reports of several new wells in the deep aquifer being permitted and drilled around Castroville CSD right now.
- **Revise paragraph on page 5-40, to add date and complete reference including website for the State of the Salinas River Groundwater Basin report.** All stakeholders will need to understand this important report, its recommendations, limitations, and analysis in order to make informed decisions about sea water intrusion abatement measures.

Groundwater Quality Distribution and Trends

- **Revise Section 5.5 of the GSP to include a clear and transparent assessment of the spatial and temporal water quality trends in the subbasin with respect to the drinking water beneficial use (23 CCR § 354.16(d))**. This section should include water quality data (both in map and tabular form) for all constituents with minimum thresholds listed in Tables 8-6 through 8-9 for all public drinking water wells (including those listed in Appendix 7E), state and local small water system wells, and private domestic wells.[13] It is also important to highlight data gaps in drinking water data here and in Chapter 7.
- **Clearly state in the introduction to this section that the amount and location of pumping can impact groundwater quality distribution and trends.**
- **Revise Section 5.5.3, paragraphs 2 and 3, to clarify in the text and on the figure itself the years of the nitrate data and also the well type (on farm domestic well, irrigation well, all wells) of information presented in Figures 5-32 and 5-33.** Because domestic wells often rely on more shallow aquifers that are susceptible to nitrate and other contamination, it is recommended that nitrate maps of domestic wells are separated out from maps of irrigation wells (as you mention further down in this section when discussing the Regional Water Board staff report).
- **Revise Section 5.5.3, paragraphs 4 to 6, to add the complete reference for the May 2018 staff report to the Regional Water Quality Control Board data on nitrate contamination and clarify that the tables referenced in the GSP are located in the staff report not in the GSP.**[14] We also recommend adding information and maps from this staff report to the GSP on other

[13] The review of water quality data in the groundwater conditions section of the draft GSP (Section 5.5) is very limited and focused almost entirely on nitrate. The draft GSP identifies numerous constituents that have been detected in groundwater above drinking water standards, but, with the exception of nitrate, does not present this data spatially or even in tabular format. Even though the draft GSP sets water MTs for these constituents (Table 8-6 through 8-9), the supporting data are not presented, and no analyses of spatial or temporal water quality trends are presented.

[14] Central Coast Regional Water Quality Control Board (CCRWQCB), May 2018. Central Coast Water Board staff report on groundwater quality conditions in Central Coast Groundwater basins: https://www.waterboards.ca.gov/centralcoast/board_info/agendas/2018/may/item8/item8_stfrpt.pdf

contaminants present in the 180/400-Foot Aquifer Subbasin in addition to nitrate including salts, industrial chemicals, arsenic, and pesticides.

- **Consult Guide to Water Quality Requirements Under the Sustainable Groundwater Management Act (2019), published by Stanford University, for a comprehensive overview of data sources on water quality available for use in GSPs in California.**[15] It is important that this GSP includes all publicly available data on groundwater conditions so that groundwater can be managed in a way that improves water quality or, in the least, does not cause further degradation.

GSP Chapter 6: Water Budgets

The GSP water budget requirements are intended to quantify the water budget in sufficient detail in order to build local understanding of how historical changes have affected the six sustainability indicators in the basin. Ultimately, this information is intended to be used to predict how these same variables may affect or guide future management actions[16]. Another important reason for providing adequate water budget information is to demonstrate that the GSP adheres to all SGMA and GSP regulation requirements and can demonstrate the ability to achieve the sustainability goal within 20 years, and maintain sustainability over the 50 year planning and implementation horizon. The calculations of sustainable yield and the water budget in this chapter *greatly overestimate the actual sustainable yield of this subbasin*, and this chapter is also missing key information on data and assumptions used in the development of these sections. We recommend the following changes:

- **Better articulate and quantify the needs of drinking water users within the GSA and address key missing information and assumptions about drinking water users.**
    - This GSP chapter should include more information about all drinking water users in the subbasin (e.g. all small and large public water systems, all state and local small water systems and all private domestic wells) including number of connections, population served, current, historical and projected demands by each system/user.
    - Revise Figure 6-7 to clarify whether the "municipal pumping" and "rural/domestic" include all drinking water users (e.g. all small and large public water systems, all state and local small water systems and all private domestic wells).
    - Revise Table 6-30 Projected Annual Groundwater Pumping by Water Use Sector to include all drinking water users in this model. Currently, rural domestic is not simulated in model and is considered minimal. All drinking water users should be considered including all small and large public water systems, all state and local small water systems and all private domestic wells.

Sustainable Yield

- **Revise calculations of sustainable yield in Section 6.8.5 to include and avoid all six undesirable results as enumerated in the Sustainable Groundwater Management Act (SGMA).** We reiterate and reaffirm our July 11, 2019 comment letter on Draft GSP Chapter 6 which is included as an attachment to this comment letter. The definition of Sustainable Yield in this draft GSP has not

[15] Moran, T. and Belin, A. (2019). A guide to Water Quality Requirements Under the Sustainable Groundwater management Act. Stanford Digital Repository. Available at: https://purl.stanford.edu/dw122nb4780
[16] DWR, 2016. Best Management Practices for the Sustainable Management of Groundwater, Modeling (BMP #5), December 2016.

changed since the draft GSP we commented on in July 2019. Sustainable yield is still defined in the 180/400-Foot Aquifer Subbasin GSP (October 1, 2019, page 6-32) as "an estimate of the quantity of groundwater that can be pumped on a long-term average annual basis without causing a net decrease in storage." Establishing a sustainable yield that adequately takes into consideration all undesirable results is a foundational step for developing appropriate sustainable management criteria and for accurately planning for the management actions and projects necessary to meet sustainable management criteria. We repeat our request that this GSP include a calculation of sustainable yield calculation that informs the public of the actual net amount of water that can be extracted from the subbasin while avoiding all six undesirable results, including sea water intrusion.

- **We strongly urge the GSA in Section 6.10.5 to justify the assumption that a proposed seawater intrusion project will result in "zero seawater intrusion," to clearly explain that the sustainable yield calculations and water budget depend on such proposed project, and to detail the level of pumping reductions necessary to prevent damages to public water supplies if the project is not built.**
    - In public meetings, GSA staff have been clear that a sea water intrusion project will be necessary in order to meet the minimum threshold for sea water intrusion. Section 6.10.5 currently states: "It is important to recall that simply reducing pumping to within the sustainable yield is not proof of sustainability, which must be demonstrated by achieving the SMC that are outlined in Chapter 8. While the sustainable yield estimates in Table 6-31 assume zero seawater intrusion, they do not account for temporary pumping reductions that may be necessary to achieve higher groundwater levels that help stop seawater intrusion." This section needs to include more justification for this assumption - what evidence can the GSA provide that there will be zero seawater intrusion if the project is built? In order to meet interim milestones and/or prevent damages to public water supplies prior to the project being built, what level of pumping reductions will be necessary?

Uncertainties in Projected Water Budget Simulations

- **Revise Section 6.11 to discuss the uncertainty around the assumption that a future project (e.g. sea water extraction barrier) will be built and will successfully stop sea water intrusion.**[17] The largest uncertainty in the projected water budget is not the uncertainty described in this section, but rather the uncertainties related to this future project. Overall, the impacts to DACs and drinking water supplies are *certain* and are, in fact, already happening, but the proposed projects to stop sea water intrusion are very *uncertain* in terms of timeline, effectiveness, how they will impact the water budget of the basin (e.g. how much groundwater will they pull from the ocean-side versus how much will be extracted from the inland side), how the gradient of groundwater may be impacted, how climate change will impact project viability, whether this

[17] The draft GSP identifies a seawater intrusion pumping barrier and estimates that operation will require withdrawing up to 30,000 AFY of groundwater, which would then be conveyed to discharge into the Pacific Ocean or to a new or existing desalination plant (Section 9.4.3.7). The draft GSP also states that an "optional barrier using injection instead of extraction was also considered" and that this option would require injection of approximately 46,000 AFY of water to create a protective mounding effect.

scale of project will be permitted in the coastal zone, what will be the long-term energy demand, what will this project cost to install, maintain, and monitor, and who will pay.

- **Revise Chapter 6 to account for this uncertainty surrounding the extraction barrier, and clearly explain the predicted amount of water that will come from the inland side of the extraction barrier and the uncertainty around that estimate.** There is substantial uncertainty around how much water this project would extract from the subbasin— from the inland side of the extraction barrier and from the ocean side of the extraction barrier. The groundwater gradient is currently moving inland with seawater being pulled from the ocean into the intruded area. The sea water intrusion project will impact the gradient in one of two ways: 1) The gradient will either continue or slow in the same inland direction, or 2) the gradient will reverse and water will be pulled by the extraction barrier toward the coast (at least for some distance). Either way, the project needs to be accounted for in the water budget. If the gradient continues inland, then the sea water intrusion MT will not be met unless pumping is restricted. If the gradient reverses, then the projected water budget will need to include the amount of water being extracted by the subbasin by the sea water intrusion project. In both cases, the project ***will*** impact the MTs and water budget.
- **Include another calculation of sustainable yield that assumes that the seawater extraction barrier is not built because this project itself is highly uncertain**. Sustainability of this subbasin should not hinge on unproven technology. To take into account uncertainty around this project, the GSA should include evidence that sea water intrusion projects of this scale in similar groundwater basins have been successful. The GSA should include actual operation and maintenance costs, including energy demand, of installed projects of similar scale to know how much would need to be charged in the water charges framework to cover these costs. While some numbers are presented in Chapter 9, it is not clear how these numbers were calculated (no mention of comparable projects that are already in operation) and how funding for this project relates to the water charges framework.

GSP Chapter 7: Monitoring Network

Robust monitoring networks are critical to ensuring that the GSP is on track to meet sustainability goals. GSAs undertaking recharge, significant changes in pumping volume or location, conjunctive management or other forms of active management as part of GSP implementation, must consider the interests of beneficial users, including domestic well owners and S/DACs. As currently developed, the monitoring network does not adequately monitor how groundwater management actions related to groundwater levels could impact vulnerable communities. The following public comments were submitted by public comment letter or provided during public workshops hosted by Community Water Center and San Jerardo Cooperative:

> "There is absolutely no monitoring well data from the hill areas in the northern part of the 180/400 ft. aquifer. The monitoring wells are located on the flatland areas only. SVBGSA has NO IDEA what the condition of wells are in the hill areas where thousands of rural residents live. They do not know how many wells are already at risk in terms of groundwater level and how the proposed projects and

continued high pumping rates could exacerbate those low levels." - public comment letter
"We don't know what salt water intrusion is at the Elkhorn Slough." - Public Workshop comment
"How can individuals know what the level the aquifer is where they are? - Public Workshop comment

We recommend the following changes:

- **Provide the locations and depths of all drinking water supply wells in the subbasin.** Use the best available information and present this information on maps along with the proposed SGMA-compliance monitoring network so that the public can evaluate how well the monitoring network addresses these key beneficial users.
- **Clearly describe in Section 7.1.2 how the GSA will establish a representative monitoring network in areas of the basin with vulnerable drinking water supplies and DACs with limited and insufficient data (as previously discussed in our comments on Chapter 5).** As has been acknowledged in many public meetings, one of the biggest challenges to the Salinas Valley GSP implementation is the confidentiality of monitoring data. It is required by SGMA that the monitoring networks be representative.
- **Revise Section 7.1.3 to include management areas and more frequent monitoring around and near vulnerable drinking water systems and private domestic well clusters**.
- **Conduct an in-depth study of groundwater levels, sea water intrusion, and water quality impacts in the northern most "general data gap area" in the subbasin, due to the variable topography and high concentration of private domestic wells (See Figures 7-4 and 7-5 and Section 7.2.4).** We have included CWC Figure 2 (attached to this comment letter) to illustrate the representative monitoring wells proposed for water levels as well as the locations of domestic wells, public supply wells, DACs and public water systems in the subbasin, and the seawater intrusion measurable objectives and minimum thresholds. This map suggests that the data gap identified in the GSP is for a much larger and highly variable geographic area. In order to better understand the scope of this data gap, the GSA should engage local residents and small water systems in this area to support additional monitoring of groundwater levels, sea water intrusion, and water quality in order to best identify representative monitoring points in this geographic area to be included in the GSP monitoring network. We understand that specific data gaps have been recognized in Figure 7-4, Figure 7-5 and Figure 7-6, and that these data gaps will be addressed in the future by adding an existing well in each area to the monitoring network. This is likely insufficient to represent groundwater conditions in some part of the subbasin.
- **Use the same terminology throughout the report and change the first bullet of this section and first paragraph of Section 7.3 to say "Public Water Systems" instead of "municipal groundwater users and small water systems."** It is helpful that you included the definition of a "public water system" and also the source of the information. This is important because the state does not collect this information, nor (to the best of our knowledge) does the county, *for state and local small water systems*. Estimates of total water withdrawn by state and local small water systems is also important to include in this section.
- **Require flowmeter calibration to ensure consistent and fair monitoring among all agricultural groundwater users (Section 7.3.1).** We agree with the data gaps mentioned in Section 7.3.2 with respect to drinking water users and recommend this data gap is filled as soon as possible.

- **Revise Section 7.4 to include more frequent monitoring around and near drinking water systems and private domestic well clusters that are already or that are likely to be impacted by sea water intrusion.** Figures 7-7 and 7-8 should include a data layer that includes drinking water wells (or service areas for state and local small water systems) in order to better determine whether the proposed monitoring network is sufficient to protect these beneficial uses. We have included CWC Figure 1 and CWC Figure 2 which illustrate how different data layers in this report can be brought together to better connect specific drinking water sources with the monitoring network and minimum thresholds.
- **Acknowledge and include the data gap of no seawater intrusion monitoring points in the northern part of the sub-basin and mention that this area is outside of the MCWRA management area (Section 7.4.2).** This includes the area near Elkhorn Slough which has experienced loss of agricultural wells due to sea water intrusion (as reported by local residents) and also the area further inland.

Section 7.5 Water Quality Monitoring Network

- **Revise Section 7.5 to acknowledge that drinking water contaminants such as arsenic, 123-trichloropropane, hexavalent chromium, and nitrate have been found in public supply wells in the 180/400 foot aquifer subbasin.**
- **Determine if there are confined or semi-confined aquifers that have water quality problems that require special monitoring at specific depth intervals.** We know that the underground strata in the GSA is non-homogeneous and we know contaminates such as nitrate vary in concentration by depth. We also know that hexavalent chromium has been found in many wells in the northern part of the subbasin (and a few other locations throughout) and that arsenic is present in some deeper wells. The SVB GSA groundwater quality monitoring network must recognize that well depth (and depth of perforations) is an important parameter for accuracy of level and location of contamination.
- **Clearly identify on both a map and in tabular form each of the wells to be used as representative monitoring sites for water quality as required under 23 CCR §354.34(h).** The GSP must include "The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used." Without this information, the public cannot review and assess the adequacy of the proposed GSP to monitor impacts to beneficial users of groundwater, in particular those reliant on domestic wells for drinking water purposes.
- **Include all public water system wells in the monitoring network i**n order to monitor trends in drinking water quality**.** Change or clarify the language in this section that says, "Wells were selected that had at least one of the constituents of concern reported from 2015 or more recently, and totaled 51 wells (Burton and Wright, 2018)." It is unclear if the GSP means to include only public supply wells where contamination has already been detected. Either way, please include all public supply wells in the monitoring network as those without contamination will also need to be monitored and protected from future contamination.
- **Revise this section to include all state small water system and local small water system service areas (by APN) that are publically available from Monterey County Environmental Health Bureau (a division of Monterey County Health Department).** It is critical that this publically available data is included in the monitoring network as it fills, in part, a significant data gap related to water quality in the more shallow aquifers. This section of the GSP should be revised

to include a map of state and local small water systems and include them as representative monitoring points. Clarify the language in this paragraph to make it clear that all 136 wells regulated by Monterey County Department of Environmental Health will be included in the GSP monitoring network. We believe that this is the intent of this paragraph, of this GSP (based on Table 8-4: Summary of Constituents Monitored at Each Well Network and Table 8-5: Groundwater Quality Minimum Thresholds), and of the GSA based on all public meetings and input, but as written, it is not clear whether these systems are RMWs and part of the GSP network. If it is not feasible to include these systems in this draft GSP, these must be clearly listed this as a data gap that will be filled. "Small public water systems" regulated by Monterey County include public water systems that serve 15-199 connections and state and local small water systems that serve 2-14 connections. Because the 15-199 connection systems must meet all statewide requirements for public water systems (e.g. extensive water quality monitoring, groundwater usage reporting), it is recommended to distinguish these systems from state and local small water systems that have different requirements.

- **Expand GSP monitoring network to include reliable monitoring of wells that are representative of the shallow aquifer. Do not rely solely rely on ILRP domestic well data.** Similar to CASGEM, the groundwater quality monitoring network could include monitoring points on private property including ILRP domestic wells, but it should not be restricted to ILRP sites only. While onfarm domestic wells monitored through the ILRP provide a potentially good source of water quality information, additional representative monitoring wells in the shallow aquifer are important to include for several reasons: (1) The ILRP network only includes private domestic wells located on agricultural irrigated lands. While this is the primary land use in the subbasin, there are private domestic wells in areas with different primary land uses (e.g. rural). (2) There are other, more robust networks established by USGS, GAMA, and Monterey County that could be drawn on and included to make the groundwater quality monitoring network more comprehensive and representative of conditions in the shallow aquifer, and (3) Ag Order 4.0 will likely not be adopted until the end of 2020 or early 2021, which means the first year of monitoring data will not be available until 2022. Furthermore, the GSA has no authority to determine the robustness or enforcement of monitoring in the Ag Order 4.0 network.
- **Representative Water Quality Monitoring Wells for the shallow aquifer should be established in this GSP based on all currently available data sources with direct agreements with landowners or public entities established.** If the GSA plans to use Ag Order data as part of the monitoring network, it is critical that this GSP includes and discloses more in depth information about Ag Order 3.0 data (historic and most recent data), how it is collected, reporting requirements, gaps in reporting, and enforcement procedure. The GSA must also include a plan to ensure that all representative monitoring sites have reliable monitoring schedules and that those monitoring schedules are enforced in Ag Order 4.0.
- **Develop long-term access agreements for Representative Monitoring Wells (RMWs) that use private wells.** Collecting data from private wells is not a reliable approach due to access challenges, lack of well construction information, and unreliable accounting of pumping or non-pumping measurements. The GSP should specifically identify the RMW owners and operators, include signed long-term access agreements, and identify a plan to obtain adequate monitoring data, if for any reason the well owners decide to not grant access to the wells or provide associated data to the SVB GSA. It also appears the SVB GSA plans to rely on data collected by growers through the Ag Order. In our experience, not all growers are consistent with their water quality and other reporting, despite the regulatory requirements in place. In order to

maintain consistency for future sustainability analyses, the SVB GSA should also consider conducting its own water quality analysis of wells and establish access agreements to water quality RMWs.

- **Distinguish between on farm domestic wells and irrigation wells in Figure 7-10 and in the text.** We previously made this request during public comment at a GSA meeting in April 2019 and also with a written request on April 27, 2019. All Ag Order 3.0 data - including monitoring data by well type - is public and available upon request from the Central Coast Regional Water Quality Control Board.
- **Include well construction information for all Representative Monitoring Wells (RMWs) included in the GSP.** We recognize that this has been listed as a data gap, and also that some well construction information is already available.
- **Clarify that groundwater quality monitoring network will include domestic wells and state and local small water systems.** Chapter 7 should be updated to be consistent with the rest of the GSP that there will be representative monitoring of the shallow aquifer. We specifically recommend updating language in this chapter around data gaps, domestic wells, and state and local small water systems to be more specific and consistent in this chapter and throughout the GSP, including these particular sections:
    - "Small public water systems wells, regulated by Monterey County Department of Public Health, include a total of 136 wells in the current network. The limitation of this dataset is that the well location coordinates and construction information are currently missing; this is a data gap. SVBGSA work with the County to assess if the data gap can be filled and if additional wells from this network are appropriate to be added to the public water supply wells network for water quality monitoring."
    - "The SVBGSA will use the data developed under this monitoring program to determine if domestic supply wells have constituents of concern above drinking water limits… The SVBGSA will identify a select number of ILRP wells as representative sites after Ag Order 4.0 is issued; not all wells sampled under Ag Oder 4.0 will be included in the GSP's ***agricultural*** water quality monitoring network." Please clarify as described in Chapter 8 that onfarm domestic wells will also be part of the monitoring network.
- **Clarify how the GSA plans to align groundwater monitoring efforts and the sustainable management criteria with any emerging contaminants of concern and new MCLs.**

GSP Chapter 8: Sustainable Management Criteria

At the community GSP workshops, community members shared questions, concerns and recommendations regarding minimum thresholds and groundwater management. The following are community comments[18] that relate to the sustainable management criteria of the 180/400 Foot Aquifer Subbasin GSP and Salinas Valley Integrated Sustainability Plan that the SVB GSA can consider to improve the sustainable management criteria chapter of the GSP:

Question: "Cómo van a ayudar a pozos privados si el pozo se seca a causa de umbral mínimo?"

[18] Comments in red were received at the Salinas Valley GSP at San Jerardo in July 2019.

How will the GSA help private wells that go dry because of the minimum thresholds?
Question: "Are two minimum thresholds in conflict?"
Concern: "Groundwater levels will cause well failure."
Concern: "No improvement of contaminated wells"
Concern: "Que no vuelva contaminación [a nuestro pozo]." "How to avoid water contamination [in our well] again."
Concern: "Groundwater over pumping in Langley where there is confined aquifer and dry wells."
Concern: "My water system has good groundwater quality and supply - how will SGMA impact long term access."
Recommendation: "Consider how to improve groundwater quality for wells above MCL."

During a detailed review of this complete GSP, CWC identified several data gaps and potential significant impacts to public water systems and domestic wells. The current GSP does not adequately consider the groundwater impacts that may affect the supply and beneficial uses of groundwater as required by GSP Regulations Chapter 354.16. As currently written, the GSP is insufficient and is at risk of being deemed inadequate by DWR. The following are concerns that need to be addressed:

- A significant portion of the drinking water supply in the subbasin is at imminent risk of seawater intrusion impacts if seawater intrusion is not halted, including: 1) a high concentration of domestic well users located east of Moss Landing and north of Castroville, 2) domestic well users in and around the DAC of Boranda, 3) public supply wells located near Castroville (a DAC), and 4) public supply wells located near Salinas (which includes DACs).
- Groundwater Level MTs will not halt seawater intrusion and are inconsistent with the seawater intrusion MT, thus drinking water supplies for DACs and other vulnerable populations are not adequately protected (and depend on future projects that are uncertain).
- The GSP does not include the quantification of demand reduction necessary to mitigate overdart and achieve all MTs and undesirable results in this chapter as required by SGMA regulations 354.44.
- Significant data gaps exist in the monitoring network for the shallow aquifer, upon which many small water systems and domestic wells depend. The GSP needs to include these systems in the monitoring network and/or clearly list the data gaps in this GSP.

We recommend the following changes:

- **Undertake a drinking water well impact analysis that adequately quantifies and captures well impacts at the minimum thresholds, measurable objectives, and proposed undesirable results.** Include this analysis during the annual reporting process. We have included CWC Figure 3A and CWCFigure 3B as attachments to this comment letter to illustrate potential changes to water levels at proposed MTs and MOs. This type of analysis should be expanded to include:

  - Locations of potentially impacted wells overlayed on a map so the public can better assess well impacts specific to DACs, small water systems, or other beneficial users of water
  - Quantify the number of potentially impacted wells of each well type (irrigation, domestic, state/local small water system, public water system) for water quality, water levels, and sea water intrusion MTs
  - Quantify the costs associated with impacted wells including desalinization/treatment, lowering pumps, well replacement and increased pumping costs associated with the increased lift at the projected water levels
- **Clarify the process for evaluating minimum threshold exceedance and the potential actions to address exceedance.** This clarification should describe the evaluation process, potential actions taken, and the funding to implement actions. Without an adequate well mitigation plan in place, impacts to wells are significant and unreasonable.
- **Develop and include a plan that outlines steps that will be taken is a drinking water well goes dry, becomes contaminated, or becomes unusable due to sea water intrusion (chloride or TDS levels) as a result of the SVB GSA's management actions and projects.** More detailed recommendations of a drinking water well mitigation program is included in the Projects and Management Actions Section.
- **Analyze how groundwater gradients will influence all MTs and all six undesirables results with and without the proposed seawater extraction barrier.** The importance of understanding groundwater gradients with and without the proposed seawater extraction barrier is described in more detail in our Chapter 6 comments of this comment letter and our July 2019 Comment letter submitted previously (*CWC Attachment 5*). An analysis of groundwater gradients is essential to achieve sustainability in the subbasin.

Groundwater Levels

- **Develop a protective minimum threshold near vulnerable communities, including domestic wells, to avoid localized impacts and ensure the protection of these important water sources.** Near small community water systems and domestic well users, SVB GSA should reconsider the approach of setting MTs as the current proposal may leave key beneficial users in the subbasin, specifically domestic well users and S/DACs vulnerable to significant impacts. It is important to protect vulnerable communities access to a reliable source of water, thus minimum thresholds for groundwater levels should be set at a level above the screen of the shallowest domestic well. If SVB GSA decides to define and reach its sustainability criteria in a way that allows for the dewatering or seawater intrusion of drinking water wells, it must provide a robust drinking water protection program to prevent impacts to drinking water users and mitigate drinking water impacts that occur. Recommendations for this type of program are included in the Management Actions and Projects section of this comment letter.

Sea Water Intrusion

- **Clearly identify the data gaps in sea water intrusion data for the northern part of the subbasin, explain that the GSA plans to fill these data gaps in the monitoring network, and describe plan and timeline to update the seawater intrusion MTs when new data becomes available.**

Specifically, Figure 8-6 and Figure 8-7 showing MTs contours for seawater intrusion should include MCWRA management area boundaries and make data gaps transparent to the reader.

- **Include a map of vulnerable drinking water supplies, monitoring network locations (with current TDS and chloride levels), and the seawater MTs to ensure that these beneficial uses are adequately monitored and protected.** This figure could be placed in Section 8.8.2.4 on "Effects on Beneficial Users and Land Uses."

Groundwater Quality

We are pleased that the draft 180/400 Foot Aquifer Subbasin GSP establishes MTs/MOs based on maximum contaminant levels (MCLs) for contaminants of concern for drinking water supply systems, and that this chapter indicates that state and local small water systems and private domestic wells will be added to the monitoring network with these same MTs/MOs. There are however a few areas in regards to groundwater quality sustainable management criteria that are not clear and could cause significant impacts to drinking water users if not adequately addressed. In order to avoid these challenges, we recommend the following changes:

- **If a contaminant is already above the MCL, this GSP should set a minimum threshold to prevent further degradation or aim to improve groundwater quality conditions where possible.** Increased contamination levels can require water systems to utilize more expensive treatment methods and/or to purchase additional alternative supplies as blending may become more difficult or impossible. Communities reliant on domestic wells who are aware of contamination in their water and use a point of use/point of entry (POU/POE) treatment systems may no longer be able to use their devices if contaminate levels rise too high. Higher contaminant levels can also result in higher costs of waste disposal from certain types of treatment systems. Increased contamination levels result in unreasonable impacts to access to safe and affordable water and are, thus, inconsistent with SGMA and the Human Right to Water.
    - Consider developing management areas to protect areas where drinking water wells have water quality that is currently below the MCLs.
- **For monitoring network wells with contamination less than 75% of the MCL for all contaminants, the GSP should set minimum threshold exceedance action triggers of 75% of the MCLs.** The GSP should include an action trigger at 75% of the MCL so that groundwater can be managed in that area to prevent a minimum threshold exceedance at a representative monitoring well. If the GSA waits until the minimum threshold is exceeded, it may be too late or difficult for actions to be effective. Actions to prevent minimum threshold exceedances should also be clearly explained in this chapter including a description of what action will be taken, what type of evaluation will be used, under what time period action will take place, and how this action will be funded.
- **Clearly identify and describe past and present levels of contamination and salinity at each representative monitoring site (RMS) and attribute specific numeric values for MTs/MOs at each RMS for each contaminant of concern.** Quantitative values need to be established for MTs/MOs for each applicable sustainability indicator at each RMS as required by 23 CCR §354.28 and 23 CCR §354.30. The GSP should include a map and tables that include each individual RMS along with water quality data for each RMS (this data is currently summarized in Table 8-6, Table

8-7, and Table 8-8). This information should be presented clearly so that both the public and DWR can evaluate how the proposed monitoring network and sustainability management criteria (SMCs) relate to their own drinking water well or water supply system.

- **Include more current maps of existing nitrate and other contamination in the 180/400 Foot Aquifer Subbasin and describe potential impacts to drinking water users.** As required by 23 CCR § 354.16, each GSP needs to provide a description of "groundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and a map of the location of known groundwater contamination sites an plumes." While the maps of nitrate contamination in Chapter 5 present useful information to start to identify nitrate hotspots and trends in the subbasin, these maps do not provide an accurate understanding of current conditions affecting shallow, domestic wells and deeper public supply wells. GSP Figure 5-33 Nitrate Concentrations, 1950-2007 (from MCWRA), does not present current data and it is also unclear what depth of aquifer or well type (irrigation or domestic) that this data represents. GSP Figure 5-32 presents data from the Central Coast Groundwater Coalition includes wells with "multiple sample dates from 2000 to 2014, the maximum nitrate concentrations were used for each well. (page 5, LSCE 2015)[19] - while this map is helpful in identifying potential hot spots for nitrate contamination, it does not provide a clear representation of current conditions, nor are well types or depths distinguished, making it difficult to determine the extent and impact of current contamination. Both the Central Coast Regional Water Quality Control Board and the USGS GAMA groundwater quality assessment and trend analysis would be good additions to better understanding trends and drinking water supply threats in the subbasin, and could also help contribute to a representative monitoring network.
- **Include hexavalent chromium as a contaminant of concern and plan to add emerging contaminants to monitoring network.** While there is currently not a Maximum Contaminant Level for hexavalent chromium, there is still a Public Health Goal and public health threat posed by this contaminant in drinking water. The State is required to adopt an MCL for chromium-6 again and is in the process of updating the method used in the cost analysis. In addition to including hexavalent chromium, the draft GSP would benefit from an explanation of how the plan will be updated to align groundwater monitoring efforts and the sustainable management criteria with any emerging contaminants in the basin and any future new MCLs.
- **Include an analysis of the relationship between changes in groundwater levels and groundwater quality concentrations.** Section 8.9.2.5 of the draft GSP mentions that, "a change in groundwater levels may cause a change in groundwater flow direction which in turn could cause poor water quality to migrate into areas of good water quality." The text should also acknowledge that groundwater pumping can not only cause the movement of contaminant plumes, but can also cause the release of naturally occurring contaminants such as arsenic and chromium, and that pumping from deeper portions of the aquifer and then irrigating can bring up contaminants found in deeper portions of the aquifer and cause them to impact shallow well users. In order to clearly evaluate the relationship between changes in groundwater levels and groundwater quality, SVB GSA should undertake an analysis of the change in water quality

[19] http://www.centralcoastgc.org/wp-content/uploads/2015/08/Northern-Report-and-Figures.pdf

constituent concentrations relative to change in water levels[20], particularly over drought periods, to evaluate the potential relationship between water quality and groundwater management activities[21].

GSP Chapter 9: Projects and Management Actions

The following are community comments that relate to the projects and management actions of the 180/400 Foot Aquifer Subbasin GSP[22] :

Concerns: "No limit on extraction, lack of enforcement, lack of well meters."
Question: "Los rancheros pagan por su uso de agua?" Do the agricultural users pay for their pumping of groundwater?
Recommendations: "Meter every user." "[Require] reduction during drought." "Reducción en riego." Reduce agricultural water usage. "Exigir reducción de todos los usuarios." Require reduction of groundwater pumping for all users.
Recommendation: "Create a water district for long-term solution."
Recommendation: "Put in larger community water system (better than individual wells)."
Recommendation: "Help protect drinking water. Balance need for all beneficial uses."

Community member comments highlight a few key issues. While so many projects are possible and on the horizon, it is important to focus on management actions that can be taken today to move toward

[20] See P.A.M. Bachand et. al. Technical Report: Modeling Nitrate Leaching Risk from Specialty Crop Fields During On-Farm Managed Floodwater Recharge in the Kings Groundwater Basin and the Potential for its Management https://suscon.org/wp-content/uploads/2018/10/Nitrate_Report_FInal.pdf. See also, Groundwater Recharge Assessment Tool, created by Sustainable Conservation to help groundwater managers make smart decisions in recharging overdrafted basins, including modeling whether a particular recharge project would result in short or long term benefits or harms to water quality, http://www.groundwaterrecharge.org/.

[21] More information about groundwater quality and the relationship between changes in groundwater levels can be found in the following resources:

Stanford, 2019. A Guide to Water Quality Requirements Under the Sustainable Groundwater Management Act. Community Water Center, 2019. Guide to Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act. https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858

Community Water Center and Stanford University, 2019. Factsheet "Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium" for more information.https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896

[22] Community comments were received workshops hosted by CWC and San Jerardo on Drinking Water Protection and Groundwater Planning in the Salinas Valley in July and October 2019.

sustainability. They also highlight the need to look for long-term solution options for vulnerable drinking water users who rely on private wells. **It is not acceptable to wait until 2023 for the water charges framework to start to voluntarily incentivize efficiency and conservation.Well meters, meter calibration, monitoring requirements, and water charges should be implemented immediately to incentivize efficiency and achieve the goals of SGMA. This should happen at the same time that projects and the water charges framework are being developed.**

We recommend the following changes to strengthen this section:

- **Revise Chapter 9 to clarify how the proposed projects and management actions will achieve sustainability by 2040. The GSP should describe the decision-making process and key milestones that will be used to select projects and management actions.** The descriptions of the projects are helpful, but it is still not clear how each project will contribute to the cumulative mitigation needed to achieve sustainability by 2040. It will be important to convene the Seawater Intrusion Working Group, but this group within itself it not a "management action" it is a working group to develop "management actions."

- **Quantify demand reductions necessary to meet all minimum thresholds in the short and long-term.** The GSP should more transparently lay out and quantify the deficit that needs to be addressed by projects and management actions, and also quantify and present the degree of continued seawater that will occur before the projects and management actions are implemented. These two steps are necessary in order to inform immediate measures that the GSA needs to take, and/or to mitigate for damages if these actions are not taken.

- **Immediately adopt management actions based on short-term demand reductions necessary to protect vulnerable drinking water supplies and demonstrate progress for interim milestones, including the following:**
    - Clearly articulate past recommendations from MCWRA and other agencies related to sea water intrusion, barriers to adoption of these measures, and specific actions the GSA can take immediately based on this past body of work and what has been learned during GSP development.
    - Require an additional drinking water impact assessment prior to the construction of new wells with high production capacity. This analysis would include an assessment of potential adverse impacts to drinking water supplies, such as the analysis of how the proposed high production well pumping would influence long-term groundwater level fluctuations and the identification of the zone of influence of the pumping well.
    - Create management zones with pumping restrictions in areas with vulnerable drinking water wells.
    - Require monitoring and reporting for all groundwater extraction in the 180/400 Foot Aquifer Subbasin, fill all gaps in existing monitoring including for the deep aquifer
    - Stop all new agricultural wells from being drilled in the deep aquifer. There has been much discussion about the County Ordinance 5302: County Moratorium on Accepting and Processing New Well Permits during public meetings, especially regarding the inadequacy of the provision which allows replacement wells to be drilled into the "deep aquifer." The Castroville CSD general manager has commented during advisory committee meetings regarding the high number of wells going salty in the 400 foot

aquifer and the frenzy of drilling drilling deeper wells by the coast. The GSA needs to immediately address this and other gaps in the ordinance.
  - Require all wells to be metered and charge fees based on the amount of water pumped (to pay for future projects and incentivize voluntary reductions)
  - Incentivize demand reduction (land fallowing, conservation, etc.)

- **SB GSA should conduct a deep aquifer study or provide funding for MCWRA to conduct the unfunded study that they have planned, as described in Section 9.3.6.** It is not acceptable to have such a critical study be left to uncertain funding, which also indicates an uncertain timeline as discussed in this section. "MCWRA plans to complete this study of the Deep Aquifer over the next three years, when funding becomes available. (GSP Page 09-18)." SVB GSA should take ownership of this study as it is a data gap.

- **Register all wells in the subbasin and begin program to install meters and monitor extraction from all wells by the end of 2020.** Revise Section 9.2.1 to clarify that the well registration program *will be implemented* in the first two year of GSP implementation (not that it will be developed in the first two years).

Improve Seawater Intrusion Project and Clarify Funding Source

- **Provide more information about potential projects to address sea water intrusion including costs, benefits, risks, and uncertainty. Discuss specific cases where these types of projects are currently active, include actual monitoring data and O&M costs of installed projects.** The GSP depends on one of these projects in order to address the biggest threat to sustainability. Yet the proposed projects to stop sea water intrusion, as described in this Chapter, are very uncertain in terms of the following: timeline, effectiveness, how they will impact the water budget of the basin (e.g. how much groundwater will they pull from the ocean-side versus how much will be extracted from the inland side), how the gradient of groundwater may be impacted, how climate change will impact project viability, whether this scale of project will be permitted in the coastal zone, what will be the long-term energy demand, what will this project cost to install, maintain, and monitor, and who will pay. To lessen this uncertainty, the GSA should include evidence that sea water intrusion projects of this scale in similar groundwater basins have been successful. The GSA should include actual operation and maintenance costs, including energy demand, of installed systems to know how much would need to be charged in the water charges framework to cover these costs.
- **Amend the water charges framework text (page 9-3) to clarify whether sustainable pumping allowances will pay for seawater intrusion project capital cost of ~100M and annual O&M of ~$10M in the 180/400 Foot Aquifer Subbasin. If a different of funds will be used, clarify in the text.** Explain the apparent contradiction between the Water Charges framework in which the "sum of all sustainable pumping allowances is the sustainable yield of the subbasin" and the calculation of sustainable yield in Chapter 6 which does not include a calculation of pumping restrictions necessary to address seawater intrusion.
- **Clarify what a "total project yield for the Seawater Intrusion Pumping Barrier" refers to in Section 9.4.3.7.6**. If 30,000 AF/year is the amount of water to be extracted from the subbasin, then it should be subtracted from the projected sustainable yield for the basin (as currently defined).

Consider Partnerships for Multi-Benefit Remediation Projects

- **Consider working with local and regional water agencies or the county to implement groundwater quality remediation projects that could improve both quality as well as levels and to ensure groundwater management does not cause further degradation of groundwater quality.** The strategic governance structure of GSAs can uniquely leverage resources, provide local empowerment, centralize information, and help define a regional approach to groundwater quality management unlike any other regional organization. When implemented effectively, GSAs have the potential to be instrumental in reducing levels of contaminants in their regions, thus reducing the cost of providing safe drinking water to residents. GSAs are the regional agency that can best comprehensively monitor and minimize negative impacts of declining groundwater levels and degraded groundwater quality that would directly impact rural domestic well users and S/DACs within their jurisdictions. When potential projects are proposed, SVB GSA should consider how projects could potentially both positively and negatively impact groundwater quality conditions and should take leadership in coordinating regional solutions.

Design Recharge Projects to Protect Drinking Water

- **Develop criteria for recharge projects that prevent unintended impacts to drinking water.** Groundwater recharge projects can have multiple benefits such as increasing groundwater storage and levels, as well as diluting contaminant plumes and improving groundwater quality. However, if not properly designed, recharge projects may mobilize nitrates, pesticides, and fertilizers, as well as naturally occurring contaminants, and can lead to the further degradation of groundwater quality, impacting drinking water wells. Currently, it is unclear if these proposed projects include precautions of groundwater quality degradation or if groundwater quality is included in the monitoring plan of these projects. In order to develop recharge projects that move the subbasin towards sustainability, avoid the further degradation of groundwater, and improve drinking water conditions, we recommend the following considerations for this recharge criteria[23]:

    1. When selecting sites for on-farm recharge projects, GSAs can work with growers who are implementing some or all of the following in order to minimize the mobilization of pesticides and fertilizers:

        - Using best management practices that optimize chemical use so residuals do not enter recharge water;
        - Growing crops that require fewer fertilizers (e.g. legumes);
        - Recharging during winter months (when less/no fertilizer is being used);
        - Minimizing fall applications of fertilizers and pesticides;

[23]Community Water Center. Guide to Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act. https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858

- Not surrounded by dairy operations.

2. When implementing on-farm recharge projects, recharge on the same plot of land annually for a consecutive number of years in order to most effectively flush out and dilute residual contaminants (especially nitrate) left behind from previous applications. Continued flushing will also help reduce bicarbonate, calcium, and organic carbon transport which will limit their impact on the dissolution and release of uranium and/or arsenic.

3. Prior to implementing any recharge project, identify all nearby drinking water wells (both public supply and private wells). Additional monitoring wells that collect groundwater quality samples may need to be installed in key areas to protect public health.

4. Prior to implementing any recharge project, collect data to characterize the upper soil zone and groundwater quality, including the amount of fertilizer applied and any naturally occurring contaminants present in the soil. Monitor and adjust the quality of water being recharged in order to limit the mobilization of naturally occurring contaminants (e.g. monitoring oxygen, pH, electrical conductivity, and nitrate levels).

5. Consider recharging through excavated points, ditches/canals, and other designated recharge basins in order to bypass soil layers with naturally occurring contaminants, pesticides, and/or nitrate.

Add Drinking Water Well Mitigation Program

If SVB GSA defines its sustainability criteria in a way that allows for the dewatering of drinking water wells, increased levels of contamination, or seawater intrusion, it must provide a robust drinking water protection program to prevent impacts to drinking water users and mitigate the drinking water impacts that occur. Based on the draft GSP water budget, rural domestic and small water system demand does not contribute substantially to the overdraft conditions, yet the risks imposed on these drinking water users are overlooked and neglected, creating a disproportionate impact on already vulnerable communities. Without any clear actions regarding establishing a groundwater allocation, addressing reductions in groundwater pumping, or addressing seawater intrusion, drinking water users could face significant impacts, particularly if the region faces another drought.

A GSP which lacks a mitigation program to curtail the effects of projects and management actions as to the safety, quality, affordability, or availability of domestic water, violates both SGMA itself and the Human Right to Water. The Human Right to Water (AB 685) (HR2W) was signed in 2012 and added § 106.3 to the California Water Code, declaring, "the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes."[24] The California legislature has recognized that water used for domestic purposes has priority over all other uses since 1913[25] in Water Code § 106, which declares it, "established policy of this State that the use of water for domestic purposes is the highest use of water

[24] WAT § 106.3 (a).
[25] Senate Floor Analysis, AB 685, 08/23/2012.

and that the next highest use is for irrigation."[26] The passage of the Safe and Affordable Drinking Water Act by Governor Newsom indicates a clear State-level commitment in providing safe and affordable drinking water to California's most vulnerable residents. To ensure compliance with the legislature's long established position, the HR2W requires that agencies, including the Department of Water Resources and the State Water Board, must consider the effects on domestic water users when reviewing and approving GSPs[27]. Therefore, GSPs that cause disproportionate impacts to domestic water use are in violation of the HR2W, SGMA, and Water Code § 106.

A Drinking Water Well Mitigation Program could include a combination of different strategies including: replacing impacted wells with new, deeper wells, connecting domestic well users to a nearby public water system, or providing interim bottled water. Key considerations and recommendations, including examples from existing well mitigation program, will be shared with the SVB GSA separately.

GSP Chapter 10: GSP Implementation

- **Include a schedule for immediate actions that the GSA will take in the first months and year of operation in order to protect drinking water supplies and vulnerable users.** While large scale projects need to be developed, many management actions should be taken to protect groundwater today (see our list in GSP Chapter 9 comments). The intent of designating the 180/400 Foot Aquifer as a "critically overdrafted basin" and to have this subbasin on a shorter timeframe than the other nearby subbasins, was to require action and abatement also on a shorter timeline (to match the impacts already happening).
- **Complete the "Registration/ Install Well Meters / DeMinimum Certification" program development by the end of 2020.** Update Figure 10-1 and describe this program in the written text of this chapter as it is the first item scheduled to be completed for the 180/400 Foot Aquifer Subbasin Plan and will set the stage for all other management actions and projects.
- **Include the implementation schedule for major projects in this implementation chapter** and clarify which aspects of these projects the GSA will move forward with immediately in year 1 and according to schedules in chapter 9, and which aspects of the projects will be delayed will until 2023 according to project schedules in chapter 10 (Figure 10-1).

GSP Chapter 11: Stakeholder Engagement and Community Outreach

Public engagement, when done well, goes far beyond the usual participants to include those members of the community whose voices have traditionally been left out of political and policy debates.[28] It invites citizens to get involved in deliberation, dialogue, and action on public issues that are important to them. More importantly, it helps leaders and decision-makers have a better understanding of the perspectives, opinions, and concerns of citizens and stakeholders, especially the underrepresented ones. Barriers to participation of underrepresented stakeholders in the Salinas Valley Basin and in general include:

[26] This policy is also noted in the Legislative Counsel's Digest for AB 685.
[27] WAT § 106.3 (b)
[28] DWR. (2018) Stakeholder Communication and Engagement.

(1) Accessibility - information is accessible, in a language and with sufficient background so that all present can understand what is presented
(2) Self-efficacy - community member participation makes a difference in the outcome of this plan and groundwater management
(3) Time commitment / logistics - meetings are held in familiar locations, close enough to where community members live or work, and at a time when most are available
(4) Relevance - the meeting and information is important enough and relevant for community members to prioritize

We have appreciated the opportunity to participate in many of the GSA public meetings to discuss this GSP - the planning committee, advisory committee, board of directors meetings, as well as the more recent GSP outreach meetings. We have appreciated that GSA staff have hosted outreach meetings and worked to make these forums accessible, in the evenings, and in locations throughout the Salinas Valley. The outreach meetings hosted as part of the GSA formation, and associated outreach, were particularly well done. We appreciate the opportunity to provide comments on this GSP in its entirety.

In this GSP, the SVB GSA can reaffirm your past community engagement practices and also improve by considering the following recommendations for effective public engagement:

- Consider changing the regularly scheduled board and advisory committee meetings for the afternoon outside of work hours so more community members would be able to attend.
- Provide more information regarding how communication and updates related to GSP implementation will take place and how this will be accomplished after the plan is approved.
- Consider developing a Stakeholder and Outreach Communication Strategy (similar to the one in Appendix 11D) for 2020 to 2025. This strategy could include the following:
    - **Continue to provide translation services at public meetings. Continue to provide bilingual (English and Spanish) information and materials on the website and via email. Consider inserting short notices (notices must include key messages, visuals and information that is relevant to the average water user) in water bills and/or community newsletters.** The Dymally-Alatorre Bilingual Services Act requires that public agencies serving over 10% of non-English speaking constituents provide appropriate translation services[29]. At a minimum, this information should be provided during plan updates, and prior to critical decisions. In particular, the draft GSP released during the formal comment period should include bilingual materials highlighting key summaries of the GSP. Critical decision points can also include the adoption of groundwater fees, or the approval of new groundwater projects or management actions.
    - **Identify community social media (Facebook, Instagram, etc.) groups, pages and websites and post information.** Continue to develop media advisories, press releases and work with local media outlets, such as local radio stations, television stations, and local newspapers to captivate a broader audience that are not being reached via the electronic-based outreach currently used.
    - **Identify, and work with key community leaders / trusted messengers to distribute information and encourage community participation.**

[29] California Government Code Section 7290.

  - **Partner with other educational programs to leverage resources and explore opportunities to educate different generational groups.**
  - **Consider hosting Spanish-only outreach meetings** as it is difficult to realtime translate technical groundwater terms and concepts in a way that is understandable and promotes participation.

- Reinstate the Stakeholder and Outreach Communications committee that helped plan the outreach associated with SVB GSA formation and provide GSA staff support to implement action items from this committee.
- Consider hiring a bilingual Stakeholder and Outreach Communication specialist as part of the SVB GSA staff
- Partner with the Monterey County Health Department to host GSA workshops throughout the Salinas Valley for DAC residents and residents who rely on small water systems and private wells. This stakeholder group is under-represented in the GSA and other public forums.
- Continue to work to make all forums for stakeholder input more inclusive and accessible to all stakeholders.
- Invest GSA staff time and resources to develop a more representative structure within the GSA itself.
  - During GSA formation, limited work was done to engage all DAC residents and small water systems in the nominating group structure. This process could be further developed to move beyond public notification with the goal of having board directors that represent and are accountable to their constituencies. Agricultural representatives have already built this into the structure of their nominating process, but the less organized and under-resourced stakeholders have not.
  - Consider amending the JPA agreement to allow for more balanced representation and power on the board. The GSA includes directors that represent the public, environmental, or small water system/DAC stakeholders that do not hold voting power to impact substantive changes to this GSP including a sense of urgency to act now to address critical overdraft. (Any decision related to imposing fees and/or limitations on well extractions must be approved by a "Super Majority Plus" or "eight of eleven board members, including an affirmative vote by three of the four agricultural representatives.")
- **We request that there be full disclosure to the public regarding the agricultural subbasin working groups, what was discussed at meetings that informed this GSP, when these meetings were held, and why these meetings were not open to the public when they were so influential on all key decisions of this GSP.** The Agricultural Subbasin Working Group meetings and their accompanying meetings notes should be noticed publicly and easily accessible on the website. As active participants in GSA public meetings, it was our experience that the projects, management actions, minimum thresholds, sustainable yield calculation, water budget, and other important GSP elements were brought to the planning committee and advisory committee after consensus had already been reached by the agricultural subbasin specific working groups and that no substantive changes were made with input these public forums. Examples include:

- At the very first public meeting when Chapter 9 on projects and management actions was discussed (planning committee meeting in July 2019), Community Water Center staff asked for more information regarding when "stakeholder" meetings were held to shape the projects selected and prioritized in the project chapter.[30] The GSA consultant responded that they had shaped the recommendations with the agricultural stakeholders, presumably the same agricultural subbasin specific working groups.
- At the most recent advisory committee meeting on November 21, 2019, two advisory committee members (who represent non-agricultural interests) requested changes in the minimum thresholds for water levels stating the current minimum thresholds would cause significant impacts to those relying on small systems and private wells and that the threshold should be revised to a water level during a non-drought time. The GSA consultant responded that these types of "policy" decisions would need to go before the whole board. The advisory committee member asked how and when these "policy" decisions were made since the proposed levels were already decided when the chapter came to the advisory committee.
- GSP Section 8.3 discusses the process for developing sustainable management criteria and mentions "Subbasin Specific working groups (page 8-5)" - it is important here, in the projects chapter, and in the plan in general to be transparent about how "policy" and other decisions are being made.
- It might be a good step to open the agricultural subbasin working groups to the public as part of the GSP review process, as planned, for the other subbasins in the Salinas Valley. We encourage the SVB GSA to think critically about how to make these forums inclusive and accessible for all stakeholders drawing on suggestions in these comments.

Thank you, again, for reviewing this letter and for the consideration of our comments on the draft GSP. Please do not hesitate to contact us with any questions or concerns, or if you would like to meet to further discuss these important sets of issues.

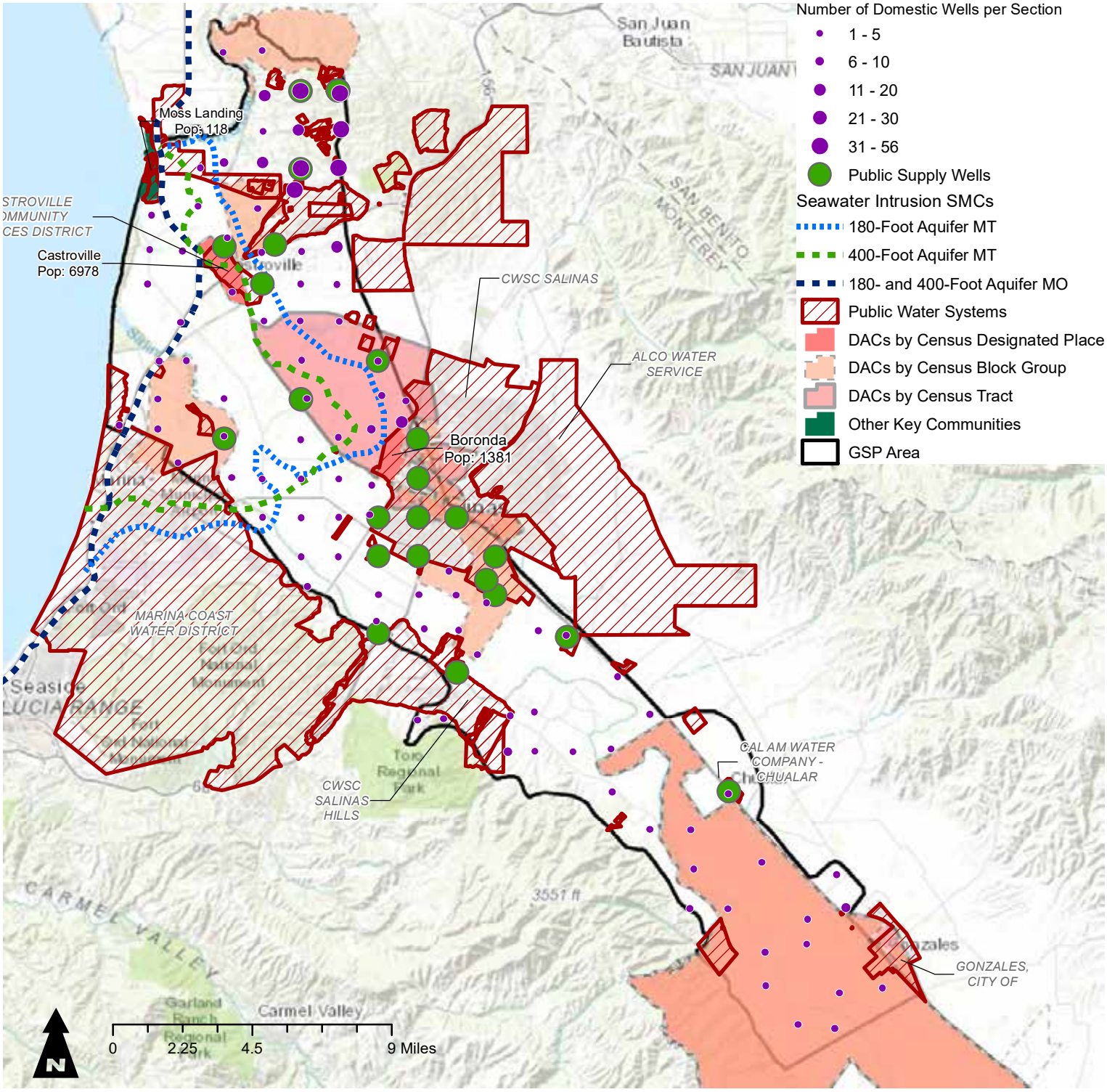
Attachments to this Comment Letter

1. Figure 1 – Seawater Intrusion SMCs Relative to Domestic Wells, Public Supply Wells, DACs, and Community Water Systems
2. Figure 2 – Representative Monitoring Network for GW Levels Relative to Domestic Wells, Public Supply Wells, DACs, and Community Water System
3. Figure 3A – Estimated Water Level Decline at Minimum Thresholds in the 180-Foot Aquifer
4. Figure 3B – Estimated Water Level Decline at Minimum Thresholds in the 400-Foot Aquifer
5. CWC Comment Letter on Chapter 6: Water Budgets, July 10, 2019

[30] "Eight projects were selected as the most reliable, implementable, cost-effective, and acceptable to stakeholders. (Page 22, July 2019 Draft of Chapter 9 for Planning Committee).

Figure 1 - Seawater Intrusion SMCs Relative to Domestic Wells, Public Supply Wells, DACs, and Community Water Systems

Salinas Valley Basin GSA



Notes

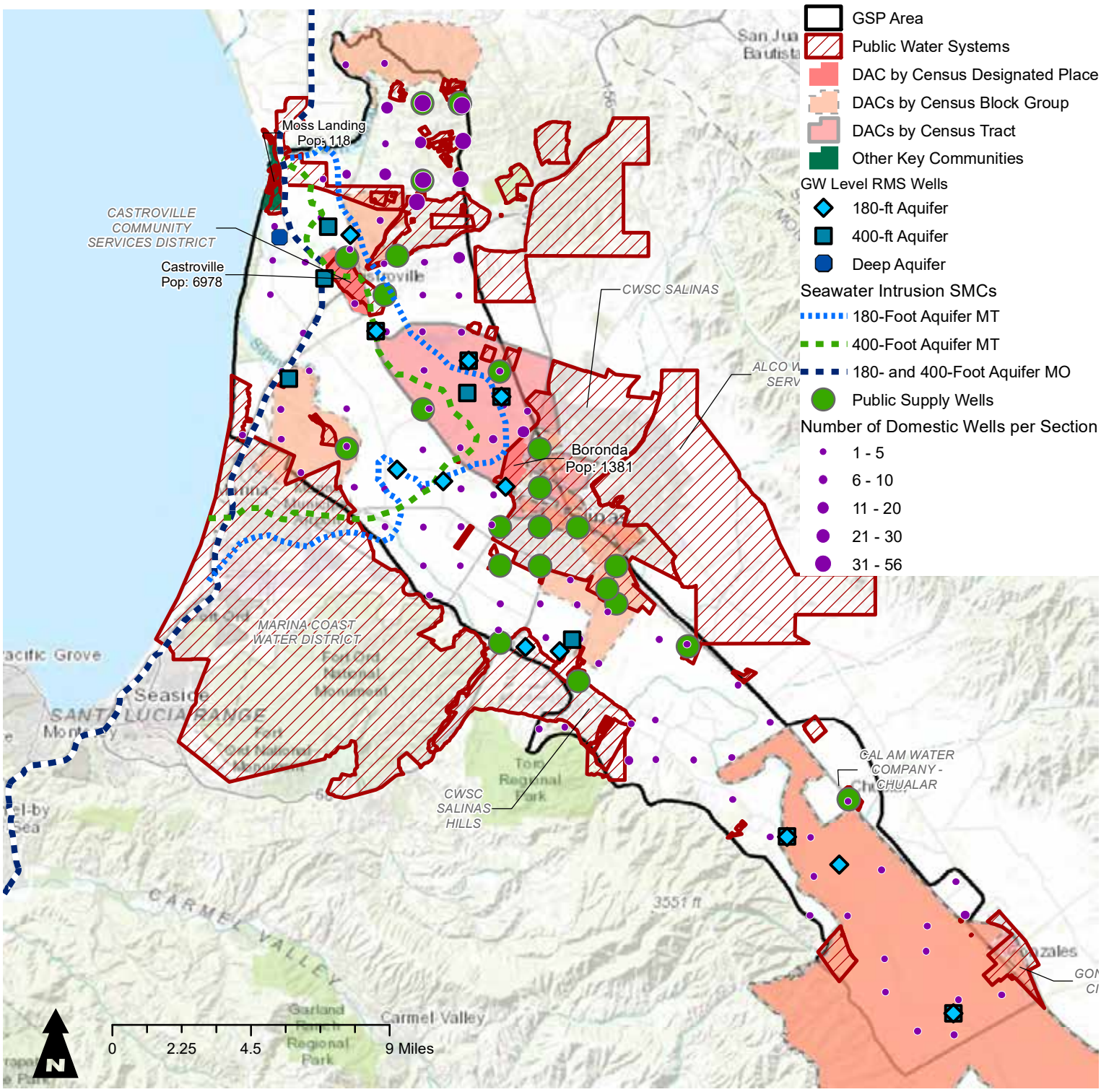
1. All locations are approximate.

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Public supply well data: DWR Well Completion Reports downloaded on August 30, 2018 from https://atlas-dwr.opendata.arcgis.com/datasets/.
3. Disadvantaged and other key community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/.
4. Public Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer. The dataset includes "community" and "non-community" water systems.
5. Seawater Intrusion MOs and MTs: Figure 8-6 and Figure 8-7 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.

Figure 2 - Representative Monitoring Network for GW Levels Relative to Domestic Wells, Public Supply Wells, DACs, and Community Water Systems

Salinas Valley Basin GSA



Notes

1. All locations are approximate.
2. Location of Water Level Representative Monitoring Site Wells is based on Table 7-2 of the SVBGSA GSP (2019).

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Public supply well data: DWR Well Completion Reports downloaded on August 30, 2018 from https://atlas-dwr.opendata.arcgis.com/datasets/.
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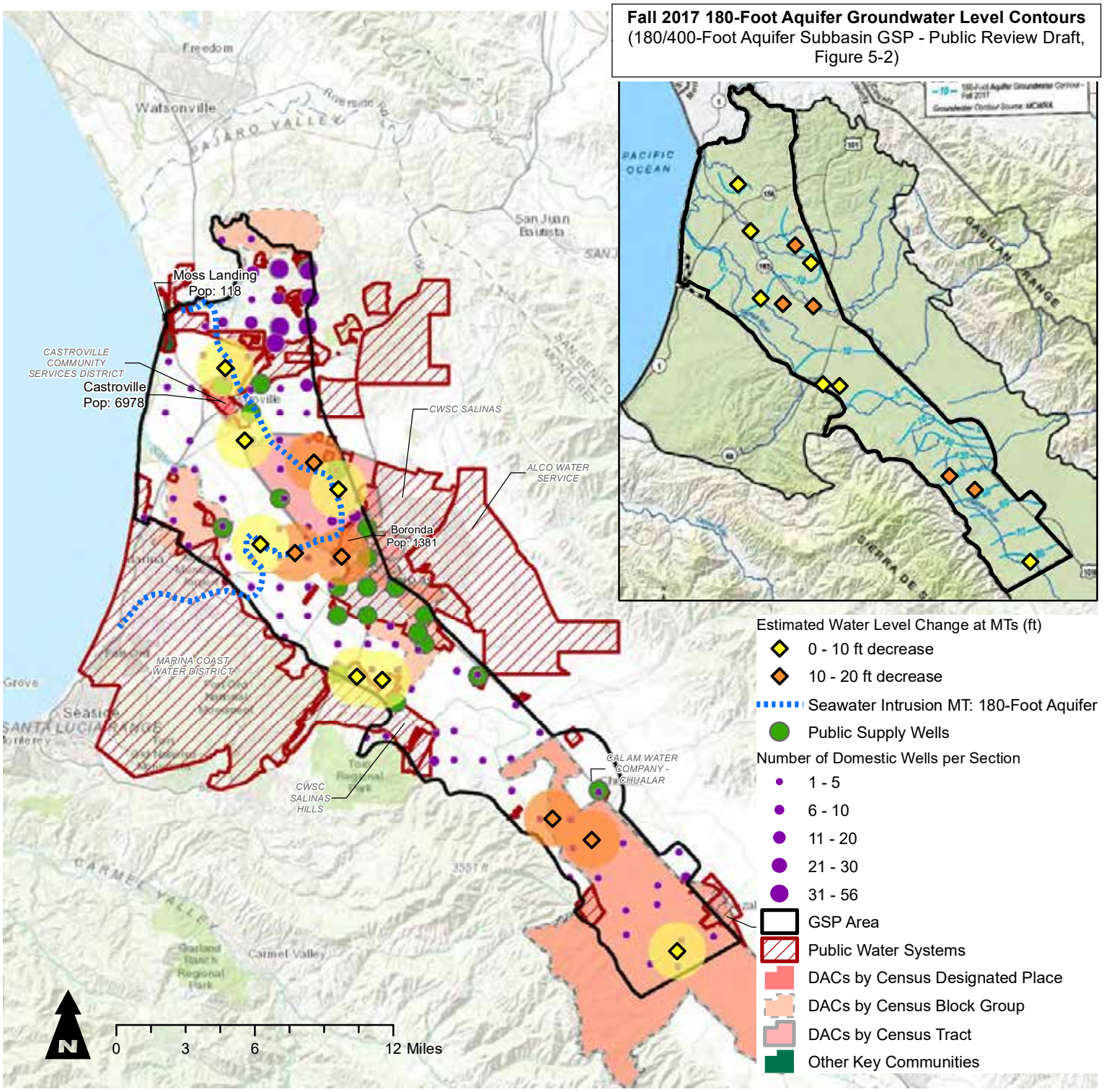
4. Public Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer. The dataset includes "community" and "non-community" water systems.
5. Water Level RMW locations: Table 7-2 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.
6. Seawater Intrusion MOs and MTs: Figure 8-6, Figure 8-7, and Section 8.8.3.1 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.

Figure 3A - Estimated Water Level Decline at Minimum Thresholds in the 180-Foot Aquifer

Salinas Valley Basin GSA



Notes

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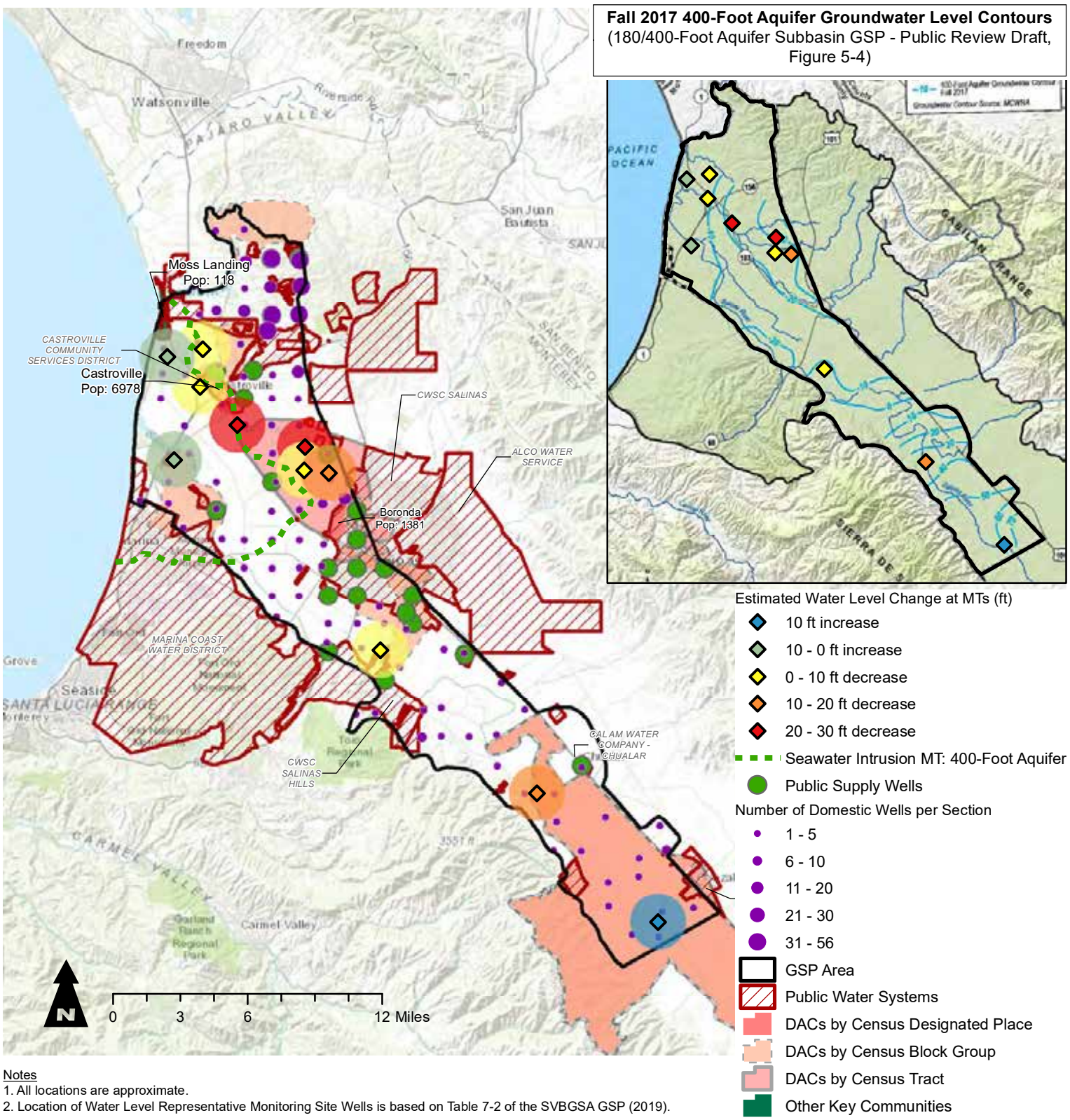
2. Location of Water Level Representative Monitoring Site Wells is based on Table 7-2 of the SVBGSA GSP (2019).

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Public supply well data: DWR Well Completion Reports downloaded on August 30, 2018 from https://atlas-dwr.opendata.arcgis.com/datasets/.
3. Disadvantaged and other key community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/.
4. Public Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer. The dataset includes "community" and "non-community" water systems.
5. Water Level RMW locations, MTs, and contour map: Tabel 7-2, Table 8-2, and Figure 5-2 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.
6. Seawater Intrusion MTs for the 180-Foot Aquifer: Figure 8-6 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.

Figure 3B - Estimated Water Level Decline at Minimum Thresholds in the 400-Foot Aquifer

Salinas Valley Basin GSA



Notes
1. All locations are approximate.
2. Location of Water Level Representative Monitoring Site Wells is based on Table 7-2 of the SVBGSA GSP (2019).

References
1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Public supply well data: DWR Well Completion Reports downloaded on August 30, 2018 from https://atlas-dwr.opendata.arcgis.com/datasets/.
3. Disadvantaged and other key community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/.
4. Public Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer. The dataset includes "community" and "non-community" water systems.
5. Water Level RMW locations, MTs, and contour map: Tabel 7-2, Table 8-2, and Figure 5-4 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.
6. Seawater Intrusion MTs for the 400-Foot Aquifer: Figure 8-7 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.

COMMUNITY WATER CENTER
EL CENTRO COMUNITARIO POR EL AGUA

UC Davis Aoki
Water Justice Clinic

July 10, 2019

Salinas Valley Basin Groundwater Sustainability Agency
Attn: Gary Peterson, General Manager
peterseng@svbgsa.org
VIA ELECTRONIC MAIL

Re: Comments on Draft Chapter 6 ("Water Budgets") for the 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan

Dear Salinas Valley Groundwater Sustainability Agency Board Directors, General Manager Peterson, and Advisory Committee:

We thank you for the opportunity to comment on draft chapters of the Groundwater Sustainability Plan ("GSP") for the 180/400-Foot Aquifer Subbasin of the Salinas Valley Basin.

Recommendation 1: For both practical and legal reasons, we strongly encourage you to revise your calculations of sustainable yield to include and abate all six undesirable results enumerated in the Sustainable Groundwater Management Act (SGMA).

As currently written, Chapter 6's definition of sustainable yield fails to comport with the statutory definition. SGMA defines sustainable yield as "the maximum quantity of water . . . that can be withdrawn annually from a groundwater supply without causing an undesirable result." Water Code § 10721(w). SGMA explicitly requires that groundwater be managed in a way that avoids negative impacts to beneficial users *and* all six undesirable results. Those undesirable results include: (1) chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon; (2) significant and unreasonable reduction of groundwater storage; (3) significant and unreasonable seawater intrusion; (4) significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies; (5) significant and unreasonable land subsidence that substantially interferes with surface land uses; and (6) depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of that surface water. *Id.* § 10721(x). The undesirable results are cumulative, not disjunctive. GSPs must evaluate all six undesirable results, and any interactions between those results, to satisfy SGMA.

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Despite SGMA's clear definition of sustainable yield and sustainable groundwater management, the current draft of Chapter 6 relies on only one indicator of sustainability and one undesirable result. The proposed draft defines sustainable yield as "an estimate of the quantity of groundwater that can be pumped on a long-term average annual basis without causing a net decrease in storage." *See* Draft Chapter 6 180/400-Foot Aquifer Subbasin GSP page 24, section 6.8.4 (June 17, 2019, included in advisory committee meeting packet). There is no legal or scientific basis for that definition of sustainable yield.

We are concerned that the current sustainable yield calculation fails to inform the public and GSA of the actual net amount of water that can be extracted from the subbasin while avoiding all six undesirable results. Establishing a sustainable yield that adequately takes into consideration all undesirable results is a foundational step for developing appropriate sustainable management criteria and for accurately planning for the management actions and projects necessary to meet sustainable management criteria. For example, during the project development phase, the GSA will need to understand the scale and size of recharge or other projects required to stop seawater intrusion. At a minimum, the sustainable yield calculation must adequately consider all undesirable results in order to provide a reliable foundation for setting and meeting minimum thresholds and measurable objectives, determining extraction and recharge levels, and monitoring.

The Department of Water Resources' (DWR) Draft Best Management Practices for Sustainable Management Criteria ("Draft BMP")[1] states that "[s]ustainable yield can only be reached if the basin is not experiencing undesirable results . . . [u]ndesirable results must be eliminated through the implementation of projects and management actions, and progress toward their elimination will be demonstrated with empirical data (e.g., measurements of groundwater levels or subsidence)." From a practical perspective, the 180/400-foot aquifer subbasin GSP already faces several undesirable results, and it will need to develop projects and regulations that rely on the sustainable yield measure to avoid exacerbating all six undesirable results. As currently drafted, the sustainable yield calculation does not provide the GSA with the information it needs to be able to prevent or improve groundwater conditions that cause those undesirable results.

Moreover, the Groundwater Sustainability Plan Regulations ("Regulations") do not recognize change in storage as an acceptable proxy for the other sustainability indicators or undesirable results. The Regulations clearly state that only groundwater elevation may be used as a proxy

[1]https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT.pdf

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metric for the sustainability indicators for minimum thresholds and measurable objectives. 23 CCR §§ 354.28(d) & 354.30(d). Groundwater elevation can only be used as a proxy metric if both of the following conditions are met:

> (1) Significant correlation exists between groundwater elevations and the sustainability indicators for which groundwater elevation measurements serve as a proxy. (2) Measurable objectives established for groundwater elevation shall include a reasonable margin of operational flexibility taking into consideration the basin setting to avoid undesirable results for the sustainability indicators for which groundwater elevation measurements serve as a proxy. 23 CCR § 354.36(b)).

By focusing solely on groundwater storage, draft Chapter 6 fails to identify the relationship between the water budget, current undesirable results, and the possibility of worsening all six undesirable results if the water budget is improperly calculated. As a result, the draft water budget reinforces current unsustainable groundwater uses, risks further degradation of groundwater supplies, and fails to adequately prioritize beneficial uses and protect groundwater stakeholders' interests.

The calculation of sustainable yield is at the heart of all Groundwater Sustainability Plans, and those Plans derive all other components from this important determination. Because the draft GSP ties sustainable yield to an improper metric that is not recognized by statute or regulation as acceptable, it is likely that DWR will find the draft 180/400-Foot Aquifer Subbasin GSP to be inadequate, creating the risk that the Basin will fall under probationary status.

Recommendation 2: We request that you release the data and assumptions underlying Chapter 6's sustainable yield calculations, water budget calculations, and groundwater model. We encourage the GSA to ensure compliance with SGMA and California administrative law by releasing the data, methodologies, technical appendices, model assumptions, model inputs/outputs, sources, and all other relevant model parameters when draft chapters are released to the public for review and comment. We request that the GSA ensure that all relevant data is released concurrently with draft chapters for all future draft chapters.

SGMA, California administrative law, and the Brown Act require GSAs to release to the public all data, research, sources, assumptions and inputs, outputs, the formulae applied to those inputs, and the ultimate results of a formula or model as part of the public comment process.

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23 CCR §§ 352.4(f) & 354.14. DWR's Draft BMP also encourages transparency in the use and disclosure of models used to support SGMA's requirements.

In the context of GSPs, the purpose of public comment is to allow the public to engage meaningfully in the public decision making process, which in turn will strengthen the reliability and accuracy of GSPs. That data must be publicly accessible and is a critical factor in gaining consensus on groundwater projects, groundwater pumping restrictions, potential groundwater fees, prioritization of beneficial uses, and other groundwater regulations. Draft Chapter 6 currently fails to provide the GSA and the public with sufficient background information to support the chapter's sustainable yield calculations and the groundwater model itself.

Timely disclosing source material and key assumptions is necessary to ensure the GSP is accurate and that the public is able to ground truth those assumptions. For example, during the June 20, 2019, advisory committee meeting, the GSA's consultant informed the public that the proposed "sustainable yield" calculation assumes that the Castroville Seawater Intrusion Project (CSIP) will function "perfectly." Many of those in attendance questioned that assumption, as it is impossible to ensure a project will operate perfectly. Failure to account for the reality that the project will not always operate "perfectly" introduces unquantified uncertainty into the sustainable yield calculation. As a result, the proposed calculation may be inaccurate, which may exacerbate undesirable results—including seawater intrusion—in the subbasin. At a minimum, the GSP must consider alternative calculations that account for the reasonable and foreseeable possibility that the project may operate below "perfect" performance in order to create an accurate accounting of sustainable yield. In fact, in its Draft BMP, DWR explicitly notes that GSPs must acknowledge uncertainty and address how the plan will address that uncertainty. By failing to disclose to the public the assumptions incorporated in draft Chapter 6, the GSP may rely on any number of faulty assumptions that undermine the reliability, reality, and accuracy of the sustainable yield calculation and groundwater model.

We are asking the GSA to make all assumptions transparent and clear in the plan itself, to engage stakeholders and the public in discussion of those parameters and assumptions, and to make decisions with knowledge of the limitations of whatever formulae or models are adopted. When DWR reviews plans, it will assess "[w]hether the projects and management actions are feasible and likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield." 23 CCR § 355.4(b)(5). Failure to account for and disclose the assumptions in the sustainable yield calculation places the basin at substantial risk of failing to pass DWR's evaluation or to ensure sustainable yield is met.

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It is challenging to provide feedback regarding Chapter 6's models and its sustainable yield calculation without publicly available supporting documentation on how calculations have been made. We request that the GSA immediately:

1. Disclose the technical appendix, supporting documentation and research, groundwater model,, sustainable yield formula, methodologies for the groundwater model and sustainable yield formula, and model assumptions and limitations at the time it releases draft Chapter 6 for public review and comment. Disclosure should be made by posting this information to the GSA website and contacting all interested parties.
2. Update its timeline to ensure technical appendices, supporting data and research, and all related information are released when public comment opens for each draft chapter and the final draft GSP;
3. Distribute a revised draft Chapter 6 that includes the Advisory Committee and stakeholders' requested changes.

We look forward to working with the Salinas Valley Basin GSA to ensure that the GSP complies with its legal obligations, that the GSP adequately addresses drinking water needs, and that stakeholders and the public have access to the information necessary to be able to engage in this process.

Sincerely,

Heather Lukacs
Community Water Center

Camille Pannu
Founding Director, UC Davis Aoki Water Justice Clinic

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Dallas H. Tubbs
Manager – Subsurface Optimization

November 21, 2019

Mr. Gary Petersen
General Manager – SVBGSA
c/o Regional Government Services
P.O. Box 1369
Carmel Valley, CA 93924

Salinas Valley: 180/400-Foot Aquifer Sub-basin Groundwater Sustainability Plan **https://svbgsa.org/groundwater-sustainability-plan/180-400-ft-aquifer/**

Dear Mr. Petersen:

Chevron North America Exploration and Production (Chevron) operates facilities in the San Ardo area of Monterey County. As an active member of the Salinas Valley Basin Groundwater Sustainability Agency's Advisory Committee, Chevron offers the following comments with respect to the captioned Groundwater Sustainability Plan (GSP).

3.4.1 Water Source Types:

- It is stated in the GSP, that the 180/400-Foot Aquifer Sub-basin has three water source types: groundwater, surface water and recycled water. However, there is inconsistent use of terminology: both "recycled" and "reclaimed" water appear to be used interchangeably in the document. Chevron recommends the consistent use of the term reclaimed as opposed to recycled. While the terms are synonyms, reclaimed better describes the conversion of wastewater into water that can be reused for other purposes.
- Chevron recommends that the SVBGSA include a fourth category, that being "desalinated water". This will include the desalinated new water that is expected to be produced by the California American Water (Cal-Am) Monterey Peninsula Water Supply Project. It will also allow for the inclusion of water sources created via reverse osmosis or equivalent processes.

Our Family of Brands

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[illegible]

- [illegible]

Figure 5-25: Cross-Section of Estimated Depth of Seawater Intrusion

- It appears that the seawater intrusion is represented in this cross-section with different shading. If so, Chevron recommends that Figure 5-25 include a legend.

6 WATER BUDGETS

- The "future" water budget is based on output from a groundwater model still under developed by the USGS. Chevron notes that the Salinas Valley Integrated Hydrologic Model (SVIHM) has not been made available for public review. Chevron formally requests that a copy of the model and its relevant input parameters be provided for review. Without external review the water budget lacks foundation for broad stakeholder acceptance and becomes a matter of faith.
- Although this GSP is for the 180/400-Foot Aquifer Sub-basin, the SVIHM is dependent on flow parameters for the entirety of the Salinas Valley Basin. Chevron notes that the amount of monitoring well data at the southern boundary of the Salinas Valley - Upper Aquifer Sub-basin is sparse (between Monterey and San Luis Obispo counties). This could be a consequential source of error in the USGS model.

6.2.2 Groundwater Budget Components

- Chevron notes that the Groundwater budget inflows does not include desalinated water and recommends that it be added to the "Inflows" budget. This will account for new source of desalinated water expected from projects like the California American Water (Cal-Am) Monterey Peninsula Water Supply Project

6.11 Uncertainties in Projected Water Budget Simulations

- In answer to a Chevron question posed at a meeting of the Advisory Committee, it was learned that the USGS model has not been history matched using actual data from prior years. Replicating historical data seems an obvious first step in validating the efficacy of the model. Accordingly, what is the technical foundation for the expressed confidence in the SVIHM Model?

[illegible]

[illegible]

[illegible]

- [illegible]
- [illegible]

Sincerely,

Dallas H. Tubbs
Manager – Subsurface Optimization

[illegible]

FARELLA BRAUN + MARTEL LLP

PAUL P. SPAULDING, III
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January 8, 2020

By Hand Delivery and E-Mail

Board of Directors
Salinas Valley Basin Groundwater
Sustainability Agency
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Re: Finalizing Groundwater Sustainability Plan and Adopting Cooperation Agreement with the County of Monterey–SVBGSA Board of Directors January 9, 2020 Meeting, Agenda Items # 7a and # 7b

Dear Salinas Valley Basin Groundwater Sustainability Agency Board of Directors:

On behalf of the City of Marina ("City" or "Marina") and the Marina Groundwater Sustainability Agency ("MGSA"), we submit these comments opposing the adoption of two proposed resolutions on the Agenda for the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") Board of Directors' January 9, 2020 meeting: (1) the resolution adopting SVBGSA's final groundwater sustainability plan ("GSP") for the 180/400 Foot Aquifer Subbasin ("Subbasin"); and (2) the resolution adopting a cooperation agreement between SVBGSA and the County of Monterey ("County") for management of an approximately 400-acre parcel within the Subbasin.

INTRODUCTION

The City and MGSA previously opposed both resolutions when the SVBGSA Board of Directors first considered them on December 12, 2019. A copy of the City/MGSA letter in opposition to those resolutions is enclosed as Exhibit 1 and incorporated herein by reference. After considering the resolutions, the SVBGSA Board of Directors continued them to its January 9, 2020 meeting. However, in the intervening time, SVBGSA has failed to address the concerns of the City and MGSA regarding both resolutions. As a result, the City and MGSA continue to oppose the resolutions for the reasons set forth in our December 12, 2019 opposition letter and for the further reasons set forth herein.

The City and MGSA oppose both of SVBGSA's proposed resolutions as impermissible interference with the City and MGSA's sustainable management of groundwater in MGSA's jurisdictional area ("MGSA Area") and MGSA's performance of its obligations as a groundwater sustainability agency ("GSA") under the Sustainable Groundwater Management Act ("SGMA"). On December 11, 2019, the Monterey County Board of Supervisors adopted Resolution 19-171, which attempts to utilize Water Code Section 10724 to become the "exclusive" GSA for the MGSA Area. County staff then filed a GSA notification with the California Department of Water Resources ("DWR") to become the GSA for the MGSA Area, and on December 18, 2019, DWR posted the County's notification and designated the County as the "exclusive" GSA for the MGSA Area.

On December 30, 2019, the City and MGSA filed a Petition for Writ of Mandate and Complaint for Declaratory and Injunctive Relief in Monterey County Superior Court against Monterey County and DWR, with SVBGSA and its Board of Directors named as Real Parties in Interest (Case No. 19CV005270). This Petition was served on the SVBGSA parties on January 2, 2020. The City and MGSA allege that SVBGSA is participating in an unlawful scheme to conduct a hostile takeover of MGSA's jurisdiction for the purpose of divesting MGSA of its SGMA jurisdiction and substituting SVBGSA management and the SVBGSA GSP for the MGSA Area. Since adoption of this proposed cooperation agreement with the County would represent a further step to consummate this unlawful scheme, the City and MGSA strongly advise SVBGSA not to take this action.

Together, SVBGSA's two proposed resolutions purport to deny the City and MGSA the opportunity to contribute to the sustainable management of the portions of the Subbasin within the City's jurisdiction either as a local entity or as a SGMA GSA. First, SVBGSA's proposed resolution to adopt its Final GSP without fully considering or incorporating the City and MGSA's public comments would deny the City its right to contribute to the management of the entire 180/400 Foot Aquifer Subbasin as a local government entity under Water Code Section 10728.4. That section mandates that a GSA "shall review and consider comments from any city or county" within its GSP's area. Cal. Water Code § 10728.4; *see also* Cal. Code Regs. tit. 23, § 354.10(c) (requiring a GSP to include the public comments on the GSP "and a summary of any responses by the [GSA]"). SVBGSA's decision to almost completely ignore the City and MGSA's comments not only leaves critical gaps in SVBGSA's GSP, but it also leaves MGSA's role as a GSA with its own GSP as the only way for the City and MGSA to shape groundwater management in the MGSA Area.

Second, SVBGSA's resolution proposing to adopt a cooperation agreement with the County further attempts to quash the City and MGSA's right to contribute to groundwater management in the Subbasin through MGSA's GSP. This cooperation agreement would effectively install SVBGSA as the exclusive GSA for the MGSA Area by assigning SVBGSA the responsibility of complying with SGMA, including reviewing, adopting, and implementing the GSP for the Marina Area. As a result, the cooperation agreement improperly attempts to cement the County's efforts to strip the City and MGSA of their groundwater management authority under SGMA.

Accordingly, SVBGSA's proposed resolutions would collectively deprive the City and MGSA of their ability to ensure sustainable management of the Subbasin and protect the beneficial groundwater uses and users in the City's coastal areas. Therefore, the City and MGSA strongly urge SVBGSA to (1) immediately revise its Final GSP to incorporate the comments of the City and MGSA, and (2) decline to adopt the cooperation agreement.

I. SVBGSA's Failure To Address The City And MGSA's Public Comments In Its Final GSP Results In A Deficient Final GSP.

The City and MGSA oppose SVBGSA's resolution to adopt its Final GSP. SVBGSA's staff report for the January 9, 2020 Board of Directors' meeting maintains that SVBGSA will not respond to all of the timely comments it received on its Draft GSP before its November 25, 2019[1] comment deadline. Unfortunately, SVBGSA has only considered and responded to a fraction of the City and MGSA's public comments.[2] Instead, SVBGSA's proposed resolution still seeks to approve its Final GSP without fully considering these comments or addressing them through changes to its GSP. This approach violates SGMA, essentially nullifies the important public comment process, and impairs the due process rights of all commenters whose comments SVBGSA did not choose to consider. Accordingly, SVBGSA's Board cannot legally approve the Final GSP without first completing the comment review, response, and GSP revision processes.

SVBGSA's Final GSP fails to address the critical gaps in SVBGSA's GSP previously identified by the City and MGSA in their public comments on the Draft GSP.[3] In particular, SVBGSA's GSP still does not correctly characterize, monitor, or manage the groundwater resources in the coastal region south of the Salinas River or recognize the critical municipal,

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[1] *See* SVBGSA, *Public Notice Release of Groundwater Sustainability Plan 180-400 Foot Aquifer Subbasin*, available at https://svbgsa.org/groundwater-sustainability-plan/180-400-ft-aquifer/.

[2] SVBGSA's comment response matrix indicates that SVBGSA has considered and responded to only seven of the City and MGSA's public comments. In addition to a cover letter and four attachments, the City and MGSA submitted a table outlining 39 separate comments on SVBGSA's Draft GSP. SVBGSA's Staff Report notes that it will not consider or respond to "[c]omments that are not individually addressed in this matrix." SVBGSA Board Agenda, *Staff Report on Agenda Item 7a* at p. 15. Instead, those comments "will be addressed as the GSP is implemented and refined." *Id.* This means SVBGSA has not considered or addressed the vast majority of the City and MGSA's public comments. A copy of SVBGSA's comment response matrix is available at https://svbgsa.org/wp-content/uploads/2020/01/Master_Review_Comments_ 20191231- CF.pdf.

[3] The City and MGSA submitted comments on the SVBGSA's Draft GSP including a cover letter, four attachments, and a comment table on November 25, 2019. Those comments are available at https://svbgsa.org/wp-content/uploads/2019/12/WholeGSP_Comment_letters_compiled_reduced.pdf and are incorporated by reference herein.

domestic, groundwater-dependent ecosystems ("GDEs"), and other beneficial uses or users in that area. SVBGSA also fails to utilize the newest and best available science for its GSP, including state-of-the-art airborne electromagnetic investigations performed by Stanford University researchers and others that have generated three-dimensional groundwater maps and cross-sections of the Subbasin. These studies reveal critical characteristics and complexities in the Subbasin that SVBGSA must consider to manage and protect groundwater resources in the Subbasin.

SVBGSA's failure to consider these studies also contributes to the Final GSP's inadequate protections against ongoing and worsening seawater intrusion. This failure puts the City's water supply and coastal beneficial groundwater users at risk. Furthermore, and without limitation, SVBGSA's Final GSP also fails to (1) designate, protect, and manage the Dune Sand Aquifer as a principal aquifer; (2) meaningfully recognize, address, monitor, and manage GDEs as a beneficial groundwater use; (3) consider state and federal protections for habitats and species in and near the MGSA Area; and (4) include an adequate monitoring network in the coastal portion of the Subbasin. The Final GSP is thus deficient in its current form.

Adopting SVBGSA's GSP without addressing the deficiencies delineated in the City and MGSA's comments will result in a GSP that lacks the necessary protections for the Subbasin's coastal areas as well as local beneficial uses and users of groundwater. SVBGSA's failure to address the crucial factual, technical, and scientific issues that MGSA and the City raised in their comments undermines the integrity and validity of SVBGSA's Final GSP. Further, SVBGSA's failure to revise its GSP in response to the City and MGSA's valid comments denies the City of its right to contribute to groundwater management in its jurisdiction in violation of SGMA. It also leaves the City and MGSA with only a future undefined "implemented and refined" GSP process to voice and address local concerns regarding groundwater management in the MGSA Area.[4]

II. The Proposed Cooperation Agreement Unlawfully Attempts To Eliminate The City And MGSA's Groundwater Management Authority.

The City and MGSA oppose SVBGSA's proposed resolution to approve a cooperation agreement between SVBGSA and the County of Monterey GSA. SVBGSA failed to negotiate in good faith with MGSA over the terms of a coordination agreement for four months and instead requested that the County take over MGSA's jurisdictional area. The proposed cooperation agreement would further the County's hostile takeover of the MGSA Area by attempting to

[4] In correspondence with MGSA, SVBGSA confirmed that it would only agree to meet with MGSA to coordinate on a GSP if MGSA "agrees to give up its GSA." Relinquishing its GSA status would leave the City with only the public comment process to influence groundwater management in its jurisdiction. Therefore, SVBGSA's improper refusal to fully consider MGSA's comments and revise its GSP to address the gaps identified by MGSA further illustrates why SVBGSA's negotiation demand that MGSA give up its valid GSA status was a complete non-starter.

legitimize the illegal efforts of the County and SVBGSA to deprive MGSA of any groundwater management authority and circumvent SGMA's coordination requirements.

The cooperation agreement seeks to bar the City and MGSA from exercising any groundwater management authority in the MGSA Area. In the proposed agreement, the County purports to delegate complete management authority for the MGSA Area to SVBGSA, including the responsibility of "comply[ing] with SGMA at the CEMEX Site," as well as "taking actions to review, adopt and implement the GSP." SVBGSA and Monterey County Cooperation Agreement at p. 4. The agreement further provides that the "County GSA authorizes SVBGSA to exercise any and all legal authorities in compliance with applicable law for the CEMEX Site." *Id.*

These provisions effectively eliminate any voice that the City or MGSA has in the management of the MGSA Area. They also demonstrate that the County has no interest in acting as the GSA for the MGSA Area. The County instead only seeks to become a GSA to remove MGSA, so its agency partner SVBGSA, can manage the site. Indeed, through the cooperation agreement, the County and SVBGSA aim to do what SVBGSA cannot do under the SGMA on its own—adopt SVBGSA's GSP for the MGSA area without coordinating with MGSA and its GSP. Accordingly, the proposed cooperation agreement functions as a key part of the unlawful scheme to circumvent the local voices and local concerns contained in MGSA's GSP.

CONCLUSION

For all of these reasons, the City and MGSA oppose SVBGSA's proposed resolutions. Together, SVBGSA's resolutions threaten to silence MGSA both as a local agency participating in the public comment process and as a validly formed GSA. The City and MGSA therefore strongly urge SVBGSA to (1) immediately revise its Final GSP to incorporate the comments of the City and MGSA, and (2) decline to adopt the cooperation agreement.

Sincerely,

Paul P. "Skip" Spaulding, III

PPS:jla
Enclosures

cc: Layne Long, Marina City Manager
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Marina City Council (via e-mail)
Robert Wellington, Marina City Attorney
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(via e-mail attys@wellingtonlaw.com)
Keith Van Der Maaten, Marina Coast Water District GSA
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EXHIBIT 1

FARELLA
BRAUN + MARTEL LLP

PAUL P. SPAULDING, III
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December 12, 2019

By Hand Delivery

Board of Directors
Salinas Valley Basin Groundwater
Sustainability Agency
1411 Schilling Place
Salinas, California 93901

Re: Finalizing Groundwater Sustainability Plan and Adopting Cooperation Agreement with the County of Monterey–SVBGSA Board of Directors
December 12, 2019 Meeting, Agenda Items # 7.a and # 7.b

Dear Salinas Valley Basin Groundwater Sustainability Agency Board of Directors:

On behalf of the City of Marina ("City" or "Marina") and the Marina Groundwater Sustainability Agency ("MGSA"), we submit these comments opposing the adoption of two proposed resolutions on the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") Board of Directors' December 12, 2019 Agenda: (1) the resolution adopting SVBGSA's final groundwater sustainability plan ("GSP") for the 180/400 Foot Aquifer Subbasin ("Subbasin"); and (2) the resolution adopting a cooperation agreement between SVBGSA and the County of Monterey ("County") for management of an approximately 400-acre parcel within the Subbasin.

INTRODUCTION

The City and MGSA oppose both resolutions before the SVBGSA Board of Directors' for different reasons. First, the City recognizes the hard work that has gone into the preparation of SVBGSA's GSP. As required by the Sustainable Groundwater Management Act ("SGMA"), SVBGSA circulated its Draft GSP for a 45-day public comment period, and we understand that SVBGSA received a considerable volume of comments. However, according to the Staff Report, SVBGSA has no intention to respond to the timely comments it received after mid-November or to make any changes to its Draft GSP based on those comments. Rather, SVBGSA's proposed resolution seeks to approve its Final GSP without taking these comments into account.

SVBGSA's approach violates SGMA and essentially nullifies the important public comment process. The City and MGSA submitted comments on November 25, 2019 (within the public comment period), but SVBGSA is disregarding these comments and making no changes

to its GSP based on them. This procedural misstep by SVBGSA fundamentally impairs the due process rights of all commenters who filed comments after mid-November. It also undermines the integrity and validity of SVBGSA's Final GSP because it does not address the crucial factual, technical, and scientific issues that MGSA and the City raised in their comments. Accordingly, SVBGSA's Board cannot legally approve the Final GSP without first completing the comment review, response, and GSP revision processes. The Final GSP is thus deficient in its current form.

Second, the City and MGSA oppose the resolution approving a cooperation agreement between SVBGSA and the County of Monterey. SVBGSA failed to negotiate in good faith with MGSA over the terms of a coordination agreement for four months and instead requested that the County take over MGSA's jurisdictional area. This is no less than a "hostile takeover" of MGSA's entire groundwater area. Pursuant to this plan, on December 11, 2019, the County adopted a resolution to utilize Water Code Section 10724 to pursue becoming the groundwater sustainability agency ("GSA") for the approximately 400-acre parcel within the Subbasin where MGSA and SVBGSA have filed overlapping GSA notifications.

However, the County cannot lawfully invoke Section 10724, in part because as a member, majority funder, and architect of SVBGSA and its GSP, the County "is creating or contributing to the [GSA] overlap" it allegedly seeks to solve by becoming a GSA. State Water Resources Control Board, *Frequently Asked Questions on GSAs*, at 3 (Nov. 22, 2017). The County thus has no legal basis for disregarding MGSA, a properly-formed GSA with jurisdiction over the MGSA area. Furthermore, the County's efforts to install SVBGSA's GSP and to delegate management of the overlapping area expose the County's real motive. Together, SVBGSA and the County seek to contravene SGMA's GSA coordination requirements and effectively designate SVBGSA as the exclusive GSA for the Subbasin through a prohibited "backdoor" maneuver. These actions violate SGMA and attempt to unlawfully block the City of Marina and MGSA from exercising their rights under SGMA.[1]

Both of these resolutions would undermine the efforts of the City and MGSA to contribute to the sustainable management of the Subbasin and protect the critical coastal areas in the City's jurisdiction. Accordingly, the City strongly urges SVBGSA not to adopt either proposed resolution and instead begin coordinating with MGSA to develop a GSP or set of GSPs to sustainably manage the Subbasin.

I. SVBGSA's Proposed Resolution To Finalize Its GSP Unlawfully Disregards Timely Filed Public Comments And Has Resulted In A Deficient Final GSP.

The City and MGSA oppose SVBGSA's proposed resolution to adopt its Final GSP after only considering and addressing a portion of the public comments on it. The deadline to submit

[1] The City and MGSA provided a detailed description of these issues in their December 10, 2019 joint opposition letter to the County's GSA Resolution, which is enclosed herewith as Attachment 1 and incorporated herein by reference.

public comments on SVBGSA's GSP was November 25, 2019.[2] Now, after that deadline has passed, SVBGSA seeks to impose an earlier comment deadline by failing to consider and address public comments received "[b]etween mid-November and prior to the closing comment date of November 25, 2019." SVBGSA Board Agenda, *Staff Report on Agenda Item 7a* at 63.

SVBGSA openly admits that "not all" public comments "will be initially addressed individually in the comment matrix." *Id.* SVBGSA plans instead to wait until after it approves and submits its Final GSP before addressing all of the comments. It tries to justify this deferral by stating that it can take the comments into account "as the GSP is implemented and refined." *Id.* Because of SVBGSA's newly announced mid-November comment cutoff, the unaddressed comments include the City and MGSA's November 25, 2019 comment letter and matrix.[3]

SVBGSA's failure to consider the City and MGSA's comments violates SGMA, which mandates that a GSA "shall review and consider comments from any city or county" within its GSP's area. Cal. Water Code § 10728.4; *see also* Cal. Code Regs. tit. 23, § 354.10(c) (requiring a GSP to include the public comments on the GSP "and a summary of any responses by the [GSA]"). SVBGSA's failure to consider and address these comments undermines the purpose of the public comment process and potentially deprives local governments, beneficial users, and interested parties of the opportunity to provide input on the GSP. *See* Cal. Water Code § 10727.8. Accordingly, SVBGSA's efforts to adopt its GSP without considering or addressing the City and MGSA's comments present a clear violation of SGMA.

Failing to consider the City and MGSA's comments also leaves critical gaps in SVBGSA's GSP unaddressed. These gaps include the GSP's failure to (1) utilize the newest and best available science; (2) designate, protect, and manage the Dune Sand Aquifer as a principal aquifer; (3) provide sufficient protections against ongoing or worsening seawater intrusion; (4) meaningfully recognize, address, monitor, and manage groundwater-dependent ecosystems as a beneficial groundwater use; (5) consider state and federal protections for habitats and species in and near the MGSA area; and (6) include an adequate monitoring network in the coastal portion of the Subbasin. These and the other deficiencies delineated in the City and MGSA's comments only heighten the harm from SVBGSA's refusal to consider them. Adopting SVBGSA's GSP without addressing these issues will fail to protect the Subbasin's coastal areas as well as local beneficial uses and users of groundwater.

When taken together, SVBGSA's instigation of the County's new effort to become a GSA and failure to consider the City's public comments would deny the City of its right to contribute to the management of the MGSA area as either a DWR-recognized GSA or a local government entity. In correspondence with MGSA, SVBGSA has confirmed that it will only

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[2] *See* SVBGSA, *Public Notice Release of Groundwater Sustainability Plan 180-400 Foot Aquifer Subbasin*, available at https://svbgsa.org/groundwater-sustainability-plan/180-400-ft-aquifer/.

[3] City of Marina and MGSA, *Comments on SVBGSA Draft Groundwater Sustainability Plan* (Nov. 25, 2019).

agree to meet with MGSA to coordinate on a GSP if MGSA "agrees to give up its GSA."[4] Relinquishing its GSA status would leave the City with only the public comment process to influence groundwater management in its jurisdiction. However, SVBGSA has thus far failed to consider MGSA's public comments before finalizing its GSP. These efforts collectively would deprive the City and MGSA of their ability to ensure sustainable management of the Subbasin and protect the City's coastal areas.

II. The County And SVBGSA's Proposed Cooperation Agreement Confirms SVBGSA's Role As The County's Affiliate In The County's GSA Takeover.

SVBGSA's proposed resolution adopting a cooperation agreement with the County to install SVBGSA's GSP and manage the overlap area demonstrates SVGBSA's role in the County's proposed unlawful GSA takeover. Indeed, both SVBGSA's proposed resolution and the cooperation agreement provide further proof of the unlawful nature of the County's efforts and SVBGSA's status as the County's affiliate. The City and MGSA oppose the adoption of this proposed cooperation agreement because it formalizes the County and SVBGSA's joint effort to exclude MGSA from the management of the MGSA area.

First, the cooperation agreement evidences the County's and SVBGSA's shared intent to deny MGSA the opportunity to collaborate on groundwater management issues in the Subbasin and circumvent SGMA's coordination requirements. SVBGSA's Staff Report demonstrates that SVBGSA had no intention of coordinating with MGSA and instead has sought ways to work with the County to implement its GSP. Only two days after MGSA released its Draft GSP on October 8, 2019, the SVBGSA Board voted to "request[] that Monterey County take all necessary steps to become the GSA for either the entire 180/400 Foot Aquifer Subbasin or the CEMEX site." SVBGSA Board Agenda, *Staff Report on Agenda Item 7b* at 502. This motion included a request that the County also adopt SVBGSA's GSP. *Id*. Thus, before MGSA and SVBGSA even submitted comments on each other's GSPs, SVBGSA already solicited the unlawful intervention of its member and majority funder to override MGSA and implement its GSP.

Second, SVBGSA and the County's proposed cooperation agreement also confirms their plan to have the County become a GSA, not to manage the overlap area, but instead to effectively install SVBGSA as the exclusive GSA for the MGSA area. In particular, Section 5.2 assigns SVBGSA the responsibility of "comply[ing] with SGMA at the CEMEX Site, including taking actions to review, adopt and implement the GSP." SVBGSA and Monterey County Cooperation Agreement at 4. Section 5.3 then provides that the "County GSA authorizes SVBGSA to exercise any and all legal authorities in compliance with applicable law for the CEMEX Site." *Id.* These provisions demonstrate that the County has no interest in acting as the GSA for the overlap area. The County instead only seeks to use Section 10724 to remove MGSA, so its affiliate, SVBGSA, can manage the site. In other words, the County's resolution

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[4] *See* Letter from Layne Long to Gary Petersen (Nov. 21, 2019) (stating SVBGSA's position) (enclosed as Attachment 2).

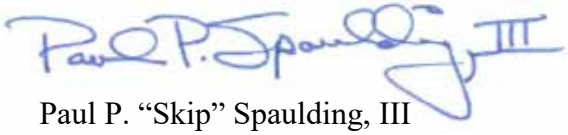
and the cooperation agreement aim to use Section 10724 to do what SVBGSA cannot on its own—adopt SVBGSA's GSP for the MGSA area without coordinating with MGSA and its GSP.

Third, as explained in the City and MGSA's letter opposing the County's GSA resolution, the County is indisputably creating and contributing to the overlap situation, as a member, majority funder, and driving force in the SVBGSA. The proposed cooperation agreement further links the County and SVBGSA through provisions like Section 14.13's joint defense provision. It provides that SVBGSA and the County may "further coordinate and cooperate by undertaking joint defense, including utilizing a common interest/joint defense agreement" to defend against "any challenge to the Subbasin GSP as it relates to the CEMEX Site." *Id.* at 10. The County created and contributed to the overlap with MGSA through SVBGSA. Now, the two affiliates seek to jointly defend their bad faith takeover of the MGSA area against a potential legal challenge from the City and MGSA. This confirms the County and SVBGSA's affiliation as joint actors and further cements the County's status as a creator and contributor to the overlap area.

CONCLUSION

For the reasons outlined above, the City and MGSA oppose SVBGSA's proposed resolutions. Together, SVBGSA's resolutions threaten to silence MGSA both as a local agency participating in the public comment process and as a DWR-recognized GSA. Accordingly, the City and MGSA strongly urge SVBGSA not to adopt either resolution and instead begin working with MGSA to coordinate on a GSP or set of GSPs to sustainably manage the Subbasin.

Sincerely,



Paul P. "Skip" Spaulding, III

PPS:jla
Enclosures

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ATTACHMENT 1

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December 10, 2019

Via Hand Delivery

Monterey County Board of Supervisors
168 West Alisal Street, First Floor
Salinas, California 93901

Re: Formation of Groundwater Sustainability Agency and Related Actions
County Board of Supervisors December 11, 2019 Meeting, Agenda Item #4

Dear Chair Phillips and Honorable Monterey County Supervisors:

On behalf of the City of Marina ("City" or "Marina") and the Marina Groundwater Sustainability Agency ("MGSA"), we submit these comments opposing the adoption of a resolution by Monterey County ("County") to become the Groundwater Sustainability Agency ("GSA") for a portion of the 180/400 Foot Aquifer Subbasin ("Subbasin") and to take related actions.

INTRODUCTION

The City of Marina and MGSA strongly object to Monterey County's unlawful effort to subvert the intent and explicit text of the Sustainable Groundwater Management Act ("SGMA"). The County proposes to undertake a "hostile takeover" of MGSA's entire groundwater area and then turn over the management of this groundwater to its affiliate, the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA").

The County is hopelessly conflicted and therefore disqualified from taking these actions. It was the moving force in founding SVBGSA, has provided 60% of its funding so far and, until only two months ago, provided all legal services for SVBGSA's SGMA activities and management, including the preparation of SVBGSA's draft groundwater sustainability plan ("GSP"). The County is masquerading as a "neutral" agency coming in to resolve a local agency "overlap" in jurisdiction, but in fact, its sole motivation is to eliminate MGSA and supplant MGSA's GSP in favor of the SVBGSA GSP that it supervised and approved as the most prominent SVBGSA member.

Notably, the County's proposed resolution fails to consider MGSA's GSP, recognize the need for sustainable groundwater management in and near the MGA Area, or make any findings on the merits of SVBGSA's GSP to address these needs. Instead, the proposed resolution demonstrates that the County's true motivation is not collaborative management of the Subbasin,

but rather is to strip the City of Marina of any voice in the management of groundwater within its own jurisdiction.

MGSA is a validly formed SGMA GSA. It took all required SGMA steps and filed all appropriate notices with the Department of Water Resources ("DWR") for MGSA's formation and GSP preparation, and DWR accepted these notices and posted them on its website.[1] MGSA authorized a $275,000 contract for preparation of the GSP and continues to expend these funds as its GSP preparation proceeds. MGSA issued a draft GSP on October 8, 2019, and accepted comments on it until November 25, 2019. Responses to comments and any necessary revisions to the GSP will be completed in the next few weeks, and the GSP is scheduled for MGSA consideration in January 2020. Thus, it is "on track" to be submitted to DWR by the January 31, 2020 deadline prescribed in SGMA.

These actions by the County have been orchestrated by California-American Water Company ("CalAm"), which has encouraged the SVBGSA Board and Committees to eliminate the City of Marina and the MGSA by requesting that the County attempt to "take over" MGSA's groundwater area. CalAm, of course, has no interest in sustainable groundwater management – rather, its sole goal is to eliminate any potential impediments to its foundering Monterey Peninsula Water Supply Project ("MPWSP" or "Project").[2] CalAm does not want the City of Marina to have any groundwater management role in this area, primarily because they prefer the "hands off" approach of SVBGSA. Once SVBGSA made this request to the County, the County immediately notified DWR of its "takeover" plans in a letter and has now published the proposed resolution.

This proposed County action has no precedent under SGMA. The statutory sections which the County relies on are intended to apply only to areas that are "unmanaged" because *no* GSA has filed to manage the groundwater in that area (rather than the situation here where two agencies have filed for the same area). In the only other case where a County has stepped in to

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[1] The County and SVBGSA have tried to create the incorrect impression that MGSA is not a valid GSA because it supposedly did not file to be a GSA by a deadline in SGMA. However, this contention has been completely debunked and has never been supported by DWR. We enclose as Exhibit "1" hereto and incorporate herein a copy of a letter dated August 28, 2019 sent to DWR on behalf of MGSA that explains why this contention lacks any merit.

[2] CalAm has suffered severe, and potentially fatal, setbacks in its efforts to obtain agency permits and authorizations for the MPWSP. After the City of Marina (the certified local coastal agency) denied the primary Coastal Development Permit ("CDP") for the Project, California Coastal Commission Staff recommended that both the appealed CDP application and the CDP application within its original jurisdiction be denied. The Coastal Commission will not consider these permits until March 2020 or later. In the meantime, as the result of a lawsuit brought by Marina Coast Water District, a Monterey County Superior Court Judge has entered an Order enjoining any construction of the Project's desalination plant until at least March 2020. CalAm has also failed to apply for or pursue other key federal and state permits necessary for the Project. If the Project is ever fully approved and constructed, it will be many years behind schedule.

resolve an overlap in jurisdiction, the local agencies *supported* the county action. According to DWR: *"No county has yet sought to use Section 10724 [the SGMA section relied on by the County] to form a GSA against the wishes of agencies within their jurisdiction."*

Monterey County appears to be adopting the simplistic position that DWR has supposedly blessed this action through a letter dated November 5, 2019 ("DWR Letter"). However, the County is making a serious mistake. DWR actually said that the County might be able to do so if certain conditions are satisfied. Ultimately, a court will determine whether SGMA allows the County to take this action in the current context. And under California administrative law, courts give no deference to inconsistent agency statutory interpretations. *See, e.g., Yamaha Corp. of Am. v. State Bd. of Equalization*, 19 Cal. 4th 1, 13 (1998)("*Yamaha*"). DWR has taken inconsistent positions over time on this issue, and the County's current position directly contradicts its position only two months ago. Indeed, on the crucial "creating or contributing" test discussed below, the County's action would violate the published guidance of the State Water Resources Control Board ("State Board") on this issue. Moreover, the latest DWR advice runs directly counter to SGMA's text and purpose. Given the lack of case precedent and the shifting DWR positions, it would be extremely risky for the County to adopt this resolution.

This dispute must be viewed against the larger backdrop of the MGSA and SVBGSA GSPs. The SVBGSA GSP is a regional approach to the management of the Subbasin which is primarily oriented to protecting the interests of the agricultural producers north of the Salinas River and inland from the coastal region. The GSP ignores or disregards the recent site-specific studies by a Stanford University research team and others, based on state-of-the-art airborne electromagnetic ("AEM") techniques, that have resulted in three-dimensional maps and cross-sections of the Subbasin groundwater, which forms the best scientific information on Subbasin groundwater conditions.

The SVBGSA GSP contains a wholly deficient monitoring network south of the Salinas River. No meaningful monitoring of any kind is proposed within several miles of the coast, leaving the area effectively unmanaged under SGMA. The SVBGSA GSP also fails to consider and manage groundwater resources in the Dune Sand Aquifer that are designated by the State Board to be protected, and fails to acknowledge or protect the interconnected surface water features such as the vernal pools and wetlands in and near the City of Marina. Thus, the County's proposed takeover of the MGSA as an "unmanaged area" will have exactly the opposite effect – it will perpetuate a lack of management of groundwater resources in this area by failing to protect local beneficial uses and users of groundwater in favor of the policy preferences of a select group of inland beneficial users.

In contrast, MGSA has prepared a locally-focused GSP that uses the best available science and information to ensure sustainable groundwater management in the MGSA Area, to protect local beneficial users and property, and to support regional efforts to address seawater intrusion and other undesirable results. Unlike the SVBGSA GSP, the MGSA GSP characterizes, monitors and manages the Subbasin groundwater resources south of the Salinas

River in the coastal region and recognizes the important municipal, domestic, groundwater dependent ecosystem, and other beneficial uses and users in this area, including the urban and other users who depend on this drinking water source in the Subbasin and the adjacent Monterey Subbasin.

Five independent reasons, discussed below, prevent Monterey County from invoking Section 10724 in attempt to become the new GSA for the overlap portion of the Subbasin:[3]

- Because Monterey County is creating and/or contributing to the overlap, it cannot invoke Section 10724;
- Section 10724 does not authorize a county to file a GSA notice for areas covered by multiple GSA notices;
- Monterey County's decision to invoke Section 10724 is premature and would unlawfully circumvent SGMA's explicit local agency coordination requirements and GSP resolution provisions;
- Monterey County's resolution to become the GSA for the overlapping area cannot nullify MGSA's GSA notice or solve the underlying coordination problem; and
- Monterey County cannot become the GSA for the overlap portion in time to submit a GSP before SGMA's January 31, 2020 deadline.

The County should be clear that the City of Marina and MGSA view this proposed action and resolution as a direct and unlawful attempt to eliminate the City's SGMA rights and responsibilities and that the City and MGSA will take all necessary steps to protect their SGMA jurisdiction. The City strongly advises Monterey County not to undertake this misguided action.

SGMA CONTEXT

Both MGSA and SVBGSA filed notices of their GSA formation and of their intent to prepare GSPs for the Subbasin. While SVBGSA's notice covers the entire Subbasin, MGSA's notice applies only to an approximately 400-acre portion of the Subbasin within the City of Marina's jurisdictional boundaries that is not under the jurisdiction of a local water agency. Thus, MGSA and SVBGSA have overlapping claims to this portion of the Subbasin.

When competing GSA notices cause overlapping boundaries, SGMA prevents a GSA decision from "tak[ing] effect unless the other notification is withdrawn or modified to eliminate any overlap in the areas proposed to be managed." Cal. Water Code § 10723.8(c). Here, DWR has not recognized an exclusive GSA for the Subbasin. *See* DWR SGMA Portal, *All Posted GSA*

[3] We enclose as Exhibit "2" hereto and incorporate herein a copy of a October 21, 2019 letter on behalf of MGSA to DWR explaining these factual and legal issues.

Notices.[4] SGMA instructs the local agencies to "seek to reach agreement to allow prompt designation of a groundwater sustainability agency." Cal. Water Code § 10723.8(c). SGMA further requires GSAs "intending to develop and implement multiple groundwater sustainability plans" to "coordinate with other agencies preparing a groundwater sustainability plan within the basin." *Id.* § 10727.6. The GSAs must "jointly submit" their GSPs with a coordination agreement "to ensure the coordinated implementation of the groundwater sustainability plans for the entire basin." *Id.* § 10733.4(b); *see also* Cal. Code Regs. tit. 23, § 357. 2.

Accordingly, when GSAs file overlapping claims, SGMA envisions a process where those agencies negotiate in good faith to reach a compromise and enter into a coordination agreement which they submit with their GSPs. MGSA and SVBGSA must file their GSPs and coordination agreement for the Subbasin by January 31, 2020.

LEGAL AND FACTUAL ANALYSIS

I. Monterey County Cannot Invoke Section 10724 Because It Is A Creator And Contributor To This GSA Overlap.

A county cannot invoke Section 10724 if it "is creating or contributing to the [GSA] overlap." State Board, *Frequently Asked Questions on GSAs*, at 3 (Nov. 22, 2017) ("SWRCB FAQs"). The State Board's limitation on Section 10724 prevents counties that contribute to overlapping areas from circumventing SGMA's GSA collaboration requirements.

Here, the County is indisputably creating and contributing to the GSA overlap as a member, majority funder, and architect of SVBGSA and its GSP. As a result, the State Board's limitation precludes the County's proposed resolution, which weaponizes Section 10724 in an attempt to install its affiliate's GSP and disregard a properly-formed GSA with jurisdiction over the MGSA Subbasin area. The necessary implications of SGMA's GSA coordination requirements mandate that the County cannot override MGSA's GSP and deny MGSA the opportunity to collaborate with SVBGSA on the management of groundwater within Marina's jurisdiction.

A. Based On Its Close Affiliation with SVBGSA, The County Is Creating Or Contributing To The Overlap Area.

As discussed in Section II, the Legislature intended counties to use Section 10724 as a backstop to protect groundwater users from facing Water Code Section 5202(a)(2)'s reporting requirements. The County's proposed resolution would attempt to improperly exploit this backstop to install a GSP commissioned by the County as a member of SVBGSA.

The County was the moving force behind SVBGSA's formation and even "pushed for the establishment of the Joint Powers Authority" ("JPA"). SVBGSA Minutes at 2 (Sept. 19, 2019). Section 10.4 of the JPA Agreement for SVBGSA shows that the County has provided almost

[4] Available at https://sgma.water.ca.gov/portal/gsa/all.

60% of all initial funding for SVBGSA during the 2017–19 period, totaling $1.34 million. Monterey County remains a member of SVBGSA, and the County Administrative Officer position (who authored the County's October 9, 2019 letter to DWR) is designated as the official County representative to SVBGSA. *See* Exhibit A to SVBGSA's JPA Agreement. Further, the County played an integral role in the development of SVBGSA's GSP. The Monterey County Counsel's office has served as the attorney for SVBGSA as it filed GSA and GSP notices and prepared the GSP that the County's resolution seeks to adopt after it overrides MGSA.

In short, contrary to the resolution's purported findings, the County, as a member, majority funder, and driving force in the SVBGSA, is indisputably creating and contributing to the overlap situation. The County therefore cannot credibly pose as a disinterested county coming in under a ministerial application of Section 10724 to resolve a dispute among two local GSA agencies. This is precisely the kind of conflict situation that disqualifies a county from attempting to invoke Section 10724 under the "creating or contributing" limitation.

B. The County's Proposed Resolution Would Represent A Bad Faith Attempt To Circumvent SGMA's Coordination Requirements And Implement The GSP Of Its Close Affiliate.

Monterey County's proposed resolution vividly illustrates the dangers of a county misusing Section 10724 to override a local agency instead of cooperating with it. The County's proposed resolution responds to a request by an affiliated entity (SVBGSA) to prevent the City of Marina from exercising its GSA authority. Monterey County then seeks to adopt the same GSP that the County helped design as a member of SVBGSA. Notably, Monterey County fails to even consider adopting any part of MGSA's GSP, addressing SGMA management gaps identified by MGSA, or providing any justification for adopting SVBGSA's GSP. The County likewise fails to present any groundwater management justification for asserting control over the overlap area.

It is striking that the County actually has no intention of managing the overlap area, which is exactly what it would be required to do under Section 10724. Rather, the County blatantly announces its intention to instead delegate management authority to SVBGSA, whose GSP provides no framework for sustainable groundwater management in or near the MGSA Area, and does not consider the needs and rights of coastal beneficial groundwater users and uses. These County actions lead to only one conclusion. The County's resolution seeks to use Section 10724 to do what the County's affiliate SVBGSA cannot: adopt only the SVBGSA GSP for the MGSA jurisdictional area without coordinating with MGSA and its GSP. Indeed, the intent appears to be retain the area as essentially unmanaged under SGMA, leaving CalAm to implement the MPWSP unhindered by any requirements for sustainable groundwater management for the benefit of beneficial users in inland portions of the Subbasin. The State Board's guidance aims to quash these exact types of bad-faith maneuvers.

While the County's proposed resolution blames the overlap on Marina's GSA notice, the County and SVBGSA continue to contribute to the overlap by refusing to collaborate with MGSA. The County and SVBGSA are engaging in this waiting game at the behest of CalAm,

which has encouraged these actions to promote its Project. In its October 9, 2019 letter to SVBGSA, copied to the Monterey County Administrative Officer, CalAm requests both entities to "defer any action on a coordination agreement" with MGSA and instead advocates that the County should become the GSA for the overlap area. CalAm takes the ridiculous position that MGSA is only preparing a GSP to stop its Project and attempts to enlist the County's help so that it can build the Project. CalAm is not a GSA, and, as a private corporation intent on profit, it has no interest in ensuring sustainable groundwater management in the Subbasin. Rather, it is a third party with no official role in this SGMA process, attempting to pressure public agencies to achieve its corporate goals. By advocating to stop any coordination agreement discussions, CalAm wanted to artificially create an impasse in hopes of a County takeover. And by acquiescing to CalAm's demands, the County and SVBGSA have needlessly created this situation.

We note that the MGSA has been working in good faith to negotiate a Coordination Agreement with SVBGSA and, in August 2019, prepared, approved and transmitted to SVBGSA a draft agreement based on a template provided by SVBGSA. Since that time, SVBGSA staff has not negotiated in good faith with MGSA to reach agreement. In contrast, in the last month, SVBGSA has developed a Coordination Agreement with the County, which is being considering for adoption at the SVBGSA Board meeting on December 12, 2019. This backroom Coordination Agreement effort with the County vividly illustrates that SVBGSA knows how to negotiate such an Agreement when it really wants to.

SGMA, in contrast, "requires the agencies to resolve" boundary disputes. SWRCB FAQs at 3. The State Board only deems an area unmanaged until the GSAs resolve their conflict. *Id.* This limitation aligns with the intended purpose of Section 10724 to function as a backstop, allowing a county to assume the role of a GSA in a ministerial manner as a last resort or as a temporary solution before a local agency can take control. Instead of serving that purpose, Monterey County's proposed resolution uses Section 10724 to target only the City of Marina and block it from exercising its GSA authority and implementing its GSP. This bad-faith effort contravenes SGMA's emphasis on and processes for local agency cooperation and basin management.

C. DWR's Latest Inconsistent Interpretation Of Section 10724 Does Not Apply.

DWR has articulated inconsistent standards for when a county is disqualified from invoking Section 10724. First, DWR guidance authored in May 2019 prohibits a county who "is responsible for creating the overlap" from becoming a GSA under Section 10724. DWR, *GSA Frequently Asked Questions*, at 4 (May 10, 2019) ("DWR FAQs"). A DWR representative (Tom Berg) expanded on DWR's position at the September 19, 2019 SVBGSA Advisory Committee meeting, stating to SVBGSA that:

> **Monterey County can remove itself from the SVBGSA and become the GSA for the unmanaged area and enter into a coordination agreement.** The cleaner approach is if Monterey County decides there is an overlap and becomes the GSA for the

> entire 180/400 Subbasin. **They can become the GSA for only Marina if they do not create the GSA with the intent to take over Marina's portion.** You can resolve the overlap and trust Marina will timely submit their Plan. If the Plan is determined to be insufficient during the two-year review, the Water Board could determine the entire Subbasin to be insufficient. He expects legal fights if Monterey County takes over the Subbasin. **Mr. Berg referenced the determination that Kern County had created their overlap conflict, and they were prevented from becoming the GSA as a result.**
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> Tom Berg stated that during the telephone conversation with Mr. Nordberg, DWR, it was suggested that the cleaner approach is for Monterey County to become the GSA for the entire basin. **If the County becomes the GSA only for Marina, it is no longer ministerial in terms of taking out Marina instead of just trying to clear the overlap.**[5]

Id. at 3–4 (emphasis added).

As you can see, the requirements for County use of Section 10724 articulated by DWR at this meeting contains several important elements. First, the County would need to remove itself as a member of the SVBGSA before undertaking any action under Section 10724 to eliminate the conflict of interest and associated County contribution to the overlap. Second, the County is barred from creating the GSA "with the intent to take over Marina's portion." Third, if the County does not take over management of the entire Subbasin, it would contravene SGMA because it is clearly only trying to take out Marina. The County's resolution fails to address and follow these DWR requirements. It plans to remain a member of the SVBGSA, its transparent intent is to take over Marina's portion, and it is not installing itself as the GSA for the entire Subbasin.

Despite recently articulating these positions, DWR's November 5, 2019 letter attempts to constrict the standard for precluding a county from invoking Section 10724. The DWR Letter states, "that it would be inappropriate to accept a Section 10724 notice from a county that had deliberately created the overlap that led to the existence of an unmanaged area with the purpose of doing so, and simply waited out other actual or potentially overlapping agencies."[6] DWR

[5] The minutes reflect that a representative of Monterey County (Charles McKee) attended this meeting.

[6] Even under its narrower test, DWR also appears to share concerns about Monterey County's contribution to the overlap. In particular, the DWR Letter requests further "information related to the decision-making role of the County as part of the SBVGSA, and the intent of the SBVGSA in filing the notice that resulted in overlap" if the County decides to submit a GSA notification. DWR Letter at 2.

Letter at 2. This standard purports to narrow and change the exception that DWR previously recognized in its own guidance and articulated to SVBGSA. And unlike the State Board's "creating or contributing" standard (SWRCB FAQs at 3), DWR's new standard potentially only guards against situations where a county files a GSA notice after another GSA. However, as the County's current actions demonstrate, a county can act in bad faith even if it or its affiliate filed its GSA notice first by refusing to coordinate with the other GSP and invoking Section 10724 to install its affiliate's GSP.

DWR's failure to consistently articulate its standard for precluding bad-faith actions under Section 10724 undermines the weight a reviewing court will grant it. Although California courts consider an agency's interpretation of a statute, "the binding power of an agency's interpretation of a statute or regulation is contextual . . . and depend[s] on the presence or absence of factors that support the merit of the interpretation." *Yamaha*, 19 Cal. 4th at 7. When applying this standard, courts further recognize that an agency's "vacillating position . . . is entitled to no deference." *United Artists Theatre Circuit, Inc. v. Reg'l Water Quality Control Bd.*, No. A152988, 2019 WL 6337763, at *18 (Cal. Ct. App. Nov. 27, 2019) (quoting *Yamaha*, 19 Cal. 4th at 13) (internal quotation marks omitted).

Here, the DWR Letter attempts to change its previous standard and limit its Section 10724 exception to situations where a county or its affiliate files its GSP notice after another GSA. This limitation contradicts DWR's previously issued guidance and statements to SVBGSA. Further, the DWR's Letter fails to explain or even acknowledge this switch. DWR likewise offers no justification for the fact that its new standard potentially only covers one of many scenarios in which a county could use Section 10724 in bad faith to override an overlapping GSA and circumvent SGMA's coordination requirements. DWR's interpretation warrants even less deference given the unprecedented nature of the County's actions. DWR Letter at 2 (noting that "[n]o county has yet sought to use Section 10724 to form a GSA against the wishes of agencies within their jurisdiction"). Accordingly, a Court will likely disregard DWR's latest articulated standard, and that standard cannot serve as the basis for the County's proposed resolution.

D. The County's Bad Faith Intentions Also Preclude It From Invoking Section 10724.

As described in Section I(A), the County's failure to (1) offer a groundwater management justification for invoking Section 10724, (2) consider adopting any part of MGSA's GSP, or (3) support its decision to adopt SVBGSA's GSP, demonstrate that the County's intention in adopting the proposed resolution is only to adopt its affiliate's GSP without coordinating with MGSA. The County's plan to delegate management of the overlap area to SVBGSA provides further evidence of its bad faith intentions. Indeed, the County's plan to adopt the SVBGSA GSP will leave the coastal area south of the Salinas River without a monitoring and management framework for sustainable groundwater management in violation of SGMA and its own General Plan policies. These intentions contravene SGMA's purpose of promoting collaborative groundwater basin management, and as result, they cannot be permitted.

As DWR's representative stated to SVBGSA, the County "can become the GSA for only Marina if they do not create the GSA with the intent to take over Marina's portion." SVBGSA Minutes at 3 (Sept. 19, 2019). For example, a determination that Kern County created its overlap conflict prevented it from becoming the GSA. *Id.* Only one county has successfully relied on Section 10724 to become a GSA for an area with overlapping GSAs. DWR Letter at 2. And unlike the current situation, the overlapping GSAs there *supported* the county's decision. *Id.* Indeed, no county has ever attempted to form a GSA using Section 10724 "against the wishes of agencies within their jurisdiction." DWR Letter at 2. Therefore, Monterey County is the first county to invoke Section 10724 as part of a strategy to veto the GSP of a valid GSA within its jurisdiction. Moreover, the proposed resolution creates a dangerous precedent, not intended by SGMA, that enables counties to ignore and override the actions of GSAs within their county area.

II. SGMA Section 10724 Does Not Apply To This Situation Because Multiple GSAs Have Asserted SGMA Jurisdiction Over The Overlap Area.

The County relies primarily on Water Code Section 10724(a) for its potential plan to eliminate MGSA and take over its SGMA jurisdictional area. This provision states:

> In the event that there is an area within a high- or medium-priority basin **that is not within the management area of a groundwater sustainability agency**, the county within which that unmanaged area lies will be presumed to be the groundwater sustainability agency for that area.

Cal. Water Code § 10724(a) (emphasis added).

The County is mistaken in asserting that this provision applies here. As SGMA's legislative history reflects,[7] the Legislature intended Section 10724 to cover situations where *no* GSA asserts jurisdiction over an area within a basin, not where multiple GSAs assert jurisdiction and prepare GSPs for a particular area. Indeed, the DWR Letter characterizes Section 10724 as a "backstop" to prevent Section 5202(a)(2)'s reporting requirements from applying. DWR Letter at 2. Section § 5202(a)(2) requires persons who extract groundwater within a high- or medium-priority basin on or after July 1, 2017, to file a report of groundwater extraction if (1) the area "is not within the management area of a groundwater sustainability agency" and (2) "the county does not assume responsibility to be the groundwater sustainability agency" for that area. This implicitly provides that the overlapping GSA notices did not render the area unmanaged under

[7] The Legislature intended Section 10724 to apply "in the case of an area where no local agency has ***assumed*** management." S. Rules Comm., Floor Analysis on S.B. 11168 at 4 (Aug. 29, 2014) (emphasis added). In particular, the Legislature linked this provision to whether a local agency has acted to assume management over an area—not whether the local agency has become the exclusive GSA.

Section 5202(a)(2).[8] The overlapping GSA notices likewise do not render the Subbasin unmanaged under Section 10724. Indeed, because no reporting requirements currently apply to the Subbasin, no need exists for the County to intervene to prevent the triggering of Section 5202(a)(2)'s reporting requirements.

The County's interpretation of Section 10724 inaccurately conflates the provisions for establishing an exclusive GSA under SGMA Section 10723.8 with Section 10724 to reach a faulty conclusion that, because of the overlapping area in MGSA's and SVBGSA's GSA notices, SGMA deems the areas "unmanaged." Section 10724(a) does not address disputes arising under the process for determining an exclusive GSA under Section 10723.8, and the purpose of Section 10724 weighs against reading Sections 10723.8 and 10724 together in this manner. Rather, these GSA and GSP provisions are best understood as operating at the same time on parallel tracks. Consistent with this interpretation, the plain language of Section 10724(a) does not require that a basin be within the management area of an exclusive GSA. Therefore, where multiple GSAs file to manage the same basin area, Section 10724(a)'s text cuts against the County's ability to claim the area is unmanaged. This is especially true when, as here, both of the GSAs are on track to submit their GSPs, and a coordination agreement is not due for any overlapping areas until the January 31, 2020 GSP submittal deadline.

Accordingly, when multiple GSAs adopt GSPs to manage a basin, that area falls within the management area of several GSAs, and Section 10724 does not apply. No DWR regulations or any judicial decisions interpret this section or alter its plain meaning.[9]

III. Monterey County's Resolution Is Premature And Would Fatally Undermine SGMA's Required GSA Collaboration Process.

SGMA establishes a specific process for GSAs who file overlapping notices to coordinate and submit a joint GSP or set of GSPs. *See* Cal. Water Code §§ 10727.6 and 10733.4(b). The Water Code likewise provides a process for resolving disputes if GSAs fail to coordinate and submit joint GSPs for a critically overdrafted basin by the January 31, 2020 deadline. In that situation, the State Board can designate that basin as probationary. *Id.* §§ 10735.2(a)(2) and 10735.2(a)(3) (providing that the State Board can also make a probationary designation after finding that a GSP is inadequate). The State Board must give the local agencies or GSAs "180 days to remedy the deficiency," and "[t]he board may appoint a mediator or other facilitator . . . to assist in resolving disputes, and identifying and implementing actions that will remedy the

[8] Although State Board guidance suggests that overlapping GSA notices would trigger Section 5202(a)(2)'s reporting requirements, this has not been the case in practice. State Board, Frequently Asked Questions on GSAs, at 5 (Nov. 22, 2017) ("SWRCB FAQs").

[9] MGSA acknowledges that one guidance document from the State Board opines that "[i]f two or more local agencies overlap, the combined area will be deemed unmanaged" and asserts that a county potentially could become a GSA in this situation. SWRCB FAQs at 3. However, this interpretation is not consistent with the intent, legislative history, and text of Section 10724 and is unsupported by any official regulation or case law.

deficiency." *Id.* § 10735.4(a). This provision covers disagreements over overlapping portions of the basin.

The County's resolution seeks to strip MGSA of its authority over the overlap area and to intervene as the exclusive GSA. In doing so, the County is misusing Section 10724 to implement the GSP of its affiliated GSA entity, violating State Board and DWR guidance directly on point, and undermining SGMA's dispute resolution processes. This action would set a dangerous precedent that could incentivize the misuse of Section 10724 by counties.

IV. Monterey County Cannot Use Section 10724 To Nullify MGSA's GSA Notice Or The Need For MGSA And SVBGSA To Resolve The Overlap.

The County appears to assume that by invoking Section 10724 and becoming the GSA for the overlap area, the County will nullify MGSA's GSA notice. However, nothing in SGMA or its regulations provides that a county or other local agency can nullify the GSA notice of another. Indeed, SGMA specifically provides that to resolve an overlapping area, a GSA "notification [must be] withdrawn or modified to eliminate any overlap in the areas proposed to be managed"—not overridden by another local agency. Cal. Water Code § 10723.8(c). Similarly, Section 10724 does not change this fundamental premise or grant a county the power to nullify a GSA notification. Accordingly, even if the County attempts to become the GSA for the overlap area, MGSA's GSA notification will remain valid.

Section 10724 also does not give the County the power to designate another local agency as an exclusive GSA. Instead, DWR has responsibility for posting GSA notifications. *See* § 10723.8(b). On the SGMA portal, DWR currently does not list either MGSA or SVBGSA as the exclusive GSA for any portion of the Subbasin. See DWR SGMA Portal, All Posted GSA Notices; DWR SGMA Portal, Salinas Valley Basin GSA - 180/400 Foot Aquifer Map.[10] DWR instead identifies the GSA notices of both MGSA and SVBGSA as overlapping. *Id.* DWR will not recognize MGSA's and SVBGSA's notices until they resolve their conflict,[11] and the County's intervention under Section 10724 for the overlapping portion will not change this. Both MGSA's and SVBGSA's notices will remain valid, but non-exclusive, GSA notifications. Accordingly, the only way for SVBGSA to become the exclusive GSA for any part of the Subbasin is for MGSA and SVBGSA to reach a coordination agreement.

The fact that SVBGSA and MGSA will remain nonexclusive GSAs even if the County invokes Section 10624 raises additional logistical issues. Under SGMA, a GSP or set of GSPs must "cover[] the entire basin." Cal. Water Code § 10727(b); *see also* Cal. Code Regs. tit. 23,

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[10] This map is available at https://sgma.water.ca.gov/portal/gsa/print/461.P

[11] Indeed, State Board guidance provides that "[i]f two local agencies file notices with DWR to be a GSA for the basin, and all or a portion of their proposed management areas overlap as of June 30, 2017, neither of the local agencies will become a GSA. As a result, the proposed management areas of both local agencies will be unmanaged." SWRCB FAQs at 4; *see also* DWR FAQs at 4 ("If overlap exists, the decision to become a GSA will not take effect unless the overlap is eliminated.").

§ 355.4(a)(3); Cal. Water Code § 10733.4(b)) ("If groundwater sustainability agencies develop multiple groundwater sustainability plans for a basin, the submission" of a GSP "shall not occur until the entire basin is covered by groundwater sustainability plans"). Thus, if the County maintains that only GSAs who DWR has designated as exclusive GSAs may file a GSP, then SVBGSA and MGSA will not be able to file GSPs. The County likewise will not be able to file a GSP for the overlapping area because the GSP would not cover the entire basin. As a result, the County would instead have to become the GSA and submit a GSP for SVBGSA's entire jurisdiction in the Subbasin. The County would then have to manage the entire Subbasin until MGSA and SVBGSA resolve the overlap. This would cause needless and extensive organizational and financial harm to all the parties involved and would completely undercut SGMA's goals. Therefore, the County's attempt to become the GSA for only the overlap area will not result in efficient or effective management of the Subbasin or relieve SVBGSA of the need to coordinate with MGSA to resolve the overlap.

V. The County Must Wait 90 Days For Its GSA Notice To Take Effect, So It Cannot Meet SGMA's January 31, 2020 Deadline.

Although the DWR Letter asserts that the County would immediately become the exclusive GSA when DWR posts the County's GSA notice, DWR fails to cite any legal authority for instantly granting a county exclusive GSA status.[12] DWR Letter at 3. Instead, DWR states that its "practice has been to immediately declare the GSA exclusive." DWR Letter at 3. However, this statement contradicts DWR's statement earlier in the letter that no other county has attempted to use Section 10724 despite opposition from a GSA within its jurisdiction – so, in fact, DWR has *never* immediately posted a county notice letter in this situation. *Id.* at 2.

The DWR Letter also states that it "adopted that practice on the assumption that counties would be taking responsibility for areas in which no other agency had any interest," and that "same logic applies for notices filed in areas that are unmanaged as a result of the overlapping GSA notices of other entities." *Id.* at 3. However, the same logic does not apply because SGMA provides a specific process for GSAs who file overlapping notices to coordinate and submit a joint GSP or set of GSPs. *See* Cal. Water Code §§ 10727.6 and 10733.4(b).

Further, in an overlap situation, multiple GSA's have an "interest" in an area and applying the 90-day notice period allows the overlapping GSAs to engage in the coordination process before the county's GSA notice takes effect. This interpretation promotes SGMA's collaboration process. It also recognizes the fact that given the opportunity, GSAs may resolve an overlap situation without the need for county intervention, which aligns with Section 10724's purpose of serving as a backstop for when SGMA's other processes fail. As a result, the County must wait 90 days before becoming a GSA for the overlapping area to allow SVBGSA and MGSA to resolve the overlap and collaborate on a GSP or set of GSPs. The County therefore could not submit a GSP before the January 31, 2020 deadline.

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[12] MGSA acknowledges that State Board guidance also states that "[t]here is no 90-day waiting period for the county's intent to become the GSA to take effect" in this scenario. SWRCB FAQs at 4.

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CONCLUSION

For the foregoing reasons, the County cannot lawfully invoke Section 10724 to become the GSA for the overlap portion of the Subbasin. Bending to the will of CalAm and its reluctance to be governed and monitored by the government entity with the overlying interest (or to be subject to negotiation under sustainable management criteria at all), is fatally inconsistent with SGMA and the intention of the Legislature to sustainably manage groundwater. The City of Marina formed MGSA to prepare its own GSP to govern critical groundwater resources within its jurisdiction in this Subbasin and is completely consistent with the spirit and language of SGMA.

MGSA is complying in all respects with SGMA and MGSA is prepared to take the necessary steps to protect its jurisdiction over the CEMEX site. In the first instance, this means continuing its efforts to finalize and submit its GSP for the overlapping area by the January 31, 2020 deadline. By committing significant financial resources and following the prescribed SGMA process, MGSA has been doing exactly what the law requires and is entitled to complete the process.

The proposed resolution by which the County would attempt to take over MGSA's jurisdictional area and to install its affiliate SVBGSA as the manager of this area using SVBGSA's GSP is a bad faith attempt to misuse SGMA to eliminate MGSA and achieve a hostile takeover of its area. This action, which was conceived and encouraged by CalAm and SVBGSA, would violate SGMA and deprive the City of Marina and MGSA of their SGMA rights, leaving the area effectively unmanaged under SGMA. The City and MGSA strongly oppose this resolution and encourage the County not to pursue this misguided course of action.

Sincerely,

Paul P. "Skip" Spaulding, III

PPS:jla

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EXHIBIT 1

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August 28, 2019

Via SGMA Portal and E-Mail

Ms. Taryn Ravazzini (*taryn.ravazzini@water.ca.gov*)
Deputy Director of Statewide Groundwater Management
Department of Water Resources
P.O. Box 942836
Sacramento, California 94236-0001

Re: City of Marina GSA Groundwater Sustainability Plan
Response to California-American Water Company Comment Letter

Dear Ms. Ravazzini:

We submit this letter on behalf of the City of Marina Groundwater Sustainability Agency ("MGSA"), which recently filed an initial notification of its intent to prepare a Groundwater Sustainability Plan ("GSP") for a portion of the 180/400 Foot Aquifer Subbasin ("Subbasin") as authorized by the Sustainable Groundwater Management Act ("SGMA"). This letter responds to the August 12, 2019 comment letter submitted by the Ellison Schneider law firm on behalf of California-American Water Company ("CalAm").

In this "comment letter," CalAm requests that the Department of Water Resources ("DWR") "reject" MGSA's Groundwater Sustainability Agency ("GSA") formation notice and its GSP initial notification. However, CalAm has no legal standing under SGMA to make the request and lacks any legal authority or precedent to obtain the relief it seeks. In fact, CalAm's letter is no more than a misguided attempt by a third party to short-circuit the processes prescribed by SGMA for resolution of local groundwater management issues. Moreover, CalAm has mischaracterized the underlying facts and invented non-existent policy reasons to support its unprecedented request. DWR is not required to respond to or to take any action in response to this letter. *See* 23 C.C.R. § 353.8(f). However, if DWR does respond, it must deny CalAm's request in all respects.

BACKGROUND FACTS

The MGSA was validly formed in full compliance with SGMA. On March 20, 2018, the Marina City Council adopted a resolution forming the MGSA to "undertake sustainable groundwater management within the portion of the Salinas Valley Ground Water Basin 180/400

Foot Aquifer Subbasin within the City and outside of the Marina Coast Water District service area." On April 16, 2018, MGSA properly filed a notice of its GSA formation with DWR pursuant to Water Code Section 10723.8. DWR duly accepted and posted MGSA's notice of GSA formation on its SGMA Portal.

On July 31, 2019, pursuant to Water Code Section 10727.8(a), the City filed an initial notification of intent to prepare a GSP for its jurisdictional area. This notice provides a written statement describing the manner in which interested parties may participate in the development and implementation of the GSP and contains the other required elements for this initial notice. MGSA also provided the notice to all required persons. MGSA is proceeding forward rapidly with preparation of the GSP and, in its initial notice, specifically identified the MGSA meeting dates and other opportunities for the public to provide comments and other input on the GSP. MGSA's GSP is expected to be completed and submitted to DWR by January 31, 2020.

CALAM'S COMMENT LETTER LACKS ANY LEGAL, FACTUAL OR POLICY BASES TO SUPPORT ITS "REJECTION" REQUESTS.

CalAm's comment letter makes a series of unsupported legal contentions in which it attempts to question the validity of MGSA's formation and to argue that the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") must or should be the exclusive GSA for the entire Subbasin. However, not only do these arguments lack any factual and legal support, but they improperly attempt to undermine decisions already made by DWR and to thwart the ongoing collaborative local processes that are embedded in SGMA.

For the reasons explained below, CalAm's arguments should be disregarded in their entirety. Instead, the processes contemplated by SGMA should continue without the partisan interference reflected in CalAm's letter. We will address each CalAm argument in turn.

A. The MGSA Was Validly Formed In A Timely Manner And There Is No Factual Or Legal Basis For Attempting To "Reject" Its GSA Formation Notice.

CalAm contends that the MGSA should not be recognized as a valid GSA because it was not formed before June 30, 2017. However, CalAm has made several fundamental analytical errors that have led to this spurious contention.

First, SGMA does not contain a mandatory final deadline for the formation of all GSAs, even for medium and high priority basins. The only SGMA mention of the June 30, 2017 date in this context is in Water Code Section 10735.2 (a)(1), which relates to the circumstances under which the State Water Resources Control Board ("State Board") can designate a basin as a probationary basin and thereafter take steps to develop its own interim groundwater sustainability plan for that basin. *See* Water Code §§ 10735.4-10736.6. The June 30, 2017 date is only the trigger date for a potential probationary basin finding if one or more GSAs, or a local agency "alternative" plan, has not been noticed for an entire basin. Contrary to CalAm's contention, it is not a drop-dead date for all GSAs to have been formed and it is not true that no additional GSAs can form in a basin after that date.

Second, CalAm attempts to buttress its erroneous analysis with a quotation, taken out of context from DWR's website, that supposedly stands for the proposition that June 30, 2017 is the absolute deadline for forming a GSA. To the contrary, DWR characterizes the June 30, 2017 date on its website as only an "initial planning milestone" and recognizes that new GSAs can, will and have been formed thereafter as SGMA implementation continues. This portion of the DWR website states in full (emphasis added):

> SGMA required Groundwater Sustainability Agencies (GSAs) to form in the State's high- and medium- priority basins and subbasins by June 30, 2017. Over 260 GSAs in over 140 basins were formed by *SGMA's initial planning milestone*. However, *as SGMA continues to be implemented* and the priorities and boundaries of some basins change, *new GSAs will be formed*, and existing GSAs may want to reorganize, consolidate, or withdraw from managing in all of part of a basin. All GSA notifications are managed on DWR's SGMA Portal.[1]

Thus, the GSA formation process was expected to and has in fact continued after June 30, 2017 as SGMA continues to be implemented. Indeed, after June 30, 2017, at least ten other new GSA formation notices were posted, including those for the Fresno County Pleasant Valley GSA Area, City of Coalinga GSA, Vina GSA, Montecito Groundwater Basin GSA, Owens Valley Groundwater Authority GSA (for two different basin areas), Castaic Basin GSA, Triangle T Water District GSA, Santa Barbara County Water Agency GSA – Goleta Fringe Areas, and Corning Subbasin GSA. It appears that all but one of these post-June 30, 2017 GSA formations cover high or medium priority basins.

In sum, CalAm's assertion that MGSA's GSA formation notice should be rejected because it was filed after June 30, 2017 has no factual or SGMA legal basis. There was not an absolute June 30, 2017 deadline for forming GSAs because this process is intended to be fluid and not frozen in time. Rather, it was an initial planning milestone for determining what basins may qualify for probationary status. Indeed, this has consistently been DWR's position. Although CalAm would like to override both SGMA and DWR's judgment on this point for its own private financial purposes, it cannot do so here.

B. The SVBGSA Never Became The Exclusive GSA For The 180/400 Foot Subbasin.

CalAm makes a tortured and wholly frivolous argument that SVBGSA became the exclusive GSA for the 180/400 Foot Aquifer Subbasin on July 26, 2017, thereby supposedly preventing the City of Marina from forming a GSA or preparing a GSP for any portion of the Subbasin. However, once again, this argument defies the considered judgment of DWR and

[1] This website page is found at https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainable-Agencies.

lacks any factual or legal basis.

CalAm's line of reasoning is that, on April 27, 2017, DWR posted the notice of SVBGSA to become the GSA for the entire Subbasin and that, in its view, no other GSA filed a valid GSA notice for this Subbasin within 90 days, thereby essentially resulting in SVBGSA becoming the exclusive GSA for this Subbasin.[2]

In making this argument, CalAm relies on Water Code Section 10723.8, which provides that a local agency notice to become a GSA for a particular basin/subbasin "shall take effect" 90 days after posting if no other local agency has filed a notification of its intent to undertake groundwater management in all or a portion of the same area prior to expiration of this 90-day period. If another agency has such a notice posted before the expiration of this period, the GSA notice shall *not* take effect.

CalAm's first critical error in making this argument is that another local agency – Marina Coast Water District ("MCWD") – did file a GSA formation notice for a portion of the 180/400 Foot Aquifer Subbasin area that SVBGSA claimed in its GSA notice. It is undisputed that, on February 6, 2017, MCWD formed a GSA for the Fort Ord portion of this Subbasin and, on March 14, 2017, DWR posted the notice of this formation (even before SVBGSA filed its notice). Thus, since MCWD filed a GSA formation notice for a portion of the same Subbasin area that SVBGSA's later notice covered, SGMA Section 10723.8 prescribes that SVBGSA's notice did not take effect and SVBGSA never became the exclusive GSA for the Subbasin area it claimed.

CalAm attempts to explain away this complete roadblock to its Section 10723.8 contention by making a convoluted set of arguments that MCWD GSA's notice supposedly was not valid or effective and therefore should be completely ignored for SGMA purposes. It cites to a November 2, 2017 letter authored by a State Board attorney (attached as Exhibit G to its comment letter) that supposedly supports this argument. However, CalAm is mistaken and its citation is misleading.

At the outset, CalAm misrepresents the nature of the State Board letter by implying that it is somehow a dispositive determination by the State Board regarding the status of MCWD's GSA March 14, 2017 formation notice. To the contrary, the letter explicitly states that it is "merely advisory" and that "[t]hese opinions [in the letter] are not a declaratory decision and do not bind the State Water Board in any future determination." Moreover, CalAm also attempts to create the erroneous impression that the letter found that MCWD's GSA notice was void and must be disregarded by DWR. However, in so arguing, CalAm has entirely missed the central point of the letter. Rather than attempting to void MCWD's notice, the State Board letter was

[2] MCWD also formed a separate GSA for another portion of the 180/400 Foot Aquifer Subbasin (Marina Coast Water District GSA – Marina) at the same time and DWR posted notice of this GSA formation on February 24, 2017. This area was excluded from the area SVBGSA claimed in its own GSA formation notice.

explicitly intended to encourage SVBGSA and MCWD GSA to meet and work out their differences: "By way of this letter, I would like to encourage local resolution of the conflicts over groundwater management in Salinas Valley."

Indeed, that is exactly what occurred here. MCWD GSA and SVBGSA negotiated an agreement that resolved most of their various conflicting issues regarding the 180/400 Foot Aquifer Subbasin and Monterey Subbasin. In addition, in the advisory letter, the State Board attorney suggested that, if MCWD could expand its jurisdictional boundaries by annexation to include Fort Ord, it could become the "exclusive GSA" for the Fort Ord area. MCWD thereafter did annex this area with the final approval occurring in or about July 2019. Thus, rather than the MCWD GSA – Fort Ord notice being void (as CalAm contends), this notice eventually led to MCWD establishing its SGMA jurisdiction for the area covered by the GSA formation notice in the 180/400 Foot Aquifer Subbasin.

Notably, DWR does not agree with CalAm's argument regarding SVBGSA's alleged Subbasin exclusivity. To the contrary, DWR has consistently informed all parties that SVBGSA never achieved exclusive GSA status for the Subbasin under Section 10723.8 because of the timely filings of MCWD GSA for this Subbasin. Consistent with the local and collaborative policies contained in SGMA, DWR has encouraged the various GSAs in the Subbasin to work together to resolve any GSP conflicts. And, as prescribed by SGMA, DWR has clearly stated to all parties that no GSPs for Subbasin overlap areas will be accepted until such a resolution has occurred.

Thus, in light of this law and factual context, CalAm's demand that DWR "reject" MGSA's GSA formation and GSP preparation notices based on SVBGSA's alleged "exclusivity" is baseless. CalAm is not trying to further the purposes of SGMA or promote more effective groundwater management. Rather, it is only trying to promote is own narrow corporate agenda.

C. Contrary To CalAm's Innuendos, There Is Every Reason To Believe That MGSA's Sustainable Management of Groundwater In Its Subbasin Area Can And Will Be Effective.

CalAm attempts to create the erroneous impression that MGSA will not be successful in meeting the requirements of SGMA for its jurisdictional area. CalAm states that the covered area is "extremely small," that some of the technical information MGSA may rely on in forming its GSP is supposedly discredited, and that it is unlikely that MGSA will meet the January 31, 2020 deadline for completing the GSP. However, this is no more than the SGMA equivalent of throwing spaghetti against the wall to see if any will stick.

First, SGMA does not contain any minimum or maximum basin size for sustainable groundwater management. Rather, it implicitly recognizes that these sizes may vary substantially. Indeed, some of the GSA formation notices cover very small areas of larger basins. *See, e.g.,* Santa Barbara County Water Agency GSA -- Fringe Areas notice, posted on the SGMA Portal on September 22, 2017. Rather, one of the hallmarks of SGMA is its

recognition that local agencies will be in the best position to determine initially who should manage basins, to analyze local conditions, and to apply SGMA's sustainability criteria to these conditions. SGMA envisions local flexibility and has not mandated any artificial GSA jurisdictional area size requirements.

Second, CalAm complains (incorrectly) that some of the technical data and reports that MGSA may rely on in preparing its GSP "conflicts with the weight of the modeling and science supporting the MPWSP and has been repeatedly rejected by regulatory bodies and courts…." Although CalAm does not identify what reports it means, MGSA assumes that it refers to the Stanford University research studies regarding groundwater basin conditions that cover this exact area of the Subbasin. Unfortunately, CalAm misleads DWR regarding this technical information.

The Stanford University studies used well-accepted scientific methodologies (including state-of-the-art electrical resistance tomography ("ERT") and airborne electromagnetic ("AEM") techniques) to create two- and three-dimensional images of the actual hydrostratigraphic and groundwater quality conditions, and seawater intrusion characteristics, in portions of the 180/400 Foot Aquifer Subbasin, including the MGSA jurisdictional area. In brief, the studies found that there are significant areas of higher quality groundwater in areas of some seawater intrusion, identified an existing freshwater wedge that was retarding seawater intrusion, and identified gaps in the soil layers (aquitards) that are allowing vertical migration of saline water to the deeper aquifers. This is valuable data, gathered by one of our country's leading educational institutions, that should be utilized, along with all other available data, to prepare a GSP for this area.

It is significant that the northward extension of the same datasets are being used by other agencies for SGMA groundwater sustainability planning purposes. For example, in its recent draft GSP for the Santa Cruz Mid-County Subbasin, the Santa Cruz Mid-County Groundwater Agency (MGA) notes the following:

> In May 2017, the MGA successfully completed an offshore Airborne Electromagnetic (AEM) geophysical survey to assess groundwater salinity levels and map the approximate location of the saltwater/freshwater interface in the offshore groundwater aquifers. This important data will inform the assessment of the extent and progress of seawater intrusion into the Basin and the management responses. The MGA anticipates repeating the AEM survey on a five-year interval (2022) to identify movement of the interface and assess seawater intrusion.

This is only one example of the use of this state-of-the-art technology for sustainable groundwater management planning in California.

CalAm appears to be making a ridiculous argument that this Stanford data must be ignored in preparation of the GSP. However, a GSA is not a court of law. Rather, it is a groundwater management agency that has an obligation to gather and evaluate all water basin

data potentially relevant to SGMA's sustainability criteria. By trying to inject an issue regarding what data supposedly supports or contravenes "the weight of the modeling and science" for CalAm's particular project, CalAm is misperceiving the purpose and function of a GSA that is in the midst of preparing a GSP. Further, CalAm's has misled DWR by stating that this technical information "has been repeatedly rejected by . . . courts." In fact, no court has rejected this technical information. Indeed, the one regulatory agency that even considered a small early subset of this data – the California Public Utilities Commission – did not "reject" it.

Third, CalAm asserts that one "practical" ground for rejecting MGSA's GSP preparation notice is that MGSA supposedly will not be able to meet SGMA's January 31, 2020 deadline for submitting a GSP. To the contrary, MGSA has a schedule in place that meets all of SGMA's requirements for public notice and comment, MGSA consideration and decision on the GSP, and timely submittal of the GSP to DWR. Even so, CalAm's uninformed speculation about completion of the GSP is not, of course, a credible ground for rejecting a GSP preparation notice. SGMA does not prescribe any minimum time period for the actual preparation of a GSP. Indeed, given the focused nature of the GSP here, there is every reason to believe that it will be completed in a timely manner.

Finally, CalAm's letter displays a dismissive attitude toward the City of Marina[3] and questions the legitimacy of its interest in managing the groundwater in this Subbasin. In so doing, CalAm ignores the City's long-standing track record in protecting groundwater at the property (sometimes referred to as the "CEMEX" property) that is the subject of the MGSA notices. For example, in 1996, the City entered into an extensive Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands ("Annexation Agreement") with several other parties, including the CEMEX property owner. The expressed purpose of the Annexation Agreement is "to help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin through voluntary commitments by the Parties to limit, conserve and manage the use of groundwater from the Salinas River groundwater basin. . . ." The groundwater conditions on the CEMEX property were one main focus of the Annexation Agreement.

The City also worked closely with the California Coastal Commission and the State Lands Commission in a series of combined enforcement actions in 2016-17 to end the current sand mining operation on the CEMEX site by December 31, 2020. After decades of efforts to end this environmentally destructive use, this termination was achieved through a settlement approved by all three agencies. In addition to terminating this mining use at the end of next year and gaining full restoration of the site, the settlement requires CEMEX to transfer the entire site at a reduced purchase price to a non-profit organization or government entity approved by the Coastal Commission and the City. As part of this conveyance, a deed restriction will be put in

[3] The City of Marina has a working class, ethnically diverse population, many of whom do not speak English. Marina is a recognized "disadvantaged community" at state, federal and local government levels. The groundwater under the City is an important and valuable community resource because it is provides a clean, local and affordable groundwater source for City residents.

place to protect the CEMEX property and limit its potential uses to public access, conservation, low-impact passive recreation, and public education.

In sum, the City has a demonstrated interest and a 25-year track record in taking action to identify and protect this groundwater under MGSA's jurisdiction. MGSA expects to file a GSP with DWR by January 31, 2020 that fully complies with the groundwater sustainability requirements of SGMA and results in effective and sustainable groundwater management for many years.

D. CalAm's Articulated "Policy" Reasons For Rejecting MGSA's GSP Notice Are Contrived And Unpersuasive.

CalAm argues that rejection of MGSA's GSP notice is required to eliminate "uncertainty" about SVBGSA's GSA and GSP status and that MGSA's notice of GSP preparation supposedly could cause "significant damage" (unspecified) to the work that SVBGSA has undertaken. This is no more than empty rhetoric. The "uncertainty" that CalAm refers to is inherent in the structure of SGMA and has not been created by MGSA, SVBGSA or DWR. SGMA contemplates that there will be overlapping GSA jurisdictional claims and GSP notices and it contains built-in incentives and provisions for the involved parties to resolve these claims on the local level and, if these are unsuccessful, a resolution process at the State level. At this point, these processes are just beginning and they will be concluded in the manner SGMA contemplates.

Contrary to CalAm's rhetoric, MGSA's notices are not causing any damage, much less "significant damage," to SVBGSA's work. By all appearances, SVBGSA is moving forward in preparing and completing its GSP. Regardless of the outcome of the overlap in the jurisdictional area, SVBGSA's work will be valuable and important to completing its GSP. There is no indication that SVBGSA has violated or will violate the terms of the grants it has received, so CalAm's assertion that SVBGSA could potentially lose or need to return such funds is wholly unsupported and unrealistic.

In contrast, the action that CalAm seeks in its letter (DWR rejection of MGSA's GSA and GSP notices) would be catastrophic to MGSA. MGSA has properly formed, begun preparation of a GSP and committed all of the funds necessary to complete and file its GSP by January 31, 2020. CalAm's request is no more than an unlawful attempt to disenfranchise MGSA of its SGMA rights and would plainly thwart the goals of SGMA.

CALAM'S ATTEMPTED INTERVENTION INTO THE GSA/GSP PROCESS WOULD UNDERMINE SGMA'S LOCAL COLLABORATIVE GSP PROCESSES.

CalAm is a private party with its own narrow corporate interest in promoting a project that it would like to build in Monterey County. It is not a GSA and it is not preparing a GSP to sustainably manage groundwater in the 180/400 Foot Aquifer Subbasin. Rather, it is a member of the public that has been and will be provided with many opportunities under SGMA (which is

notable for its robust public participation provisions) to participate in the preparation of GSPs for the Subbasin and to participate in other ways as the SGMA process proceeds. Apparently not content with this role, CalAm is trying to interfere in and short-circuit the SGMA process. However, this interference is unauthorized and cannot be allowed.

One bedrock set of principles in SGMA is its structural recognition of local control and cooperative local management of groundwater. Its overall goal is to "enhance local management of groundwater." Water Code § 10720.1(b). SGMA also contemplates that state intervention only occur when absolutely necessary. SGMA articulates the Legislature's intent to "manage groundwater basins through the actions of local government agencies to the greatest extent feasible, *while minimizing* state *intervention to only when necessary to ensure that local agencies manage groundwater in a sustainable manner*." *Id*., § 10720.1(h)(emphasis added). Moreover, "[i]t is the intent of the Legislature to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdiction." *Id*., § 10750(a).

These themes of local management, minimization of state intervention, and local agency cooperation run throughout SGMA. This is especially the case with regard to formation of GSAs and to basin management through GSPs. SGMA recognizes that multiple GSAs can be formed and multiple GSPs can be prepared to manage a single groundwater basin or subbasin. *See, e.g*., *id.,* § 10720.7(a)(1)(recognizing that subbasins can be managed by "coordinated groundwater sustainability plans"); *id*., § 10727(b)(recognizing that multiple GSP's can be used to manage a basin pursuant to a "single coordination agreement"). The SGMA mechanism for achieving this coordination is a coordination agreement, which means "a legal agreement adopted between two or more GSAs that provides the basis for coordinating multiple agencies or groundwater sustainability plans within a basin." *Id.* § 10721(d).

SGMA envisions that, when there are jurisdictional overlaps in a basin, the GSAs first negotiate in good faith with one another to resolve the overlap. If these overlaps are not resolved and both GSAs submit a GSP for the overlap area, the GSPs will not be accepted (as DWR has confirmed). MGSA staff has met with SVBGSA staff and is working in good faith to negotiate a coordination agreement and will continue to do so.

CalAm is attempting to precipitate premature state action to undermine the SGMA collaborative local GSP processes. This would violate the legislative directive to minimize State intervention "to only when necessary to ensure that local agencies manage groundwater in a sustainable manner." *Id*., § 10720.1(h). At this stage of the process, the MGSA and SVBGSA GSPs have not been prepared and submitted to DWR, and no determination can yet be made as to whether they ensure sustainable groundwater management. CalAm cannot be allowed to subvert these important, ongoing SGMA processes.

CONCLUSION

For all of the reasons set forth above, MGSA respectfully requests that DWR take no action in response to the CalAm August 12, 2019 comment letter. As DWR's regulations state, DWR "is not required to respond to comments, but shall consider comments as part of its

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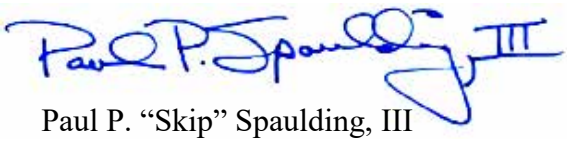
evaluation of a Plan." 23 C.C.R. § 353.8(f). However, if DWR believes that any response is necessary, it should deny in its entirety CalAm's request to "reject" MGSA's GSA formation notice and/or GSP preparation notice.

Very truly yours,



Paul P. "Skip" Spaulding, III

PPS:jla

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EXHIBIT 2

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October 21, 2019

Via E-mail and Mail

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Re: Monterey County's October 9, 2019 SGMA Letter
Marina Sustainable Groundwater Agency Jurisdictional Area

Dear Ms. Ravazzini and Ms. Sobeck:

On behalf of the City of Marina Groundwater Sustainability Agency ("MGSA"), we are responding to Monterey County's October 9, 2019 letter informing the Department of Water Resources ("DWR") and the State Water Resources Control Board ("State Board") of its intent to consider becoming the Groundwater Sustainability Agency ("GSA") for a portion of the 180/400 Foot Aquifer Subbasin ("Subbasin").[1]

INTRODUCTION

In brief, Monterey County ("County") apparently plans to supplant MGSA and become the exclusive GSA for MGSA's jurisdictional area because MGSA and the Salinas Valley Basin GSA ("SVBGSA") have filed overlapping GSA notices for the approximate 400-acre portion of the Subbasin within the City of Marina. DWR and the State Board should firmly reject any County effort to usurp MGSA's GSA authority. The Sustainable Groundwater Management Act ("SGMA") provides for a local agency resolution process to resolve overlapping GSA notices and uncoordinated Groundwater Sustainability Plans ("GSPs"). MGSA and SVBGSA have until January 31, 2020 to negotiate and submit a coordination agreement. Then, if an overlap has not been resolved, SGMA specifies a resolution process implemented by the State Board, which includes a mandatory 180-day negotiation/mediation provision.

[1] In its letter, the County states in several places that it "will consider" taking actions to become the GSA for this property. However, at the end of the letter, the County requests that the agencies let them know if they "have concerns about **the County's plans** to become a GSA for the CEMEX property, as outlined above." (Emphasis added.)

Four independent reasons compel cessation of any Monterey County efforts to become the GSA for this overlap portion of the Subbasin:

- SGMA Section 10724 does not provide a platform for Monterey County to replace MGSA for this area;
- Since it is creating and/or contributing to the overlap, Monterey County cannot invoke Section 10724;
- If it tried to invoke Section 10724, Monterey County would be unlawfully circumventing the explicit local agency coordination requirements and GSP resolution provisions in SGMA; and
- Intervention by DWR or the State Board in support of Monterey County would be premature and inappropriate.

SGMA CONTEXT

Both MGSA and SVBGSA filed notices of their GSA formation and of their intent to prepare GSPs for the Subbasin. While SVBGSA's notice covers the entire Subbasin, MGSA's notice applies only to an approximate 400-acre portion of the Subbasin within the City of Marina's jurisdictional boundaries. Thus, MGSA and SVBGSA have overlapping claims to this portion of the Subbasin.

When competing GSA notices cause overlapping boundaries, SGMA prevents a GSA decision from "tak[ing] effect unless the other notification is withdrawn or modified to eliminate any overlap in the areas proposed to be managed." Cal. Water Code § 10723.8(c). SGMA instructs the local agencies to "seek to reach agreement to allow prompt designation of a groundwater sustainability agency." *Id.* SGMA further requires GSAs "intending to develop and implement multiple groundwater sustainability plans" to "coordinate with other agencies preparing a groundwater sustainability plan within the basin." *Id.* § 10727.6. The GSAs must "jointly submit" their GSPs with a coordination agreement "to ensure the coordinated implementation of the groundwater sustainability plans for the entire basin." *Id.* § 10733.4(b); *see also* Cal. Code Regs. tit. 23, § 357.

Accordingly, when GSAs file overlapping claims, SGMA envisions a process where those agencies negotiate in good faith to reach a compromise and enter into a coordination agreement which they submit with their GSPs. The GSPs and coordination agreement between MGSA and SVBGSA for the Subbasin must be filed by January 31, 2020.

MGSA is complying in all respects with SGMA. It properly formed its GSA, provided the requisite notice of its intent to prepare a GSP, issued a draft GSP on October 8, 2019 and is on schedule to file an approved GSP with DWR by the January 31, 2020 deadline. By

committing the necessary (and significant) financial resources and following the prescribed SGMA process, MGSA has being doing exactly what the law requires and it is entitled to complete this process.

I. SGMA Section 10724 Does Not Apply To This Situation Because Multiple GSAs Have Asserted SGMA Jurisdiction Over The Overlap Area.

The County relies primarily on Water Code Section 10724(a) for its potential plan to eliminate MGSA and take over its SGMA jurisdictional area. This provision states:

> In the event that there is an area within a high- or medium-priority basin **that is not within the management area of a groundwater sustainability agency**, the county within which that unmanaged area lies will be presumed to be the groundwater sustainability agency for that area.

Cal. Water Code § 10724(a) (emphasis added).

The County is mistaken in asserting that this provision is applicable here. As SGMA's legislative history reflects,[2] Section 10724 is intended to cover situations where no GSA asserts jurisdiction over an area within a basin, not where multiple GSAs assert jurisdiction and prepare GSPs for a particular area. When multiple GSAs adopt GSPs to manage such an area, the area is within the management area of several GSAs. Section 10724 comes into play when no local agency shows an interest in a particular basin area (thereby making it "unmanaged") and a county is thereafter given the option to become the GSA of that area. If the county declines, the area will instead be managed by the State Board. No DWR regulations or any judicial decisions interpret this section or alter its plain meaning.

The County argues that this provision should also be applied in a multiple GSA situation. The County attempts to conflate the provisions for establishing an exclusive GSA under SGMA Section 10723.8 with Section 10724 to reach a faulty conclusion that, because of the overlapping area in MGSA's and SVBGSA's GSA notices, the areas should be deemed to be "unmanaged." However, the County inaccurately reads Section 10724(a) as addressing disputes arising under the process for determining an exclusive GSA under Section 10723.8 and incorrectly presumes that where overlapping GSAs jurisdictional claims exist, there is no GSA to manage an area.

MGSA acknowledges that one guidance statement from the State Board opines that "[i]f two or more local agencies overlap, the combined area will be deemed unmanaged" and asserts that a county potentially could become a GSA in this situation. State Board, Frequently Asked

[2] The Legislature intended Section 10724 to apply "in the case of an area where no local agency has ***assumed*** management." S. Rules Comm., Floor Analysis on S.B. 11168 at 4 (Aug. 29, 2014) (emphasis added). In particular, the Legislature linked this provision to whether a local agency has acted to assume management over an area – not whether the local agency has become the exclusive GSA.

Questions on GSAs, at 3 (Nov. 22, 2017) ("SWRCB FAQs"). However, this interpretation is not consistent with the intent, legislative history, and text of Section 10724 and is unsupported by any official regulation or case law. Even so, the State Board attaches an important caveat to this interpretation: if a county is "creating or contributing to the overlap, the county does not become the presumptive GSA." As explained in the next section, this rule disqualifies Monterey County from taking such an action.

In sum, it is not a reasonable interpretation of SGMA to read Sections 10723.8 and 10724 together in this manner, nor does SGMA define its use of the term "unmanaged." Rather, these GSA and GSP provisions are best read as operating at the same time on parallel tracks. Consistent with this interpretation, Section 10724(a) does not require that a basin be within the management area of an exclusive GSA. Where multiple GSAs file to manage the same basin area, the clear text in Section 10724(a) does not support Monterey County's ability to claim the area is unmanaged. This is especially true when, as here, both of the GSAs are on track to submit their GSPs, and a coordination agreement is not due for any overlap areas until the January 31, 2020 GSP submittal deadline.

II. Since Monterey County Is Creating And/Or Contributing To This GSA Overlap, It Is Disqualified From Invoking Section 10724.

Guidance from the State Board and DWR places a very important limitation on Monterey County's authority to become a GSA for an unmanaged area under Section 10724: "If a county is creating or contributing to the overlap, the county does not become the presumptive GSA." SWRCB FAQs at 3; *see also* DWR, *GSA Frequently Asked Questions*, at 4 (May 10, 2019).

The County argues that it is a completely separate entity from SVBGSA and thus could not be creating or contributing to the overlap. However, the facts do not support this claim. Monterey County was a moving force behind SVBGSA's formation and even "pushed for the establishment of the Joint Powers Authority" ("JPA"). SVBGSA Minutes at 2 (Sept. 19, 2019). Monterey County is a member of SVBGSA and the County Administrative Officer position (who authored the County's October 9, 2019 letter) is designated as the official County representative to SVBGSA. (*See* Exhibit A to SVBGSA's JPA Agreement.) Section 10.4 of the JPA Agreement for SVBGSA reflects that the County has provided almost 60% of all initial funding for SVBGSA during the 2017–19 period, totaling $1.34 million. The Monterey County Counsel's office has served as the attorney for SVBGSA as it filed GSA and GSP notices and even prepared the GSP that the County now proposes to adopt after it eliminates MGSA. Indeed, the law reflects that a JPA agreement allows "two or more public agencies by agreement [to] jointly exercise any power common to the contracting parties." Cal. Gov't Code § 6502.

In short, it is wholly unpersuasive for the County to assert that it is a separate entity from SVBGSA and therefore is not creating or contributing to the overlap situation. In actuality, the County, as a member, majority funder and driving force in the SVBGSA, is indisputably creating and/or contributing to the overlap situation and cannot masquerade as a disinterested county

agency coming in under a ministerial application of Section 10724 to resolve a dispute among two local GSA agencies.

This is exactly the kind of conflict situation envisioned by the DWR/State Board guidance where a county is disqualified from attempting to invoke Section 10724. Monterey County's contemplated actions here vividly illustrate these dangers. The County is responding to a request by an affiliated entity (SVBGSA) of which it is the primary funder, to consider using its powers to prevent the City of Marina from exercising its GSA authority. Monterey County has announced its intention to adopt SVBGSA's GSP for the overlap area – the same GSP that the County helped design as a member of SVBGSA. Notably, Monterey County fails to present any groundwater management justification for asserting control over the overlap area. It is exactly to prevent such county conflicts that the "creating or contributing" limitation was adopted.

SVBGSA and the County are being encouraged by California-American Water Company ("CalAm") to take these actions to promote its Monterey Peninsula Water Supply Project ("Project"). In its October 9, 2019 letter to SVBGSA, copied to the Monterey County Administrative Officer, CalAm requests both entities to "defer any action on a coordination agreement" with MGSA and instead requests that the County become the GSA for the overlap area. CalAm takes the ridiculous position that MGSA is only preparing a GSP to stop its Project and attempts to enlist the County so it can build the Project. CalAm is not a GSA and, as a private corporation intent on profit, it has no interest in ensuring sustainable groundwater management in the Subbasin. Rather, it is a third party with no official role in this SGMA process attempting to pressure public agencies to achieve its corporate goals. By advocating to stop any coordination agreement discussions, it is also trying to artificially create an impasse in hopes of a County takeover or state intervention.

As a DWR representative has already informed SVBGSA, the County would need to withdraw from the SVBGSA if it intends to take any action under Section 10724. According to the minutes of the September 19, 2019 SVBGSA Advisory Committee meeting, a DWR representative (Tom Berg) stated to SVBGSA:

> Monterey County can remove itself from the SVBGSA and become the GSA for the unmanaged area and enter into a coordination agreement. The cleaner approach is if Monterey County decides there is an overlap and becomes the GSA for the entire 180/400 Subbasin. **They can become the GSA for only Marina if they do not create the GSA with the intent to take over Marina's portion.** You can resolve the overlap and trust Marina will timely submit their Plan. If the Plan is determined to be insufficient during the two-year review, the Water Board could determine the entire Subbasin to be insufficient. He expects legal fights if Monterey County takes over the Subbasin. **Mr. Berg referenced the determination that Kern County had created**

> **their overlap conflict, and they were prevented from becoming the GSA as a result.**
>
> * * *
>
> Tom Berg stated that during the telephone conversation with Mr. Nordberg, DWR, it was suggested that the cleaner approach is for Monterey County to become the GSA for the entire basin. **If the County becomes the GSA only for Marina, it is no longer ministerial in terms of taking out Marina instead of just trying to clear the overlap.**[3]

Id. at 3–4 (emphasis added).

There are explicit withdrawal provisions in Sections 11.6 and 11.8 of SVBGSA's JPA Agreement that the County could utilize to accomplish this withdrawal. Moreover, after withdrawal, the County would need to assert jurisdiction over all overlap areas in the Subbasin. This would, of course, cause needless and extensive organizational and financial harm to all GSAs with overlapping claims and would completely undercut SGMA's goals.

In actuality, "SGMA requires the agencies to resolve" boundary disputes. SWRCB FAQs at 3. The State Board only deems an area unmanaged until the GSAs resolve their conflict. *Id.* This limitation aligns with the intended purpose of Section 10724 to function as a safety valve, allowing a county to assume the role of a GSA in a ministerial manner as a last resort or as a temporary solution before a local agency can take control. Instead of serving that purpose, Monterey County would be using Section 10724 to target only the City of Marina and block it from exercising its GSA authority and implementing its GSP. This effort would contravene SGMA's emphasis on and processes for local agency cooperation and basin management.

III. Monterey County's Potential Action Would Fatally Undermine SGMA's GSA Collaboration Process.

SGMA specifies a specific process for GSAs who file overlapping notices to coordinate and submit a joint GSP or set of GSPs. *See* Cal. Water Code §§ 10727.6 and 10733.4(b). The Water Code likewise provides a process for resolving disputes, in the event that GSAs fail to coordinate and submit joint GSPs for a critically overdrafted basin by the January 31, 2020 deadline. In that situation, the State Board can designate that basin as probationary. *Id.* §§ 10735.2(a)(2) and 10735.2(a)(3) (providing that the State Board can also make a probationary designation after finding that a GSP is inadequate). The State Board must give the local agencies or GSAs "180 days to remedy the deficiency," and "[t]he board may appoint a mediator or other

[3] The minutes reflect that a representative of Monterey County (Charles McKee) attended this meeting.

facilitator . . . to assist in resolving disputes, and identifying and implementing actions that will remedy the deficiency." *Id.* § 10735.4(a). Disagreements over overlapping portions of the basin are covered by this provision.

If it tried to eliminate MGSA's authority over the overlapping area and intervene as the exclusive GSA, the County would be improperly using Section 10724 to implement the GSP of its affiliated GSA entity, violating State Board and DWR guidance directly on point, and undermining SGMA's dispute resolution processes. This action would set a dangerous precedent that could incentivize the misuse of Section 10724 by counties.

IV. DWR And State Board Intervention Is Premature And Legally Unauthorized.

MGSA and SVBGSA are entering a critical time for collaboration to meet the January 31, 2020 GSP submission deadline. Monterey County's potential plan to assert itself as the GSA for the MGSA jurisdictional area threatens to derail this process. Intervention by DWR or the State Board to support Monterey County would similarly quash any possibility of compromise between the two GSAs. Unfortunately, CalAm is urging a strategy to promote its own narrow agenda, likely because it does not want to comply with the GSP of MGSA or with MGSA oversight of its potential groundwater source. However, MGSA and SVBGSA must negotiate in good faith and be given the opportunity to complete the local agency coordination process prescribed by SGMA. The Water Code specifically provides for State Board intervention if MGSA and SVBGSA cannot meet the January 31, 2020 deadline. *See* Cal. Water Code § 10735.2(a)(2). Any actions that interfere with or undermine these SGMA processes are premature and inappropriate.

CONCLUSION

For the foregoing reasons, DWR and the State Board must immediately inform Monterey County that Section 10724 is not applicable in this situation. The County, as the moving force, member, primary funder and general legal advisor to SVBGSA, has created and or contributed to the overlap situation and is therefore disqualified from using this provision. Supporting CalAm's reluctance to be governed and monitored by the government entity with the overlying interest, does not support SGMA and the intention of the Legislature to sustainably manage groundwater. The City of Marina's formation of MGSA to prepare its own GSP to govern critical groundwater resources within its jurisdiction is consistent with the spirit and language of SGMA.

Thank you for giving MGSA the opportunity to provide comments on this important issue. We are certainly available to discuss these issues with you.

Very truly yours,

Paul P. "Skip" Spaulding, III

PPS:jla

cc: Mark Nordberg, Department of Water Resources
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ATTACHMENT 2

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November 21, 2019

Gary Petersen
General Manager
Salinas Valley Basin Groundwater Sustainability Agency

Re: MGSA/SVBGSA Coordination Agreement Discussions

Gary,

I wanted to follow up on our previous discussions regarding a coordination agreement with SVBGSA and next steps to move this forward. I understand from our last telephone conversation that you have received direction that the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) will only agree to meet with the Marina Groundwater Sustainability Agency if MGSA "agrees to give up its GSA." From MGSA's viewpoint, this is not a negotiation on a coordination agreement; rather, it is a request that MGSA go out of existence, which is of course not acceptable.

We continue to be ready to have a discussion on a coordination agreement that will comply with the Sustainable Groundwater Management Act. We strongly encourage SVBGSA to negotiate in good faith to achieve this goal.

Sincerely,

Layne Long
City Manager/Executive Director
City of Marina-Marina Groundwater Sustainability Agency

ALISAL WATER CORPORATION

A California Corporation
dba ALCO WATER SERVICE

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November 25, 2019

SVBGSA
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SENT VIA EMAIL TO peterseng@svbgsa.org

RE: Comments of Alisal Water Corporation, dba Alco Water Service, on the Groundwater Sustainability Plan for the 180/400 Foot Subbasin

Dear SVBGSA Board of Directors,

Alisal Water Corporation, dba Alco Water Service ("Alco") is a water supplier located in the Salinas Valley in and around the Eastern portion of the City of Salinas and providing water for human consumption, domestic purposes, and fire protection and irrigation purposes.

Alco is regulated by both the California Public Utilities Commission ("CPUC") and State Water Resources Control Board ("SWRCB").

The CPUC is an administrative agency upon which the California Constitution and the Legislature has conferred broad authority, including broad legislative and judicial powers, to regulate utilities, including the power to fix rates, establish rules, determine the requirements for public utility practices, equipment facilities and service, and hold various types of hearings, and establish its own procedures for the execution of such authorities. CPUC defines Alco as a public utility water corporation that owns and operates a water system.[1]

SWRCB is an administrative agency upon which the Legislature has conferred the authority to regulate the water quality and the health and safety of public drinking water systems' water provided and their water system facilities. SWRCB defines Alco as a public water system and an urban water supplier.

[1] Alco, California Water Service Company and California American Water and Little Bear Water Company are all water utilities that are regulated directly by the CPUC.

Both agencies, the CPUC and SWRCB, have the responsibility to ensure that the water systems that they regulate have sufficient water supply to adequately serve the public and meet its health and safety requirements. These agencies are also obligated to ensure that the water systems meet the requirements of California Water Code § 106.3 (a) and (b)[2].

For purposes of the proposed Sustainability Plan drafted by SVBGSA for the 180/400 Foot Aquifer Subbasin, Alco is included in the group defined as municipal water provider.

As such, the following comments of Alco on the SVBGSA's draft Groundwater Sustainability Plan for 180/400 Foot Aquifer Subbasin ("Plan") reflect Alco's obligations under its CPUC, SWRCB and Legislative requirements as described above and Alco wants to ensure that the Plan, as well as future Plans, do not conflict with these obligations.

ALCO'S COMMENTS:
Page 9-4:
9.2.2 Pumping Allowances

Sustainable allowances for municipal and industrial groundwater pumpers will be addressed when sustainable pumping allowances are being developed for agricultural pumpers. Because these allowances are not water rights, municipal and industrial water users will be able to pump groundwater even without a quantified sustainable allowance. However, if municipal and industrial groundwater pumpers are not provided a sustainable allowance, any groundwater pumping by these entities will be subject to the Tier 2 Transitional Pumping Charge and Tier 3 Supplemental Pumping Charge.

Because the California Legislature has already declared, in California Water Code § 106[3], that the highest use of water is for that of domestic purposes, which is the type of water that Alco and all other municipal water providers provide, Alco believes that municipal water providers must be allowed a Tier 1 sustainable allowance, which should be based on historical groundwater pumped by municipal water providers. Courts, including the California Supreme Court and Federal Courts, have upheld California Water Code § 106's declaration that the highest use of water is domestic use and that this is binding upon all California agencies. Please refer to the cited cases, below:

Provision of this section declaring that use of water for domestic purposes is the highest use to which water can be devoted is binding on every California agency. .... City of Beaumont v. Beaumont Irrigation District (1965) 46 Cal.Rptr. 465, 63 Cal.2d 291, 405 P.2d 377.

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[2] *(a) It is hereby declared to be the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.*
(b) All relevant state agencies, including the department, the state board, and the State Department of Public Health, shall consider this state policy when revising, adopting, or establishing policies, regulations, and grant criteria when those policies, regulations, and criteria are pertinent to the uses of water described in this section.
[3] *It is hereby declared to be the established policy of this State that the use of water for domestic purposes is the highest use of water and that the next highest use is for irrigation.*

And,

Provisions of this section declaring general state policy that use of water for domestic purposes is the highest and best use and in §106.5 that rights of municipalities are to be protected to extent necessary for existing and future uses, do not merely regulate administrative action which state engineer might take on applications to appropriate surplus water, but they constitute part of substantive law of California delineating rights of users of water. Rank v. Krug, S.D.Cal.1956, 142 F.Supp. 1.

Therefore, Alco believes that the SVBGSA's Plan should establish Tier 1 sustainable pumping allowances for all municipal water providers and not subject their usage entirely to Tier 2 and Tier 3 charges.

ALCO'S COMMENTS:
Pages 9-8 to 9-9:
9.2.7 Details to be Developed

The sections above present an initial structure for the water charges framework; however, stakeholders must agree to a number of details before the SVBGSA initiates the water charges framework. An initial list of details that must be negotiated are presented below to provide SVBGSA members and stakeholders an understanding of the range of specifics that are open for negotiation.

- *Are de-minimis pumpers that pump less than two AF/yr. for domestic purposes exempt from the water charge framework and other management actions?*
- *Are any class of pumpers other than de-minimis pumpers exempt from the water charge framework and other management actions?*
- *How are sustainable pumping allowances set?*
- *How are transitional allowances phased out in the Subbasin? Over what time frame are pumping allowances ramped down?*
- *What is the Tier 1 Sustainable Pumping Charge?*
- *What is the Tier 2 Transitional Pumping Charge?*
- *What is the Tier 3 Supplemental Pumping Charge?*
- *What is an equitable balance between the Tier 1 Sustainable Pumping Charge collected in the 180/400-Foot Aquifer Subbasin and the Tier 1 Sustainable Pumping Charge collected in other subbasins?*
- *What is an equitable balance between the Tier 2 Transitional Pumping Charge collected in the 180/400-Foot Aquifer Subbasin and the Tier 2 Transitional Pumping Charge collected in other subbasins?*
- *What is an equitable balance between the Tier 3 Supplemental Pumping Charge collected in the 180/400-Foot Aquifer Subbasin and the Tier 3 Supplemental Pumping Charge collected in other subbasins?*
- *How is currently non-irrigated (e.g., fallowed) land addressed?*

- *How are municipalities addressed?*
- *What are the limits and parameters of the carryover and recharge options?*
- *What in involved in approving relocation or transfer of pumping credits?*

As Alco has previously stated, when the SVBGSA is establishing water allowances and water charges framework for municipal water providers, it must take into consideration the obligations of California Water Code § 106.3, the requirements of the CPUC (in the case of water utilities like Alco that are regulated by that agency) and SWRCB on municipal water providers. Alco believes that the Tier 1 sustainable water allowance for municipal water providers should be based on the providers' historical pumping information. Also, the municipal water providers should be able to carry over any excess pumping allowances into future years. Municipal water providers should be able to obtain all pumping credits and/or Tier 1 and Tier 2 pumping allowances for irrigated and fallow lands to which the municipal water provider provides water service in excess of the amounts that are pumped on these lands, if any.

ALCO'S COMMENTS:
Page 9-7:
9.2.4 Relocation and Transfer of Pumping Allowances

Relocation and Transfer of Pumping Allowances Pumping allowances may be moved between properties temporarily or permanently. Such relocation of pumping allowances is subject to review by the SVBGSA to ensure that such relocation or transfer does not prevent the sustainability goal from being met. The SVBGSA will model the effects of the relocation to assess any significant and unreasonable impacts from the proposed relocation. Relocating pumping allowances provides pumpers with flexibility to manage their land, water resources, and finances as they desire. Pumping allowances could also be permanently or temporarily transferred between different owners, and could be used for another pumping purpose.

Alco believes that there should be a mechanism for the transfer of pumping credits and/or Tier 1 and Tier 2 pumping allowances for 1) lands or any portion thereof that are converted from agricultural use (or fallow lands) to development to which the municipal water provider provides service and 2) agricultural lands (or fallow lands) to which the municipal water provider provides water service in excess amounts of the amounts that are pumped on these lands, if any.

ALCO'S COMMENTS:
9.4 PROJECTS

Alco believes that SVBGSA's Plan should clearly state that any party, be it a municipal water provider or agricultural users, who directly funds a project independent of the fee and charges framework developed by the Plan, and such project will supplement the 180/400 Foot Aquifer Subbasin's groundwater supplies or limit seawater intrusion (over and above the amounts of water already accounted for in this Plan), should be allowed to use such recharged water without paying any pumping fees for the amount of added water, on an annual basis. As an example, if Alco were to directly fund a project that recharged an additional 100 acre-feet per

year that would not have otherwise been available, Alco should have the legal authority to pump that much water annually without charges being assessed. The benefit of allowing parties to directly fund such projects is that the SVBGSA will not have to expend the time, monies and efforts to implement a tax and/or go through the Proposition 218 process. Additionally, the tax burden and/or fees to landowners and residents of the Salinas Valley Basin will subsequently be reduced.

Thank you for the opportunity to provide Alco's comments on the SVBGSA's draft Groundwater Sustainability Plan for 180/400 Foot Aquifer Subbasin. If you have any questions, you may contact me at (831) 424-0441.

Sincerely,

Adnen Chaabane
Operations Engineer

AC/ams

December 25, 2019

Gary Petersen, General Manager
Members of the Board
Salinas Valley Basin Groundwater Sustainability Agency

We, the signers of this letter, are farmers and landowners in the 180/400, commonly referred to as the Pressure. The 20-year Groundwater Sustainability Plan for the Pressure that your agency is about to submit to the State Department of Water Resources will have a substantial effect on the operations and economics of our companies.

We believe there is an easily correctable problem in the plan.

Project 1, found in section 9.4.3.2, is Invasive Species Eradication (arundo and tamarisk). According to the plan, this project "will reduce evapotranspiration from these invasive plants, leaving more water in the Salinas River and increasing aquifer recharge or reducing the amount of water required to be release from Nacimiento and San Antonio Reservoirs." All vegetative overgrowth in the river, not just invasives, contributes to these problems. Project 1 should be changed so that all vegetative overgrowth is managed, not just invasives, in order to reduce evapotranspiration and leave more water in the river.

Your plan will force us to pay millions of dollars for projects. It will also potentially subject us to management actions such as reduced pumping. These costs and actions are not acceptable if the SVBGSA leaves cheap water on the table from river evapotranspiration.

We ask that you amend Project 1 for the following reasons:

1. Evapotranspiration reduction. Brown & Caldwell's 2015 report states that up to 50,000 acre/feet of water are lost every year due to evapotranspiration from river vegetation overgrowth.
2. Increase conveyance of water in the river. This will benefit other GSP projects, such as water diversion for the Eastside Canal and operation of the SRDF.
3. Increase water available for percolation in the river.
4. Operation and re-operation of the reservoirs (9.3.4, #2 "Allow summer flows to better reach the SRDF") directly contribute to vegetation overgrowth in the river. The SVBGS needs to mitigate the negative side-effects of its projects and actions.
7. River vegetation management would be cheap in comparison to the plan's other projects. Chapter 9 estimates water cost from Invasive Species Eradication at $160 AF/year, which is theoretically higher than non-invasive vegetation management, as invasives require pesticides. Other projects' water costs are even higher: CSIP Optimization is $270 AF/year, CSIP Expansion is $630 AF/year, SRDF

Maximization is $220 AF/year, Extraction Barrier is $590 AF/year and the Chualar Diversion is $750 AF/year. In context with these expensive water sources, leaving cheaper water on the table is poor fiscal stewardship.

8. The total capital costs of projects 1-9 in the 20-year-plan, according to your draft, total $385,000,000.00 with an additional $24,000,000.00 in annual O&M costs. Why should we pay for high cost projects when a relatively inexpensive project like river vegetation maintenance is being ignored?

We ask that you amend Project 1 to include vegetation management before you submit the plan to the State Department of Water Resources.

Pressure Letter to SVBGSA Board 12/25/2019

signature

Carlos Ramirez

printed name

San Benny Growers

company

Pressure Letter to SVBGSA Board 12/25/2019

signature

[illegible] NUNES

printed name

THE NUNES COMPANY, INC.

company

Pressure Letter to SVBGSA Board 12/25/2019

Stephen de Lorimier

signature

Stephen de Lorimier

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D'Agrigo California

company

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DALE D. IDUSS

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OCEAN MIST FARMS

company

SEA MIST FARMS

Pressure Letter to SVBGSA Board 12/25/2019

Michael Scattini

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MICHAEL SCATTINI

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Luis Scattini & Sons

company

Pressure Letter to SVBGSA Board 12/25/2019

Dick Giannini

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Dick Giannini

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Wayne Gularte

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Wayne Gularte

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CHRIS BURN

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Crown Park Co Inc.
General Farm Investment Co

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Victor Ramirez

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George Fontes

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Fontes Farms

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Bardin Bengard

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Bardin Bengard

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Bengard Ranch

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David Costa

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David Costa

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Costa Farms Inc.
Costa Family Farms
Anthony Costa & Sons

company

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John R. Marihart

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MARIHART FAMILY LLC

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KEN HIGASHI

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HIGASHI FARMS INC

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Allan Clark

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Merrill Farms

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Church Brothers Farms

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EDWARD S. MORIMOTO

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Gary Tanimura

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GARY TANIMURA

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TANIMURA & ANTLE

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Nick Huntington

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SUNSET FARMS INC

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Dennis Lebow

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DENNIS LEBOW
DIRECTOR OF LAND AND WATER RESOURCES

25 November 2019

Mr. Gary Peterson
General Manager
Salinas Valley Basin Groundwater Sustainability Agency
1441 Shilling Place
Salinas, CA 93901

Dear Mr. Peterson,

This letter provides California Water Service Company's (Cal Water's) comments on the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (GSP) Public Review Draft, dated 21 October 2019. Our comments focus on the GSP's Section 9.2 – Water Charges Framework.

We understand that SVBGSA plans to implement a "Water Charges Framework", which includes assigning pumping allowances to groundwater users and collecting fees based on their use relative to the assigned allowances. Section 9.2 of the GSP describes the Water Charges Framework as a tiered rate structure where Tier 2 and Tier 3 charges (i.e., charges on pumping above a user's sustainable pumping allowance) will fund projects or purchases of additional water. As stated in Section 9.2 (Page 9-3) of the GSP:

> *"These allowances … are pumping amounts that form the basis of a financial fee structure to both implement the regulatory functions of the SVBGSA and fund new water supply projects… Tier 2 and Tier 3 funds are used to build projects and pay annual costs of purchasing and treating water that have a defined benefit to individuals or groups."*

It is unclear from the GSP's description who will be the beneficiaries for each proposed project and how the tiered rates structure reasonably collects funding from project beneficiaries. *"All of the integrated projects and management actions for the Salinas Valley are included in this GSP, although the benefit may be limited in this Subbasin* (Section 9.1)", therefore, it appears that fees collected in other Salinas Valley subbasins may also be used to fund the 180/400 Subbasin GSP's proposed projects or vice versa. It is also unclear how the Water Charges Framework could incorporate additional funding sources for projects, including direct investments in projects or water management efforts by an individual agency. The mechanisms of the planned Water Charges Framework are highly uncertain at this stage and could have significant impacts on groundwater users (including Cal Water and our customers) both in the near- and long-term.

We understand that SVBGSA plans to develop the Water Charges Framework during the first three years of GSP implementation with Salinas Valley Basin stakeholders. As stated in Section 9.2 (Page 9-2) of the GSP,

> *"The stakeholders of the Salinas Valley Basin will develop the water charges framework during the first three years of GSP implementation as an agreement approved by the SVBGSA."*

Cal Water srongly supports the SVBGSA's stated intention to vigorously engage stakeholders during development of the Water Charges Framework. We recommend the following to be considered and defined in the Water Charges Framework:

1. Recognition of a groundwater user's share of a basin's native safe yield and the benefits and/or effects of previous efforts undertaken by the user to augment basin supplies (e.g., investment in water supplies and conservation);
2. The ability to incorporate and preserve the projects and water management efforts that are implemented by individual agencies that result in additional supplies to the basin;
3. A mechanism by which a projects' yield can be reasonably allocated to those who have contributed to the project, either via the tiered rate structure or through direct investment;
4. Flexibility for groundwater users that are located in multiple Salinas Valley subbasins and are willing to invest in projects. Specifically, given the integrated nature of the Salinas Valley subbasins, **groundwater users should receive credit for projects and water management efforts across subbasins where there are demonstrable benefits (i.e. each subbasin's issues do not need to be entirely addressed through projects in that subbasin)**.

We appreciate the opportunity to comment and look forward to participating in GSP implementation.

Sincerely,

Michael Hurley
Water Resources Manager, California Water Service Company

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
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(559) 243-4005
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GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

November 21, 2019

Sent Via Mail and Electronic Mail

Gary Petersen, General Manager
Salinas Valley Basin Groundwater Sustainability Agency
Post Office Box 1350
Carmel Valley, California 93924
peterseng@svbgsa.org

Subject: Comments on the Salinas Valley Basin Groundwater Sustainability Plan

Dear Mr. Petersen:

The California Department of Fish and Wildlife (Department) Central Region is providing comments on the Salinas Valley Basin 180/400 Foot Aquifer Draft Groundwater Sustainability Plan (GSP) prepared by Salinas Valley Basin Groundwater Sustainability Agency pursuant to the Sustainable Groundwater Management Act (SGMA) for the 180/400-Foot Aquifer Subbasin (Subbasin). As trustee agency for the State's fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of such species (Fish & Game Code §§ 711.7 and 1802).

Development and implementation of Groundwater Sustainability Plans under SGMA represents a new era of California groundwater management. The Department has an interest in the sustainable management of groundwater, as many sensitive ecosystems and species depend on groundwater and interconnected surface waters, including ecosystems on Department-owned and -managed lands within SGMA-regulated basins. SGMA and its implementing regulations afford ecosystems and species specific statutory and regulatory consideration, including the following as pertinent to Groundwater Sustainability Plans:

- Groundwater Sustainability Plans must identify and consider impacts to groundwater dependent ecosystems (GDEs), pursuant to 23 California Code of Regulations (CCR) § 354.16(g) and Water Code § 10727.4(l); and

- Groundwater Sustainability Agencies must consider all beneficial uses and users of groundwater, including environmental users of groundwater [Water Code § 10723.2 (e)]; and Groundwater Sustainability Plans must identify and consider potential effects on all beneficial uses and users of groundwater [23 CCR §§ 354.10(a), 354.26(b)(3), 354.28(b)(4), 354.34(b)(2), and 354.34(f)(3)]; and

- Groundwater Sustainability Plans must establish sustainable management criteria that avoid undesirable results within 20 years of the applicable statutory deadline, including depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water [23 CCR § 354.22 *et seq*. and Water Code §§ 10721(x)(6) and 10727.2(b)] and describe monitoring networks that can identify adverse impacts to beneficial uses of interconnected surface waters [23 CCR § 354.34(c)(6)(D)]; and

- Groundwater Sustainability Plans must account for groundwater extraction for all Water Use Sectors including managed wetlands, managed recharge, and native vegetation [23 CCR §§ 351(al) and 354.18(b)(3)].

Furthermore, the Public Trust Doctrine imposes a related but distinct obligation to consider how groundwater management affects public trust resources, including navigable surface waters and fisheries. Groundwater hydrologically connected to navigable surface waters and surface waters tributary to navigable surface waters are also subject to the Public Trust Doctrine to the extent that groundwater extractions or diversions affect or may affect public trust uses (*Environmental Law Foundation v. State Water Resources Control Board* (2018), 26 Cal. App. 5th 844). Accordingly, groundwater plans should consider potential impacts to and appropriate protections for navigable interconnected surface waters and their tributaries, and interconnected surface waters that support fisheries, including the level of groundwater contribution to those waters.

In the context of SGMA statutes and regulations, and Public Trust Doctrine considerations, the Department values groundwater planning that carefully considers and protects groundwater dependent ecosystems, fish and wildlife beneficial uses, and users of groundwater and interconnected surface waters.

COMMENT OVERVIEW

The Department is writing to support ecosystem preservation and enhancement in compliance with SGMA and its implementing regulations based on Department expertise and best available information and science. The Department recommends the GSP provide additional information and analysis on identification and consideration of groundwater dependent ecosystems and interconnected surface waters. The Department is providing additional comments and recommendations below.

GSP COMMENTS AND RECOMMENDATIONS

1. **Comment #1 Plan Area.** Chapter 3 Description of Plan Area, Subchapter 3.3 Jurisdictional Areas and Subchapter 3.4 Land Use (starting page 3-13).

a. *Issue:* Figure 3-3 on page 3-14 incorrectly labels the Department's Moro Cojo Ecological Reserve and does not include privately conserved lands within the GSP boundary. The narrative for paragraph 3.3 Jurisdictional Areas does not list privately conserved lands within the GSP boundary, such as Elkhorn Slough Foundation lands.

b. *Recommendation:* The Department recommends changing the map on page 3-14 to include privately conserved lands to Moro Cojo Ecological Reserve. The Department also recommends the GSP include a section within 3.3 Jurisdictional Areas that defines the privately conserved lands within its boundary, including Elkhorn Slough Foundation lands.

2. **Comment #2 Interconnected Surface Water.** Chapter 4 Hydrogeologic Conceptual Model, Subchapter 4.4.4 Natural Discharge Areas (starting page 4-23); Chapter 5 Groundwater Conditions, Subchapter 5.6 Interconnected Surface Water (starting page 5-54).

   Analysis of interconnected surface waters (ISW) in the GSP deprioritizes shallow groundwater-bearing sediments.

   a. *Issues:*

      i. The GSP explains that the U.S. Geological Survey Salinas Valley Integrated Hydrologic Model (USGS SVIHM) model will help identify surface water-groundwater connectivity and locate potential areas of discharge to streams (pages 4-23, 5-56). Absent model results, the GSP cannot provide specific estimations of the quantity and timing of streamflow depletions as specified in 23 CCR § 354.16(f), though the GSP does identify likely areas of interconnectivity (Figure 5-35, page 5-58).

      ii. Importantly, the GSP abdicates oversight of shallow groundwater above the Salinas Valley Aquitard, excluding shallow groundwater from principal aquifers in the Subbasin and therefore excluding shallow groundwater from ISW analyses. The GSP cites limited hydraulic communication between the shallow groundwater (above the 180-Foot Aquifer) and the basin's primary principal aquifers, 180-Foot and 400-Foot Aquifers, as the reason for excluding shallow groundwater (pages 4-17, 5-56). Therefore, the GSP focuses primarily on interconnectivity between the 180-Foot and 400-Foot Aquifers and surface water, excluding the entirety of shallow groundwater in surface water-groundwater interactions. Groundwater Sustainability Plans are also required to identify principal aquifers, referring to aquifers or

aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems [23 CCR § 351(aa)]. For these principal aquifers, Groundwater Sustainability Plans must include formation names, physical and structural properties, water quality, primary use, data gaps, and groundwater conditions (e.g., groundwater elevation and hydrographs, and other information relevant to SGMA's six sustainability criteria) [23 CCR §§ 354.14(b)(4), 354.16]; as well as monitoring networks sufficient to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions and sustainability indicators [23 CCR § 354.34]. There is no specific reason why a shallow aquifer cannot comprise a 'principal aquifer,' particularly where shallow aquifers are overlain by GDEs supporting interconnected surface waters and special status species. Where a shallow groundwater system stores and yields quantities of water that are 'significant' to surface water beneficial users, including domestic users and environmental beneficial users such as GDE beneficial users, this shallow aquifer may be considered a 'principal' aquifer per the definition provided in the Groundwater Sustainability Plan regulations [23 CCR § 351(aa)]. Shallow groundwater systems are arguably the *most* significant aquifers for environmental beneficial uses and users of groundwater, because they are the aquifers directly accessible to and supportive of the terrestrial and aquatic habitat. Accordingly, Groundwater Sustainability Agencies should consider including shallow groundwater systems as 'principal aquifers' in their Groundwater Sustainability Plans where shallow groundwater and GDEs are concurrently present, in order to thoroughly characterize a groundwater basin and best identify potential effects on environmental users of groundwater as SGMA statue and Groundwater Sustainability Plan regulations require [Water Code § 10723.2(e), 23 CCR §§ 354.10(a), 354.26(b)(3), 354.28(b)(4), 354.34(b)(2), and 354.34(f)(3)].

iii. The GSP also says, "If the groundwater level is below the stream bottom, the stream and groundwater are disconnected. SGMA does not require that disconnected stream reaches be analyzed or managed" (page 5-54). This explanation of ISW is inaccurate and contradicts the definition of ISW per Groundwater Sustainability Plan regulations, which the GSP itself cites on page 8-2 as "surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted" [23 CCR § 351 (o)]. This means that even if groundwater elevation is lower than streambed elevation and the river reach is 'losing,' there may still be hydraulic communication between

the aquifer and streamflow if there is a saturated layer connecting the two, and pumping from the aquifer may yet cause streamflow depletion (Barlow and Leake 2012). The definition proffered by the GSP excludes streams as interconnected when groundwater levels fall below streambed elevations; however, these stream reaches may still be interconnected if there is a continuous saturated zone connecting the groundwater table and the stream.

iv. The GSP Water Budget attributes significant quantities of groundwater inflow to streamflow percolation and deep percolation of precipitation and excess irrigation (pages 6-13 to 6-14, 6-29; Figure 6-5). The GSP also claims that shallow water-bearing sediments are poorly connected to the underlying 180-Foot and 400-Foot aquifers due to the Salinas Valley Aquitard (page 4-17); therefore, it is unlikely that significant surficial recharge reaches the 180-Foot and 400-Foot Aquifers (page 4-21). This conclusion creates confusion as to how percolation contributes such large quantities of recharge to the basin, presumably to the principal aquifers that were accounted for in the water budget (180-Foot and 400-Foot), if there is limited hydraulic communication between shallow sediments and these two principal aquifers. This conclusion also lends more importance to management of the shallow groundwater above the Salinas Valley Aquifer (see above comments), especially if the basin undergoes further water resource development in the shallow water-bearing formations.

v. Continued study of surface water-groundwater interaction is not included in Subchapter 4.7 Data Gaps, but it is mentioned on pages 5-56 and 8-68, where the GSP acknowledges that additional data and shallow groundwater monitoring wells may be necessary to reduce uncertainty of ISW.

b. *Recommendations:*

i. The Department recommends that the GSP model results that identify the estimated quantity and timing of streamflow depletions in the Subbasin. The Department also recommends that the GSP include clear documentation on model development, as numerical modeling is an apt but complex tool for identifying surface water-groundwater connectivity.

ii. The Department recommends including the shallow water-bearing sediments above the Salinas Valley Aquifer as a principal aquifer in the GSP to encourage diligent monitoring and management of a resource

of great significance to environmental beneficial uses and users in the Subbasin.

iii. The Department recommends correcting the definition of ISW on page 5-54 by incorporating the Groundwater Sustainability Plan regulation definition.

iv. The Department requests clarification on how surficial recharge can be both severely restricted by the Salinas Valley Aquitard and comprise such a significant portion of the Water Budget inflow when shallow groundwater above the aquitard is not included in the GSP's Water Budget analysis.

v. The Department requests including expanded ISW studies and monitoring in the Subchapter 4.7 Data Gaps.

3. **Comment #3 Groundwater Dependent Ecosystems.** Chapter 4 Hydrogeologic Conceptual Model, Subchapter 4.4.4 Natural Discharge Areas (page 4-23 to 4-24).

The GSP proposal to refine Groundwater Dependent Ecosystem (GDE) identification, pursuant to 23 CCR § 354.16 (g), lacks actionable specifics.

a. *Issue:* The GSP relies on the Natural Communities Commonly Associated with Groundwater (NCCAG) dataset for identification of potential GDEs (Figure 4-10, pages 4-23 to 4-24). This dataset provides a valuable foundation for GDE identification but benefits from additional validation. The GSP acknowledges that field reconnaissance is necessary to verify potential GDEs (page 4-23), but it does not specify how or when this verification will occur, nor does it acknowledge that additional GDE identification may be required beyond the NCCAG dataset to thoroughly locate GDEs.

b. *Recommendations:*

i. The Department recommends developing a specific plan and timeline for GDE identification that includes methods used to vet the current set of potential GDEs shown in Figure 4-10. If the GSP will include a depth-to-groundwater analysis for GDE verification, in addition to field reconnaissance, the Department advises development of a hydrologically robust baseline that relies on multiple, climatically representative years of groundwater elevation and that accounts for the inter-seasonal and inter-annual variability of GDE water demand.

The Department also suggests careful consideration of potential GDEs near interconnected surface water bodies, as they may depend on sustained groundwater elevations that stabilize the gradient or rate of loss of surface water, rather than directly on the water table itself.

ii. The Department recognizes that NCCAG (Klausmeyer et al. 2018) provided by California Department of Water Resources (CDWR) is a good starting reference for GDEs; however, the Department recommends that the GSP consider additional resources for evaluating GDE locations, including but not limited to the California Department of Fish and Wildlife (CDFW) Vegetation Classification and Mapping Program (VegCAMP) (CDFW 2019A); the CDFW California Natural Diversity Database (CNDDB) (2019B); the California Native Plant Society (CNPS) Manual of California Vegetation (CNPS 2019A); the CNPS California Protected Areas Database (CNPS 2019B); the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (2018); the USFWS online mapping tool for listed species critical habitat (2019); the U.S. Forest Service CALVEG ecological grouping classification and assessment system (2019); and other publications by Klausmeyer et al. (2019), Rohde et al. (2018), The Nature Conservancy (TNC) (2014), and Witham et al. (2014).

4. **Comment #4 Water Quality.** Chapter 5 Groundwater Conditions, Subchapter 5.5.3 Distribution and Concentrations of Diffused or Natural Groundwater Constituents.

   Starting on page 5-49, the GSP provides a summary of the water quality analysis performed on naturally occurring groundwater constituents and their distribution within the Subbasin. From this analysis, the GSP states, "Of these constituents, most were detected at concentrations above regulatory limits in a small percentage of the sampled wells (<10%). Since constituents with low detection frequency do not represent groundwater quality issues throughout the entire Subbasin, these constituents will not be considered further in this report" (page 5-53). The small percentage of wells that have exceedances above regulatory requirements do not necessarily represent the basin as a whole with regard to water quality or potential water quality related issues, nor does the provided data represent the most current water quality data set.

   a. *Issue*: The GSP indicates that only a small percentage of sampled wells (<10%) reported exceedances greater than the State Water Resource Control Board – Division of Drinking Water regulatory requirements for drinking water and as such, indicates that these constituents will not be considered further in this report. When evaluating water quality

constituents, it is always beneficial to track trends in water quality concentrations, as increasingly elevated levels of a constituent generally indicate a problem. In the context of drinking water and deliveries from a public water system, the State has prepared regulations and guidance for monitoring and compliance. As specified by State code [22 CCR § 64432], quarterly samples shall be collected and analyzed for any chemical if analyses of such sample indicate a continuous or persistent trend toward higher levels of that chemical, based on an evaluation of previous data. While this requirement may not be applicable for all wells (e.g., agricultural wells) within the Subbasin, the State regulation illustrates the necessity for identifying and tracking water quality trends to avoid undesirable results. It is reasonable to assume that the GSP has the data set for the water quality parameters listed in Subchapter 5.5.3 and the ability to assess potential increasing trends for all water quality constituents identified, as shown for nitrates concentrations in Figures 5.32 and 5.33.

b. *Recommendation:* The Department recommends that the GSP provide a more robust representation of water quality data for the constituents identified within the plan and provide data (i.e. graphical or tabular) illustrating trends over time. Additionally, the Department recommends that the GSP provide the most current available water quality information for the constituent presented within the plan to further substantiate sustainability for this indicator.

5. **Comment #5 Sustainable Management Criteria.** Chapter 8 Sustainable Management Criteria, Subchapter 8.11 Depletion of Interconnected Surface Water (starting page 8-61).

   The 5-year average metric established for depletions of ISW Sustainable Management Criteria lacks triggers to avoid significant and unreasonable adverse impacts (i.e., undesirable results).

   a. *Issue:* The GSP proposes a volumetric minimum threshold for streamflow depletions based on the future water budget that is designed to prevent against increases in streamflow depletions attributable to pumping. This volumetric minimum threshold is proposed for average hydrologic conditions and as a long-term average over all hydrogeologic conditions (page 8-69). The GSP specifies that the minimum threshold volume will be updated upon completion of the SVIHM model and that volumetric surface water depletions for the previous five years will be estimated (page 8-68). The GSP acknowledges that localized pumping and long periods of dryness (among other causes) could lead to undesirable results including increased streamflow depletions that impact beneficial users of ISW

(pages 8-69 to 8-70). The challenge with a streamflow depletion metric that is contingent on long-term hydrologic average conditions and 'normal' water years is that there are no concrete triggers for adaptive management. The GSP does not specify how streamflow depletion minimum threshold exceedances will be identified on a time-scale shorter than five years. Importantly, increased pumping during consecutive dry years that is proximate to ISW could significantly increase surface water depletion and negatively impact instream species as well as riparian habitat (Barlow and Leake 2012, Naumburg 2005). The GSP lacks an actionable path for identifying and addressing streamflow depletion undesirable results in real-time to avoid adverse impacts to aquatic GDEs. Instead, the GSP relies on long-term averages to measure compliance with minimum thresholds, meaning that action may come too late to address undesirable results.

b. *Recommendation:* The Department recommends that the GSP specify management actions to mitigate potential undesirable results to ISW and GDEs during dry years when groundwater pumping increases. Suggestions include pumping restrictions for areas that may impact surface water flow when streamflow depletion minimum thresholds are reached in dry and critical water years.

OTHER COMMENTS: Implementation of Project Actions Related to SGMA

The Department is also commenting on its subsequent role as Trustee and Responsible Agency when individual project actions related to SGMA are implemented.

SGMA exempts the preparation and adoption of Groundwater Sustainability Plans from the California Environmental Quality Act (CEQA) (WC § 10728.6); however, SGMA specifically states that implementation of project actions taken pursuant to SGMA are not exempt from CEQA (WC § 10728.6). The Department is California's Trustee Agency for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). The Department, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (*Id.*, § 1802). Similarly, for purposes of CEQA, the Department is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

The Department is also a Responsible Agency under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381), and the Department expects that it may need to exercise regulatory authority as provided by the Fish and Game Code for implementation of projects related to the GSP that are also subject to CEQA. These projects may be subject to the Department's lake and streambed alteration regulatory authority (i.e., Fish & G. Code, § 1600 *et seq.*). Notification pursuant to Fish and Game Code § 1602 is warranted if a project will (a) substantially divert or obstruct the natural flow of any river, stream, or lake; (b) substantially change or use any material from the bed, bank, or channel of any river, stream, or lake (including the removal of riparian vegetation); and/or (c) deposit debris, waste or other materials that could pass into any river, stream, or lake. Likewise, to the extent that implementation of any project may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 *et seq.*), related authorization as provided by the Fish and Game Code will be required. The Department is required to comply with CEQA in its issuance of a Lake or Streambed Alteration Agreement or an Incidental Take Permit.

The implementation of SGMA does not alter or determine surface or groundwater rights (WC § 10720.5). It is the intent of SGMA to respect overlying and other proprietary rights to groundwater, consistent with section 1200 of the Water Code (Section 1(b)(4) of AB 1739). The capture of unallocated stream flows to artificially recharge groundwater aquifers are subject to appropriation and approval by the State Water Resources Control Board (SWRCB) pursuant to Water Code § 1200 *et seq.* The Department, as Trustee Agency, is consulted by SWRCB during the water rights process to provide terms and conditions designed to protect fish and wildlife prior to appropriation of the State's water resources. Certain fish and wildlife are reliant upon aquatic and riparian ecosystems, which in turn are reliant upon adequate flows of water. The Department therefore has a material interest in assuring that adequate water flows within streams for the protection, maintenance and proper stewardship of those resources. The Department provides, as available, biological expertise to review and comment on environmental documents and impacts arising from project activities.

CONCLUSION

In conclusion, the Department requests the Salinas Valley Basin 180/400 Foot Aquifer Draft GSP add specificity to analyses of groundwater dependent ecosystems and interconnected surface waters to: 1) better account for shallow groundwater systems and the many environmental beneficial uses and users that rely on shallow groundwater and interconnected surface waters; and 2) address all SGMA statutes and regulations. The Department recommends that the Salinas Valley Basin Groundwater Sustainability Agency consider the above comments before the GSP is submitted to CDWR. The Department appreciates the opportunity to provide comments on the GSP.

If you have any questions regarding this letter, please contact Dr. Andrew Gordus, Staff Toxicologist, at Andy.Gordus@wildlife.ca.gov or (559) 243-4014 extension 239.

Sincerely,

Julie A. Vance
Regional Manager, Central Region

Enclosures (Literature Cited, Attachment A)

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November 25 , 2019

Mr. Gary Petersen
General Manager,
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1385
Carmel Valley, CA 93924

VIA: E-mail to petersen@svbgsa.org

RE: Comments on Draft Groundwater Sustainability Plan for 180/400 Sub-Basin of the Salinas Valley Groundwater Basin

Dear Mr. Petersen:

Monterey County Farm Bureau represents family farmers and ranchers in the interest of protecting and promoting agriculture throughout our County. Since 1917, Farm Bureau strives to improve the ability of those engaged in production agriculture to provide a reliable supply of food and fiber through responsible stewardship of our local resources.

Our organization, along with our leadership, has been actively involved in the implementation of the Sustainable Groundwater Management Act (SGMA) since 2015, participating in the formation of the agency and the development of the draft groundwater sustainability plan (GSP).

We very much appreciate the open, transparent and inclusionary process utilized to develop the draft GSP into a solid document that can be a model for the other five GSPs yet to be developed in the coming two years.

In this letter we offer specific comments on Chapters 9 and 10 of the draft GSP; overall, our Directors desire that the consultants continue to do their job, clearly state goals, provide a robust analysis, correct obvious errors, re-think some Management Actions, and keep the budget manageable.

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Chapter 9.4.3.2: Preferred Project 1: Invasive Species Eradication

We fully support the intent of Preferred Project #1 and desire this to be the highest priority project for the 180/400 sub-basin (as well as the Forebay and Upper Valley sub-basins). Eradicating the exotic *Arundo donax* vegetation from the Salinas River Channel has multiple benefits for both landowners, the environment, and the groundwater basin.

There are permits already in place for Salinas River Channel vegetative maintenance with the Army Corps of Engineers, California Fish & Wildlife, and the Central Coast Regional Water Quality Control Board. While those permits do expire in 2020, we expect that their renewal will be in the best interest of the agencies involved as both the Resource Conservation District of Monterey County and the Salinas River Channel River Management Unit Stream Maintenance Program have demonstrated success in removal and management of excess vegetation, improvements to secondary channel flows, and sediment redistribution. The overall outcome is improvement of water flow for both fish passage and flood control.

We see this program as essential to achieving better infiltration of surface waters to the groundwater basin. Vegetation overgrowth in the 95 miles of the Salinas River Channel is estimated to consume from 30,000 to even 50,000 acre-feet of water each year.[1] These numbers exceed the entire number of acre feet needed to balance the basin.[2]

In the Chapter 9 description for Preferred Project #1 the limitation is stated as just *Arundo donax* removal. There are many more vegetative species demonstrating overgrowth in the river channel that should be included; indeed, historical photos from the 1930s show a river channel mostly of sandy bottom lands (which is prior to any stream modifications or dam construction).[3] This lack of vegetation appears to be the native character of the river channel and probably contributed greatly to infiltration of water into the aquifer.

There is widespread unanimity of opinion that the Salinas River Channel has too much vegetation in most reaches after more than a decade of near-total neglect. The maintenance program has touched only a small portion of the river channel to date, and needs to be greatly expanded to include incentives for all landowners to participate. Unfortunately, the costs involved in the permitting and mapping process have discouraged many landowners from participating in the program.

[1] Brown & Caldwell Report, 2015.
[2] Ibid.
[3] University of California, Santa Barbara - Map & Imagery Laboratory: https://www.library.ucsb.edu/mil

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Dollar for dollar, the channel maintenance program is the most cost effective of the Preferred Projects listed in Chapter 9 and provides the biggest bang for the buck, in the shortest time frame. Everyone agrees that channel maintenance is needed for a healthy ecosystem, including the permitting agencies.

Reducing *all* vegetation in the river channel would improve water conveyance and lead to increased water flows for recharge as well other possible projects, such as the diversion points for the Permit #11043 that could supply water to the Eastside trough. The Salinas River Diversion Facility (also known as the rubber dam) could also see more flow conveyance for the expansion of the Castroville Seawater Intrusion Project (CSIP).

Municipalities are participating in the river channel maintenance program, bringing together both urban and agricultural interests for improvements in the river channel environment. Currently, Cities of Salinas, Soledad, and King are participating materially in the maintenance program, mainly to protect their assets adjacent to the river.

Table 9-5 lists 6,000 acre-feet of savings due to *Arundo donax* removal, but there is a reference of 20,000 acre-feet also; is that amount of the entire water savings for the full basin for just the *Arundo donax* vegetation type?

While we fully respect and support the program that the Resource Conservation District of Monterey County and the success achieved in removing *Arundo donax*, there is more to be done than just replicating this as Preferred Project #1. We urge that the draft be modified to include other vegetative species that are in overgrowth mode.

Chapter 9.4.3.6: Preferred Project 5: Maximize Existing SRDF Diversion

The estimated yield for this project is 11,600 acre-feet per year; yet "the yield for this project is the same yield that is identified in Priority Project #2 and a portion of the yield identified in Priority Project #3."[4] Is this statement intending that the same water can be saved twice, or is this just a simple double reference to water that can be saved? Clarification is needed to determine the exact savings for this project and the related three projects listed for the Castroville Seawater Intrusion Project upgrades and expansion.

[4] 180-400 Sub-Basin GSP draft document, page 9-50.

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Chapter 9.4.3.7: Preferred Project 6: Seawater Intrusion Pumping Barrier

Much more needs to be known about this particular project before it can be considered more fully. Although seawater intrusion extraction wells may very well yield 30,000 acre-feet per year, this water is essentially useless until it can be desalinated. That seems to indicate that extracted water would need to be dispose of, possibly into the ocean? After determining if this project is environmentally (and politically) feasible, the cost-benefit analysis may not be justified. If the project yield is 30,000 acre-feet, why is there a statement in the notes below Table 9-5 that shows only 22,000 acre-feet? Shouldn't the projected cost benefits of this project then be based on the 11,000 acre-feet of net yield?

Chapter 9.4.3.10: Preferred Project 9: SRDF Winter Flow Injection

We question if winter flow injection makes sense in the context of possible land fallowed and available for dedicated recharge basins. The costs of removing the ground from active production could be offset by passive recharge that has little in ongoing operational and maintenance costs, and very little (comparatively) of capital investment costs. This may be an alternative opportunity for land use should there be voluntary fallowing of land in the sub-basin area.

Chapter 9.2: Water Charges Framework

As described, the water charges framework is a proposal and will still need approval from the SVBGSA Board of Directors (requiring 3 of 4 agricultural directors supporting the program). We question that if this type of funding program is to incentivize the reduction of groundwater pumping, the program will eventually defund itself due to declining water use revenue. This has happened to other utilities and is a distinct possibility in the Salinas Valley also as future farming practices may find more efficient means of delivering and using groundwater.

We also note that significant analysis will be required to determine the correct rate levels of the proposed framework; fluctuations in crops and land values, availability of any new project water, and intensive cropping patterns may make the process of determining the rate structure nearly impossible. Will the water charges framework be adopted in all sub-basins? What happens to the budget if one or more sub-basins is not needing to adopt this method of funding?

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Chapter 9.2.1 Well Registration

We point out that the draft language indicates that well registration does not obviously equate to metering, but only that some wells may have meters. There is needed clarity on what well registration and metering requirements intend, how they transect, and how this will be enforced.

Chapter 9.2.4 Relocation and Transfer of Pumping Allowances

While this entire draft document is iterative in nature, we find that this section may need some enhancements with more details. This is effectively a water trading market mechanism and critical to how pumping allowances will be managed ultimately. If SVBGSA intends to manage this on a case-by-case basis, there will need to be guidelines for how this will be managed and who will make any determinations for transfers; the mechanics of this can get quite complicated and should be fully understood before any transfers are considered. What will be the platform for managing these transfers? Will farmers need to manage these trades amongst themselves? What distance will be allowed as a maximum for a transfer (only within each sub-basin)? In past community discussions there was little support for this type of program; is that why there are no details or the consultants have not recommended a platform or program?

We suggest that the fallowing of land needs to be a fully-defined Management Action or Preferred Project. Will SVBGSA purchase water and retire land for a single year or more? There is no direct statement on what will happen if growers decide to change to different crops that may require higher water use, such as vineyard to vegetables. Just as followed land can be recycled into production, can irrigated land that was formerly producing low water use crops convert to a higher water use crop? Will there then be a penalty applied to that farm or land? This could then cross a line into managing land use and dictating which crops can be produced, or even restrict the ability of a farm to change when market conditions alter the economics of any given crop.

Chapter 9.3.2 Agricultural Land and Pumping Allowance Retirement

We support the right of landowners to do as they please with their lands in terms of wanting to continue farming, temporarily fallow or permanently retire agricultural lands under SGMA *on a voluntary basis*. However, we find this section lacking in detail and therefore may not garner the attention from landowners that may be interested. The assumption is that a combination of reduced pumping *and* Preferred Projects are likely needed; however, there is no statement on how this goal

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will be achieved with reduced extractions alone. The cost analysis is also incorrect and needs revision.

In a basin that has seawater intrusion and facing a long list of expensive projects, we believe this warrants a more proactive and thoughtful approach. SVBGSA and its consultants should conduct a geospatial analysis to assess the best areas to potentially retire land through careful study of the economic value of the land *and* water, and then proactively contact the specific landowners to gauge interest in *voluntarily* participating.

There is no mention that funding could be sourced from grant programs for water quality, habitat, and conservation easements for a voluntary land retirement program. All sources of financial support should be fully explored and exhausted prior to SVBGSA expending funds on land fallowing or retirement.

Chapter 9.6: Mitigation of Overdraft

We find there is a lack of transparency in understanding the overall goal; the total acre-feet of savings through projects needed to bring the sub-basin into balance should be clearly stated here. What is the current demand? What is the sustainable yield? What is the overdraft amount? What is the target goal that includes a buffer for seawater intrusion mitigation?

There is also a lack of understanding of what the cumulative impact of multiple projects would be, if more than one or all are put into place; would there be enough water to manage multiple projects? For example, the three projects listed for the Castroville Seawater Intrusion Project (CSIP) have overlapping water savings, yet these three projects are listed independent of each other.

Budget Concerns: Costs of Management Actions (Chapter 9.3)

Our members are sensitive to total costs of implementing SGMA over the next 20 years. Between the First and Second drafts of Chapter 9 (between July 18 and August 8, 2019), two new Management Actions (MAs) have been added and the cost for existing MAs have expanded in number of years and cost per year, and total cost. We calculate that annual costs for these Management Actions have increased total costs by $1,000,000 or more. On the "Public Comment" document, there is no apparent public comment on these MA changes; most of the comments were around the Water Charges Framework and Projects. A table listing the MAs with anticipated costs would be a good addition to this chapter of the document. We request more specific information on the following:

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- Why did MA #1 change from a 4% 30-year amortization to a 6% 25-year amortization?
- How many years is MA #2 expected to take? There is only a notation of "on going."
- Why has the cost per year increased for MA #4?
- SVBGSA will provide oversight for many of the MAs; will these be overseen by SVBGSA staff or the consultants?
- Why are there missing MAs on the Table 10-1?
- Should 180/400 operational costs specific to MAs be in table 10-1?

Tables 10-1 & 10-2

There appear to be some mathematical errors on these two tables. Table 10-1 lists planning level costs that total to $1,399,000 yet the table reflects a total of $1,784,000, a difference of $385,000. Table 10-2 lists planning level cots of $2,922,000 yet the table reflects a total of $9,423,000, a difference of $6,501,000. If either of these tables reflects planning level costs that are for multiple years, it is not clearly noted; thus, there is a distortion of the projected planning level costs for the first five years of implementation.

Conclusion

While we are generally supportive of the draft GSP as presented, we express some concerns over the details, as provided in the comments within this letter. We ask that the consultants review these items and consider further modifications to the GSP during the first two years of implementation, realizing it is difficult to address these concerns prior to full approval by the SVBGSA Board of Directors and submission to meet the January 31, 2020 deadline.

Again, we express our appreciation for the open and transparent process that brought us all to this point.

Sincerely,

Norman C. Groot
Executive Director

November 13, 2019

Ron Stefani, Chairperson
Members of the Board of Directors
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Via email peterseng@svbgsa.org, camela@svbgsa.org

Subject: Comments on 180/400-foot Aquifer Subbasin Groundwater Sustainability Plan

Dear Chair Stefani and Members of the Board of Directors:

LandWatch appreciates the opportunity to comment on the 180/400-Foot Subbasin Groundwater Sustainability Plan. Our comments are organized into three sections:

- Summary of comments
- Section 1 documents why the GSP does not meet the legal requirements of the Sustainable Groundwater Management Act ("SGMA")
- Section 2 recommends policy-based changes to the GSP

Summary of comments

The 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan ("GSP" or "Plan") fails to address the biggest threat to the groundwater resource – continued seawater intrusion. The Plan appears to have been designed to avoid the one measure that is most certain to address this threat: immediate mandatory reductions in groundwater extractions.

Each of the legal shortcomings in the Plan document can ultimately be traced to an unwillingness of the SVGBGSA to face the uncomfortable reality that mandatory pumping reductions are needed, and are needed now. As set out in detail in Section I, the Plan does not comply with SGMA for the following reasons:

- The GSP fails to adopt a conservative estimate of sustainable yield until resolution of data gaps and calibration of the groundwater model.
    - The groundwater model is not calibrated.
    - The minimum threshold for reduction in storage is improperly based on uncalibrated model projection of 2070 sustainable yield and improperly uses the least conservative estimate of sustainable yield.

- The minimum thresholds for groundwater levels and storage reduction are inconsistent with SGMA regulations because they fail to avoid the undesirable results for the seawater intrusion sustainability indicator.
    - The minimum threshold for groundwater levels, set at one foot above lowest historical groundwater levels, will not support the minimum threshold for seawater intrusion, set at existing line of seawater intrusion advance, because those groundwater levels will not halt seawater intrusion.
    - The minimum threshold for reduction in storage, set at the future long-term sustainable yield, will not support the minimum threshold for seawater intrusion, because halting seawater intrusion requires *replacement of depleted groundwater storage* by temporarily reducing extractions to below the sustainable yield.

- The GSP proposes inconsistent programs and management actions to attain the minimum threshold for seawater intrusion, and these remedies would not be timely.

- The Plan fails to include immediate pumping reductions, which are required in order to attain the identified minimum threshold for seawater intrusion.

- The Plan fails to mitigate overdraft: the water charges framework cannot reliably mitigate overdraft because pumping reductions remain voluntary and because price sensitivity and demand elasticity are unknown.
    - SGMA requires that a GSP identify projects or management actions, including demand reduction or other methods, that would be sufficient to mitigate overdraft.
    - Contrary to the Plan's claim, the water charges framework would not reduce demand or increase supply sufficiently to mitigate overdraft because it relies on voluntary pumping reductions and permits pumping in excess of sustainable pumping allocations.
    - Mitigation of overdraft requires mandated pumping restrictions that limit total pumping to current sustainable yield plus newly produced water.
    - The Plan fails to provide the mandatory quantification of the mitigation of overdraft: it fails to quantify the benefits of management actions, it assigns all of the Basin-wide Project benefits to the 180/400- Foot Aquifer Subbasin, it double counts some benefits, and it contains an arithmetic error.

- The implementation plan improperly delays substantive action for two years in order to accommodate the implementation schedule for the GSP for the rest of the Basin, which is not *critically* overdrafted.

- The Plan fails to identify project startup dates.

- The Plan fails to impose pumping restrictions pending startup of new water projects. Interim pumping restrictions are needed in order to restore and maintain the protective groundwater elevations to attain the minimum threshold for seawater intrusion.

- The GSP's multiple, inconsistent, incomplete, and deferred approaches to meeting the seawater intrusion minimum threshold – eventual temporary pumping reductions, a long-delayed $100+ million pumping barrier, or some eventual "agreed approach" from the Working Group – renders the GSP uncertain and inadequate as a plan.

In addition to these comments, LandWatch makes suggestions to revise and improve the Plan in Section II, below. LandWatch's detailed comments follow.

Section I: The GSP does not meet SGMA's requirements.

Set forth below in this section A through H are deficiencies in the Plan that preclude it from meeting SGMA's requirements. LandWatch has previously made many of these comments in letters submitted to the SVGBGSA Board as draft chapters have been released. However, the deficiencies remain.

A. The GSP fails to adopt a conservative estimate of sustainable yield until resolution of data gaps and calibration of the groundwater model.

1. The groundwater model is not calibrated.

Chapter 6 of the GSP presents three different and currently unreconciled sustainable yield calculations, one based on the historic water budget (95,700 AFY), one based on the projected 2030 water budget (107,200 AFY in 2030), and one based on the projected 2070 water budget (112,000 AFY in 2070).[1] (GSP, section 6.10.5, Table 6-31.) Chapter 6 admits that the historical and future water budgets "are developed using different approaches, and are therefore not directly comparable with each other" and are not "based on a consistent approach." (GSP, p. 6-1.) A fundamental problem is that the USGS model has not yet been calibrated with reference to the historic data and thus the projection of the future water balance is not based on a calibrated model. (GSP, p. 6-1.) SGMA requires that the model be calibrated. (23 CCR § 358.18(c)(2), (3).)

2. The minimum threshold for reduction in storage is improperly based on uncalibrated model projection of 2070 sustainable yield and improperly uses the least conservative estimate of sustainable yield.

Citing the section §354.28(c)(2) definition of the minimum threshold for reduction of groundwater storage as "a total volume of groundwater that can be withdrawn from the subbasin without causing conditions that may lead to undesirable results," the GSP sets the minimum threshold for the reduction in groundwater storage as the "the future long-term sustainable yield of the Subbasin under reasonable climate change assumptions," which Chapter 6 identifies as 112,000 AFY. (GSP, p. 8-27.)

Use of the conservative estimate of Sustainable Yield is mandated by the level of uncertainty. SGMA provides that "sustainable management criteria and projects and

[1] Unaccountably, the historical sustainable yield is stated at 95,700 AFY in Table 6-31, but as 97,200 AFY in Table 6-21.

management actions shall be commensurate with the level of understanding of the basin setting, based on the level of uncertainty and data gaps." (23 CCR § 350.4(d).) The minimum thresholds for sustainability indicators must be "qualified by uncertainty in the understanding of the basin setting." (23 CCR § 354.28(b)(1).) Measurable objectives must also "be commensurate with levels of uncertainty." (23 CCR § 354.30(c).) The SVGBGSA must "take into account the level of uncertainty associated with the basin setting when developing projects or management actions." (23 CCR § 354.44(d).) And in deciding whether to approve the Plan, DWR must consider "whether sustainable management criteria and projects and management actions are commensurate with the level of understanding of the basin setting, based on the level of uncertainty, as reflected in the Plan." (23 CCR § 354.4(b)(3).)

Despite the mandate for conservative assumptions to reflect uncertainty, the Plan relies on the *least* conservative estimate of sustainable yield, the highest, uncalibrated, black-box model output for the 2070 Sustainable Yield of 112,000 AFY – a figure produced from a model not made available to the public. The Plan should instead rely on the lower Historical Sustainable Yield of 95,700 AFY, a figure that is based on past historic data and the analysis in publicly available reports. The only rationale the GSP offers for its choice of the least conservative figure for Sustainable Yield is the stakeholder "preference" not to reduce their pumping:

> Public and stakeholder input on the significant and unreasonable conditions for groundwater storage suggested a preference for increasing groundwater storage, but not a preference for restricting average year pumping. Therefore, the minimum threshold is set at the long-term future sustainable yield of 112,000 AFY.

(GSP, section 8.7.2, p. 8-27.)

SMGA requires that the analysis, management actions, and projects in a GSP incorporate "best management practices" (BMPs) and that they be supported by "best available information" and "best available science." (See, e.g., 23 CCR, §§ 351(h),(i); 354.16; 354.18(e) 354.44(c); 355.4(b)(1), Stakeholder preferences may not preempt these considerations.

The GSP states that the sustainable yield "values in Table 6-31 are estimates only" and that the "sustainable yield value will be modified and updated as more data are collected and more analyses are performed." (GSP, section 6.10.5, p. xi.) Regardless whether the values are changed after further analysis, the GSP must observe SGMA's mandate to use conservative estimates in the face of uncertainty.

B. The minimum thresholds for groundwater levels and storage reduction are inconsistent with SGMA regulations because they fail to avoid the undesirable results for the seawater intrusion sustainability indicator.

SGMA requires that each minimum threshold must avoid *each* undesirable result because it requires that "basin conditions at each minimum threshold will avoid undesirable results for *each of* the sustainability indicators." (23 CCR § 354.28(b)(2), emphasis added.) For example, the groundwater level minimum threshold must be "supported by" the "[p]otential effects on *other* sustainability indicators." (23 CCR 354.28(c)(1)(B), emphasis added.) This means that each minimum threshold, especially

the groundwater level minimum threshold, must be coordinated to ensure that *all* undesirable results are avoided.

1. **The minimum threshold for groundwater levels, set at one foot above lowest historical groundwater levels, will not support the minimum threshold for seawater intrusion, set at existing line of seawater intrusion advance, because those groundwater levels will not halt seawater intrusion.**

Chapter 8 adopts the 2017 line of advance of seawater intrusion as the minimum threshold for seawater intrusion:

> The 2017 extent of the 500 mg/L chloride concentration isocontour as mapped by MCWRA is adopted as the seawater intrusion minimum threshold for both the 180- and 400-Foot aquifers.

(Section 8.8.2, p. 8-33.)

Because each minimum threshold must avoid each undesirable result, the groundwater level minimum thresholds should be set at the levels that have been determined to be sufficient to prevent seawater intrusion. These levels should be determined based on the most current modeling or groundwater levels that are sufficient to prevent seawater intrusion. If currently modeling is not available, then the 2013 modeling prepared by Geoscience for MCWRA should be used. Regardless, the groundwater levels must clearly be higher than sea level.

Section 8.6.2 sets a minimum threshold for groundwater elevations at one foot above the 2015 groundwater levels. (GSP, section 8.6.2.1, p. 8-9.) This proposed level is equal to the 1991-1992 groundwater level, which was the lowest historical level that occurred in the 1967-1998 climatic cycle. (Ibid; see also Chapter 8, Figure 8-1.) Figures 8-2 and 8-3 show that the proposed minimum groundwater levels *would be well below sea levels in the northern end of the Salinas Valley*. This is consistent with the MCWRA groundwater contour maps for 2015, which show that 2015 elevations were in fact well below sea level in the northern Salinas Valley.[2] Seawater intrusion accelerated in 2015.[3]

Section 8.6.3 sets a measurable objective for chronic lowering of groundwater levels that "represent groundwater elevations that are higher than the minimum thresholds" in order to "provide operational flexibility to ensure that the Subbasin can be managed sustainably." This level was set at the 2003 groundwater levels, representing "an average groundwater level from the relatively recent past." Figures 8-4 and 8-5 show that the proposed measurable objective for groundwater levels would be *well below sea levels in the northern end of the Salinas Valley*. Again, this is consistent with the MCWRA groundwater contour maps for 2003, which show that 2003 elevations were

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[2] Maps available at https://www.co.monterey.ca.us/home/showdocument?id=31284 and https://www.co.monterey.ca.us/home/showdocument?id=31286.

[3] MCWRA, Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, Special Reports Series 17-01, October 2017, pp. 4-5, available at https://www.co.monterey.ca.us/home/showdocument?id=57394.

well below sea level in the northern Salinas Valley.[4] Seawater intrusion continued in 2003.[5]

Seawater intrusion occurred throughout the 1967-1998 climatic cycle and has continued to date. It is caused by groundwater levels that are too low to hold back seawater. In its 2013 study for MCWRA, Geoscience reported the historic rate of seawater intrusion in various time intervals.[6] Intrusion accelerated over the period 1965 to 1999.[7] It has recently accelerated again.[8] Indeed, seawater has continued to steadily advance in both the 180 and 400 foot aquifers through 2017 -- the most recent year that Monterey County released seawater data – and now persists within half a mile or closer of the Salinas city boundary.

Geoscience explained that "historical pumping has lowered ground water levels in both the 180-Foot and 400-Foot aquifer systems such that there is a landward hydraulic gradient which has caused extensive sea water intrusion."[9] The report explains that control of sea water intrusion requires achieving and maintaining "protective elevations," which are defined as "those groundwater elevations which will keep the fresh/salt water interface from migrating inland. *In the northern portion of the Salinas Valley these elevations need to be above sea level and the flow of ground water toward the coast*."[10] The report explains that Geoscience quantified the protective elevations necessary to halt seawater intrusion using the SVIGSM model.

Geoscience's report sets out these necessary protective elevations in Figures 9 and 10 for the 180-Foot and 400-Foot Aquifers. These protective elevations necessary to prevent seawater intrusion are from *10 to 30 feet above sea level in the northern Salinas Valley*.[11]

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[4] Maps available at https://www.co.monterey.ca.us/home/showdocument?id=19538 and https://www.co.monterey.ca.us/home/showdocument?id=19554.

[5] MCWRA, Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, Special Reports Series 17-01, October 2017, pp. 4-5.

[6] Geoscience, Protective Elevations to Control Seawater Intrusion in the Salinas Valley, 2013, available at https://www.co.monterey.ca.us/home/showdocument?id=19642.

[7] Id., p. 5, Table 2.

[8] MCWRA, Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, Special Reports Series 17-01, October 2017, pp. 4-5.

[9] Id., p. 4.

[10] Id., p. 6, emphasis added.

[11] Geoscience determined that in order to achieve these protective elevations, additional recharge or “in lieu recharge,” i.e., coastal pumping reductions made possible by moving surface water from the south to the north, would be required:

> The amount, location and timing of groundwater recharge (direct and in lieu), needed to maintain protective elevations and a seaward hydraulic gradient was determined using the SVIGSM. Based on model results, and assuming 2030 land use conditions, 12,000 acre-ft/year will be required from the SVWP Phase I facilities and 48,000 acre-ft/year will

The fact that existing groundwater levels are far from the levels required to prevent further seawater intrusion is readily apparent from the technical study on which the GSP relies for the historic water budget in Chapter 6.[12] That study establishes that as of 2013 there was a cumulative storage deficit in the Pressure Subbasin, an MCWRA management area that includes the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin, amounting to 110,000 acre-feet.[13] That study concludes that this cumulative storage deficit would increase by 10,000 to 20,000 AFY under continued dry conditions. Since the drought did not end until 2019, the cumulative deficit has grown. The relation between cumulative deficit, insufficiently protective groundwater levels, and seawater intrusion is also evident from the rapid advances of seawater intrusion through 2017.

As Chapter 8 admits in section 8.6.2.3, "the GSP must describe the relationship between the selected minimum threshold and minimum thresholds for other sustainability indicators (e.g., describe how a water level minimum threshold would not trigger an undesirable result for land subsidence)." (GSP, p. 8-17.) Chapter 8 discusses the relationship of seawater intrusion and the minimum threshold for groundwater levels as follows:

> Seawater intrusion. A significant and unreasonable condition for seawater intrusion is seawater intrusion in excess of the extent delineated by MCWRA in 2017. Lower groundwater elevations, particularly in the 180-and 400-Foot Aquifers, could cause seawater to advance inland. The groundwater elevation minimum thresholds are set at or above existing groundwater elevations. Therefore, the groundwater elevation minimum thresholds will not exacerbate, and may help control, seawater intrusion.

(GSP, section 8.6.2.3, p. 8-17.) The discussion is not accurate. The proposed groundwater minimum thresholds would cause seawater to advance, would exacerbate existing conditions, and would not help control seawater intrusion. The fact that the minimum thresholds are proposed to be one foot higher than the lowest historical groundwater elevations or that the measurable objectives are based on average conditions is insufficient.[14] Because historic groundwater levels have caused seawater

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> be required from the SVWP Phase II facilities. Given the hydrologic variability in the Salinas Valley area, in order to supply a total of 60,000 acre-ft/year (on average), to the SVWP, it will be necessary to have the right to divert up to 135,00 acre-ft/year from the Salinas River.

Id., p. 11.

[12] Brown and Caldwell, *State of the Salinas River Groundwater Basin*, January 2015, available at https://www.co.monterey.ca.us/home/showdocument?id=19586.

[13] Id., p. ES-11.

[14] The Chapter 8 discussion in sections 8.6.2.2 appears to justify the minimum thresholds and measurable objectives based on the percentage of wells that would still have 25 feet of water. However, setting minimum thresholds and measurable objectives for groundwater levels at this level would permit continued seawater intrusion because that level is demonstrably insufficient to prevent seawater intrusion.

intrusion, the minimum thresholds and measurable objectives cannot simply be based on historic minimums or averages.

Chapter 8 also discusses the relation of groundwater elevation minimum thresholds with changes in groundwater storage. That discussion concludes that because the proposed minimum thresholds are set above existing groundwater levels, they "will not result in long term significant or unreasonable change in groundwater storage." (GSP, section 8.6.2.3, p. 8-17.) This discussion is also not accurate. The GSP concludes that there has been an average loss of storage of 2,100 AFY during the historical period. (GSP, section 6.10.5, Table 6-31, page xii.) This conclusion is consistent with the calculated 2,000 average loss of storage in the Pressure Subarea during the period from 1944 to 2013.[15] If the *average* historic groundwater elevations are correlated with the continuous depletion of the aquifer, setting the minimum groundwater elevations at the *lowest* historic level cannot support maintenance of aquifer storage.

2. **The minimum threshold for reduction in storage, set at the future long-term sustainable yield, will not support the minimum threshold for seawater intrusion, because halting seawater intrusion requires *replacement of depleted groundwater storage* by temporarily reducing extractions to below the sustainable yield.**

As discussed above, the GSP sets the minimum threshold for storage reduction at 112,000 AFY, representing the "future long-term sustainable yield of the Subbasin under reasonable climate change assumption." (GSP, section 8.7.2, p. 8-27.) Also as discussed above, until SVGBGSA has a calibrated groundwater model that reconciles historic and modeled future conditions, it should adopt the most conservative estimate of the long-term sustainable yield for this minimum threshold, i.e., the 95,700 AFY estimated using the historic model. (GSP Table 6-31, p. xii.)

But even a conservative estimate of *long-term* sustainable yield is not an adequate basis to set the minimum threshold for storage depletion because the GSP proposes to use that minimum threshold as a target for sustainable pumping. *Until seawater intrusion is in fact halted, the GSP must adopt an even lower minimum threshold for annual storage reductions in order to replace the cumulative storage deficits and to restore the protective groundwater elevations that will halt seawater intrusion*. As noted in the previous section, there is an accumulated storage deficit in excess of 100,000 AF in the Pressure Subarea, which contains the 180/400-Foot Aquifer Subbasin.

In sum, adopting a conservative estimate of sustainable yield might be sufficient to maintain protective groundwater elevations *once those elevations are attained*, but the continued pumping of the long-term the sustainable yield will not *restore* protective groundwater elevations. The cumulative storage deficit from prior years of overdraft conditions must first be addressed through a program of temporary but substantial reductions in pumping to a level *below* long-term sustainable yield in order to reestablish protective groundwater elevations.

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[15] Brown and Caldwell, *State of the Salinas River Groundwater Basin,* 2016, p. Table ES-3, available at https://www.co.monterey.ca.us/home/showdocument?id=19586.

C. The GSP proposes inconsistent programs and management actions to attain the minimum threshold for seawater intrusion, and these remedies would not be timely.

The GSP admits that continued pumping of the long-term sustainable yield is inconsistent with replacing depleted groundwater storage to attain protective elevations. However, the GSP improperly defers the needed pumping reductions to some indefinite time in the future *after* the SVGBGSA has determined the efficacy of proposed projects and management actions:

> While the sustainable yield calculated in chapter 6 assumes zero seawater intrusion, *it does not account for temporary pumping reductions that may be necessary to achieve the higher groundwater levels that help stop seawater intrusion*. Because the minimum thresholds represent long-term management criteria, any temporary pumping reductions needed to raise groundwater elevations are not explicitly incorporated into the thresholds. However, the SVBGSA recognizes that, dependent on the success of various proposed projects and management actions, there may be a number of years when pumping must be held below the minimum threshold to achieve necessary rises in groundwater elevation. *The actual amount of allowable pumping from the Subbasin will be adjusted in the future based on the success of projects designed to halt seawater intrusion*.

(GSP, section 8.7.2, pp. 8-27 to 8-28, emphasis added.) In short, the Plan defers the "temporary pumping reductions" to reestablish protective groundwater elevations even while admitting that these pumping reductions are essential.

The deferral would be for an indeterminate number of years. As discussed in section I.F below, the GSP's implementation chapter postpones even the *commitment* to projects and management actions for the critically overdrafted 180/400-Foot Aquifer Subbasin for two years to coordinate them with the GSP for the rest of the Basin. Chapter 9 indicates that the time required to implement projects and management actions *after* that commitment would run from 2 to 9+ years, although the GSP fails to specify the actual project startup dates. the proposal in Section 8.7.2 to postpone temporary pumping reductions until the GSA first determines whether the long-delayed projects and management actions are effective would result in many more years of seawater intrusion.

Permitting the advancement of the seawater intrusion front for an indeterminate period would be inconsistent with the proposed minimum threshold for seawater intrusion, which requires halting it at the 2017 line of advancement. The fact that SGMA allows SVGBGSA 20 years to attain overall sustainability cannot cure the failure to take immediate action to address seawater intrusion because *the Plan provides no evidence that seawater intrusion can be reversed* once it has occurred. Indeed, the Plan does not provide any discussion of the issue. If reversal of seawater intrusion beyond the 2017 line of advancement were possible at all, it may require heroic measures that are not discussed in the Plan and that would not have been necessary if the intrusion were halted at the 2017 line. In the absence of any discussion of this question, there is no evidence that the Plan can in fact meet the seawater intrusion minimum threshold.

Even though Chapter 8 states that temporary pumping reductions are needed to meet the seawater intrusion minimum threshold, Chapter 9 proposes an entirely inconsistent approach. In Appendix 11E, comment 8-78 asks why the groundwater elevation measurable objectives were not set to stop seawater intrusion. The "DW Response" is that "intrusion could be stopped by pumping water out as well as by raising water levels." The response in effect argues that the Plan is *not* committed to the temporary reductions in pumping to restore protective elevations that are mentioned in section 8.7.2, but is instead committed to the "Seawater Intrusion Pumping Barrier" identified as "Preferred Project 6." (GSP, section 9.4.3.7, pp. 9-50 to 9-52.)

This $100 million+ capital project calls for 18 barrier wells continuously pumping 30,000 AFY along an 8.5 mile stretch of the coast. There is no indication that the project has been determined to be feasible, either technically, environmentally, or financially. For example, it is not clear that the Proposition 218 beneficiaries of the project would be willing or able to shoulder its cost. And, the Plan provides no evidence that there is a beneficial use for 30,000 AF of brackish water removed from the basin annually or, if not, that the water could be disposed of somewhere without unacceptable environmental impacts.

Furthermore, unless immediate pumping reductions were implemented to restore protective groundwater elevations, seawater intrusion would continue until the Seawater Intrusion Pumping Barrier is implemented, a period of time that section 9.4.3.7.5 identifies as at least 5 years from project commitment, without allowing any time for the required Proposition 218 process. During that time seawater intrusion would continue to advance past the 2017 line of advancement, which is identified as the minimum threshold. That 2017 line of advancement is already more than six miles inland.[16] The Plan provides no evidence that the proposed Seawater Intrusion Pumping Barrier along the coast could reverse seawater intrusion that has occurred more than six miles inland.

Furthermore, the inclusion of the Seawater Intrusion Pumping Barrier in the list of preferred projects begs the question to be addressed by the "Seawater Intrusion Working Group," which is supposed to be convened as "Priority Management Action 6." (GSP, section 9.3.7, pp. 9-20 to 9-21.) This Working Group is supposed to determine "an agreed approach for managing seawater intrusion." (Id., p. 9-21.) The implication is that there *is in fact no agreed approach* and that the Seawater Intrusion Pumping Barrier is at best an uncertain remedy.

Finally, Priority Management Action 6, the Seawater Intrusion Working Group, is in essence a proposal to *postpone* the development of management actions and projects to halt seawater intrusion. This violates SGMA's requirement that the *Plan itself* identify the management actions and projects that will mitigate overdraft and provide specified information about these management actions and projects. (23 CCR § 354.44.) For example, SGMA requires that the Plan identify the permits and regulatory process, the status and timetable, and the expected benefits of each project and management action and explain how it will be accomplished. (23 CCR § 354.44(b).) A plan that defers this information does not comply with SGMA because it is incomplete. DWR certainly cannot

[16] MCWRA, Presentation to Special Joint Meeting, 2017 Salinas Valley Groundwater Level Contours & Seawater intrusion Maps, April 24, 2018, available at https://www.co.monterey.ca.us/home/showdocument?id=63777.

find that a plan that defers the identification of management actions and projects by delegating this task to a working group is “sufficiently detailed,” or that it will in fact attain sustainability, or that it meets SGMA’s plan evaluation criteria,. (23 CCR § 350.4(b), (f); § 355.4.) Nor does the delegation of the approach to mitigation of seawater intrusion to a working group meet SGMA’s public participation requirements. (23 CCR § 354.10.)

The GSP’s multiple, inconsistent, incomplete, and deferred approaches to meeting the seawater intrusion minimum threshold – eventual temporary pumping reductions, a long-delayed $100+ million pumping barrier, or some eventual “agreed approach” from the Working Group – renders the GSP uncertain and inadequate as a plan.

D. The Plan fails to include immediate pumping reductions, which are required in order to attain the identified minimum threshold for seawater intrusion.

In its October, 2019 meeting to consider policy choices, the SVGBGSA Board discussed the possibility of establishing a buffer to permit further advance of seawater intrusion. However, SVGBGSA does not have the option to allow seawater intrusion to move further inland unless it is prepared to permit the further loss of the land overlying newly seawater-intruded portions of the aquifer for groundwater-based activity, e.g., agriculture. As noted, the Plan does not present any evidence that seawater intrusion can feasibly be reversed; and if it cannot be feasibly reversed, this loss of productive land may be permanent.

If the SVGBGSA were to adopt a minimum threshold for seawater intrusion that permits any further advancement, it would also have to adopt interim milestones in increments of five years, as required by 23 CCR § 354.30. Thus, SVGBGSA would have to decide how much longer it going to let seawater intrusion advance (if it adopts a time-based "buffer") and/or whose land it would allow to be subjected to seawater intrusion (if it adopts a spatial "buffer"). Because the Board has not made this choice, it must adopt a plan that will in fact halt seawater intrusion at the 2017 line of advancement.

The only apparently feasible option to halt seawater intrusion at the 2017 line is immediate pumping reductions. The Plan does not identify pumping reductions that would adequately mitigate overdraft as a management action, even though the regulations require this:

> If overdraft conditions are identified through the analysis required by Section 354.18, *the Plan shall describe* projects or management actions, including a quantification of demand reduction or other methods, for the mitigation of overdraft.

(23 CCR § 354.44(b)(2).) Proposed priority management action number 4 calls for an *eventual* pumping ban in the CSIP area, but only after such time as replacement water projects are implemented. Furthermore, the Plan fails to include the required quantification of the demand reduction this management action would attain. (GSP, section 9.3.9, pp. 9-16 to 9-18.) Proposed priority management actions number 1 and 2 *might* result in pumping reductions through voluntary land retirements or BMPs, but these reductions are neither assured nor quantified. (GSP, section 9.3.2, 9.3.3, pp. 9-10 to 9-14.)

More problematically, the Plan does not quantify the demand reduction that is *needed* to halt seawater intrusion at the 2017 line of advancement. As discussed, there is available modeling that has determined that a pumping reduction of 60,000 AFY in coastal pumping would be required in order to reestablish protective elevations.[17] This modeling should be updated as necessary in order to specify a management action that would mandate the needed immediate coastal pumping reductions to halt seawater intrusion.

E. The Plan fails to mitigate overdraft: the water charges framework cannot reliably mitigate overdraft because pumping reductions remain voluntary.

1. SGMA requires that a GSP identify projects or management actions, including demand reduction or other methods, that would be sufficient to mitigate overdraft.

Mitigation of overdraft conditions is central to meeting the minimum thresholds for groundwater levels, storage reduction, and seawater intrusion. SGMA requires quantification of the "demand reduction or other methods" needed to mitigate overdraft. (23 CCR § 354.44(b)(2).) *Simply put, the SVGBGSA must either reduce pumping or take management actions and implement projects that would generate new water.*

The Plan includes projects, management actions, and an overarching "water charges framework" that are supposed to mitigate overdraft conditions and attain sustainability. (GSP, Chapter 9; see section 9.6, p. 9-85.) However, the Plan does not propose the one obvious and effective management action to ensure that pumping does not exceed sustainable yield: mandatory limits on pumping through water allocations.

As discussed in section I.D above, immediate pumping reductions are needed to attain the minimum threshold for seawater intrusion. But even if pumping reductions were not needed immediately, the Plan is not designed to ensure that pumping remains within the long-term sustainable yield of the 180/400-Foot Aquifer Subbasin. As discussed below, the Plan fails to implement an enforceable or quantifiable demand reduction and fails to show that the management actions and projects will effectively reduce demand or augment supply to avoid overdraft conditions.

2. Contrary to the Plan's claim, the water charges framework would not reduce demand or increase supply sufficiently to mitigate overdraft

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[17] Geoscience determined that in order to achieve these protective elevations, additional recharge or "in lieu recharge," i.e., coastal pumping reductions made possible by moving water from the south to the north, would be required:

> The amount, location and timing of groundwater recharge (direct and in lieu), needed to maintain protective elevations and a seaward hydraulic gradient was determined using the SVIGSM. Based on model results, and assuming 2030 land use conditions, 12,000 acre-ft/year will be required from the SVWP Phase I facilities and 48,000 acre-ft/year will be required from the SVWP Phase II facilities. Given the hydrologic variability in the Salinas Valley area, in order to supply a total of 60,000 acre-ft/year (on average), to the SVWP, it will be necessary to have the right to divert up to 135,00 acre-ft/year from the Salinas River.

Geoscience, Protective Elevations to Control Seawater Intrusion in the Salinas Valley, 2013, p. 11.

because it relies on voluntary pumping reductions and permits pumping in excess of sustainable pumping allocations.

The Plan proposes an overarching water charges framework *that it claims will mitigate overdraft*:

> The water charges framework is specifically designed to promote pumping reductions. Should adequate pumping reductions not be achieved to mitigate all overdraft, funds collected through the water charges framework will support recharge of imported water, either through direct recharge or in-lieu means. Therefore, the water charges framework in association with the projects and management actions listed in this chapter will mitigate overdraft through a combination of pumping reduction and enhanced recharge.

(GSP, section 9.6, p. 9-85.)

The water charges framework is based on based on different fees for pumping at three different levels. It distinguishes three levels of fees:

- A "regulatory" fee for pumping a user's "sustainable pumping allowance,"
- A "surcharge" for a user's "transitional pumping allowance," where the transitional pumping allowance is based initially on current pumping and then declines to zero over a period of time, and
- A "supplementary fee" for "supplemental pumping," i.e., pumping in excess of the sustainable and transitional allowance.

This water charge framework is "designed to achieve" two objectives: "to promote voluntary pumping reductions" and "to fund water supply projects." (Chapter 9, § 9.2, p. 9-2.)

However, there is no evidence that the fees can or will be set at a level that attains sustainability as long as pumping reductions remain voluntary. A purely voluntary scheme can only work to attain sustainability if (1) the fees are set at a level that pays for water projects that make additional water available in excess of sustainable yield ("new water") and (2) that fee level is just high enough to incent users to limit their cumulative pumping to an amount equal to current sustainable yield plus that new water. Setting this Goldilocks fee would require SVGBGSA to know the incremental cost of new water from a suite of potential projects and management actions, to know the elasticity of demand, and to know the point at which the marginal cost of new water equals its marginal benefit to users.

In short, reliance on voluntary reductions in response to price signals would not work unless the SVGBGSA has a lot more information to set water prices than it can possibly generate before this Plan must be implemented.

Furthermore, the Plan admits that most of the details of the water charges framework must be deferred due to lack of information. (GSP, section 9.2.7, "Details to be Developed.") For example, there is no estimate of costs and benefits per acre/foot of new water for some of the management actions. There is no allocation of the estimated Basin-wide benefits of the proposed management actions and projects to users of the 180/400- Foot Aquifer Subbasin. There is no information as to the elasticity of demand

that would enable the SVGBGSA to determine what feasible projects and management actions, priced to users at an equitably determined cost per acre/foot, should be implemented in order to satisfy demand. However, if pumping reductions remain voluntary, establishing the supplementary charges for new water that would limit pumping to sustainable levels would require this cost/benefit information and a determination as to when the supplementary water charges will become so high that users will not be willing to buy more water.

Development of the water charge framework will also require critical compromises about technical matters and benefit allocation among affected parties, with vastly different interests by subbasin and by the type of user. This information will not be available by 2020 or perhaps for many years thereafter.

In sum, there is no prospect to get to an agreement, especially any time soon, on the amount of a supplementary water charge that would pay for needed projects and induce users to keep total pumping within the level of sustainable yield plus new water. Even if the SVGBGSA can determine the precise cost per acre/foot of new water, it is unlikely to know the point at which the benefits and costs of that next acre-foot of new water are equal. As long as pumping reductions remain voluntary, there is a significant probability that pumping will exceed sustainable yield.

Accordingly, as a practical matter, the Plan cannot rely on voluntary pumping reductions to ensure that pumping does not exceed sustainable yield. There is insufficient information to develop price signals as an effective incentive for voluntary pumping reductions, and the water charges framework is too uncertain to meet SGMA's requirements. (23 CCR § 354.44(c), (d) ["projects and management actions shall be supported by best available information and best available science;" and "agency shall take into account the level of uncertainty with the basin setting when developing projects and management actions"].)

3. Mitigation of overdraft requires mandatory pumping restrictions that limit total pumping to current sustainable yield plus newly produced water.

In light of the fact that the SVGBGSA cannot determine prices that would attain the needed voluntary pumping reductions, the obvious and essential way to mitigate overdraft is through mandatory reductions. The SVGBGSA must determine each user's share of the sustainable yield, and then mandate that pumping may not exceed this level. There are many methods to allocate shares of sustainable yield.[18]

Furthermore, as LandWatch has proposed in previous comments on a draft of Chapter 9, the SVGBGSA must restrict pumping in excess of the user's allowance of sustainable yield unless and until there is an actual committed, funded management action or project that will deliver new water. When new water is produced, the SVGBGSA should continue to restrict total pumping to the total of current sustainable yield plus that new water. To

[18] Environmental Defense Fund and New Current Water and Land, LLC, Groundwater Pumping Allocations under California's Sustainable Groundwater Management Act, July 2018, available at https://www.edf.org/sites/default/files/documents/edf_california_sgma_allocations.pdf.

ensure this, when a management action or project is committed and funded, the SVGBGSA could distribute the new water by selling specific allowances of the new water to users.[19]

If demand for new water exceeds supply, the SVGBGSA could allocate the new water allowances through several means. For example, it could sell the new water by auction, e.g., a French auction in which the supply is sold at the lowest bid price above the cost of production that would clear the market. Alternatively, the right to purchase new water at the cost of production could be assigned to users according to some pre-determined formula, e.g. pro-rata, based on their initial allowances of the current sustainable yield.[20] There are other equitable ways to allocate new water. Regardless, the objective of the allocation system should be to recover at least its production cost, to dispose of all of the new water, and to prevent pumping in excess of the sustainable yield plus the amount of new water.

4. **The Plan fails to provide the mandated quantification of the mitigation of overdraft: it fails to quantify the benefits of management actions, it assigns all of the Basin-wide project benefits to the 180/400- Foot Aquifer Subbasin, it double counts some benefits, and it contains an arithmetic error.**

SGMA requires that if overdraft conditions are identified in the Water Budget, the Plan must "describe projects and management actions, including a quantification of demand reduction or other methods, for the mitigation of overdraft." (23 CCR § 354.44(b)(2).) Section 9.6 purports to provide this quantification. However, the quantification has four flaws that must be corrected.

First, Section 9.6 fails to quantify the benefits of management actions. SGMA mandates quantification of the benefits of projects *and management actions*. (23 CCR § 354.44(b)(2).) The discussion in Section 9.6 and Table 9-5 address only the benefits of proposed projects, based on the estimated quantification of benefits of each proposed project in the discussion of projects in Section 9.4. There are no such quantified estimates of the benefits of the proposed management actions in Section 9.3. It is likely that the benefits of some of the proposed management actions could in fact be estimated. For example, the benefit of a pumping ban in the CSIP area would presumably be equal to current pumping in that area, which should be ascertainable.

Unless the SVGBGSA is prepared to supply at least an estimate of the benefits of proposed management actions, it is not clear that there is adequate evidence that they would have any meaningful or reliable benefits or that there is any way to evaluate those benefits, as required by 23 CCR § 354.44(b)(5). For example, the benefits of reservoir

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[19] A management action or project should not be deemed funded and committed until it has been approved by the implementing agency and until all needed funding is in place, including fee ordinances and Proposition 218 votes as needed.

[20] Users with an allowance of the existing sustainable water supply or an allowance of new water could be permitted to sell an allowance to other users. This secondary market in water allowances would ensure the water goes to the most valued use and would establish price signals that would inform SVGBGSA of users' willingness to pay for future new water supply projects.

reoperations may be too speculative to include at this point in light of the federal agency revocation of the Biological Opinion controlling environmental flows and the unfunded obligation for dam safety repairs, estimated to cost $145 million.[21] (GSP, section 9.3.4, pp. 9-14 to 9-16, Priority Management Action 3: Reservoir Reoperation.").

Second, Chapter 9 states that the proposed management actions and projects "constitute an integrated management program for the entire Valley," not just the 180/400 Aquifer Subbasin. (Chapter 9, sections 9.3.1, 9.4.2.) Despite this, Section 9.6 only discloses the overdraft for the 180/400 Aquifer Subbasin and then concludes that the *benefits of projects intended to mitigate the entire Basin's overdraft* is sufficient because it is greater than the overdraft in the 180/400 Foot Aquifer Subbasin. It is erroneous to allocate the entire benefit of Basin-wide mitigation to a single subbasin.

Third, Table 5 double counts the benefits of the proposed projects #2, 3, 4, and 5, all of which are intended to "work together to improve and expand the performance of the CSIP system" and are identified as "part of an integrated CSIP strategy." (Chapter 9, page 31, "CSIP Projects."). For example, the discussion of the benefits of Project # 5, Maximize Existing SRDF Diversion, states that the "estimated project yield is 11,600 AF/year. *The yield for this project is the same yield that is identified in Project #2 and a portion of the yield identified in Priority Project #3.*" (GSP, section 9.4.3.6.2, p. 9-49, emphasis added.) Despite this, Table 9-5 lists 11,600 AF/year as *additional* potential yield for Project #5, over and above the yield for Projects # 2 and #3. (GSP, Section 9.6, Table 9-5, p. 9-86.)

Fourth, Table 9-5 is not added correctly. The "total" for Table 9-5 is stated as "-58,201." However, the sum of the elements listed in the table is 40,800 acre-feet per year of potential water available for mitigating overdraft. Eliminating the double counted 11,600 acre-feet per year for Project # 5, the total would be 29,200 AF/year.

F. The implementation plan improperly delays substantive action for two years in order to accommodate the implementation schedule for the GSP for the rest of the Basin, which is not *critically* overdrafted.

SGMA requires more urgent action for *critically* overdrafted basins than for other overdrafted basins: plans for critically overdrafted basins are due two years sooner than plans for other overdrafted basins. The Chapter 10 GSP Implementation proposal fails to recognize this urgency because it defers substantive action for the critically overdrafted 180/400 Foot Aquifer Subbasin until the SVGBGSA is prepared to implement the GSP for the rest of the Salinas Valley Groundwater Basin (SVGB). Because the remainder of the Basin is merely overdrafted rather than critically overdrafted, its GSP is not due until 2022.

In particular, section 10.7 postpones implementation of projects and management actions in order to coordinate with the timetable for the rest of the Basin:

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[21] Monterey Herald, "Reservoirs bond measure gets water agency support," Oct. 23, 2019, available at https://www.montereyherald.com/2019/10/23/reservoirs-bond-measure-gets-water-agency-support/.

> The projects and management actions identified in Chapter 9 are sufficient for attaining sustainability in the 180/400-Foot Aquifer Subbasin as well as the other five subbasins in the Salinas Valley. The projects and actions will be implemented in a coordinated fashion across the entire Salinas Valley to ensure Valley-wide sustainability. Because five of the subbasins in the Valley will not complete GSPs until January 31, 2022, many of the projects and actions will be implemented only after this time.

(GSP, section 10.7, p. 10-10.) Indeed, the only activities proposed for projects and management actions prior to completion of the GSP for the rest of the SVGB in 2023 are some water rights applications, cost refinement, preliminary design ("if projects adequately defined"), and some initiation of environmental permitting. (GSP section 10.7, p. 10-10.)

Figure 10-1, "General Schedule of 5-year Startup Plan," represents that the SVGBGSA will "Implement Prioritized Projects" between 2023 and 2025. (GSP, section 10-9, p. 10-15.) However, the implication that the nine "Preferred" projects identified in Chapter 9 will actually start up in 2026 is inconsistent with the detailed project timelines in Chapter 9, which call for 2 to 9+ years to implement projects *after the SVGBGSA has committed itself to them*.

Furthermore, there is no reason to suppose that the SVGBGSA can or will commit itself to the basin-wide projects in 2023, the moment the SVGBGSA submits the GSP for the rest of the SVGB. First, DWR may not approve the Basin-wide GSP for several years, and the SVGBGSA may not be able to commit to a Basin-wide project without an approved Basin-wide GSP.

Second, many of the projects will require complex Proposition 218 compliance, undertaken only *after* SVGBGSA decides to pursue the projects, in order to determine whether fees can be assessed to actually build them.[22] (Water Code, § 10730.2(c)). The Proposition 218 compliance process, requiring engineering studies and benefit allocations based on a completed design and hydrological assessment, followed by balloting and protest procedures, may add years to each major project. The SVGBGSA cannot actually commit itself to commence a project until it has confirmed that it may make assessments to finance the project through a completed Proposition 218 process. The implementation schedule does not include any time for this critical process.

Finally, section 10.2 defers the implementation of a financing method for projects and management actions to coordinate with the timetable for financing for the rest of the Basin:

> Details of the GSP implementing finance framework for all six subbasins will be developed during the first three years of this GSP's implementation through a

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[22] The GSP identifies a proposed "Groundwater Sustainability Fee" (also termed a "regulatory fee" and a "Tier 1 – Sustainable Pumping Charge") for pumping a "Sustainable allowance" and an "interim base fee" pending completion of the "GSP financing framework." (GSP, sections 9.2 and 10.2, pp. 9-1 to 9-3, 10-4 to 10-5.) However, before Proposition 218 compliance, those fees could not be used for projects but only for the activities related to developing and managing the GSP. (Compare Water Code, §§ 10730 and 10730.2.)

> facilitated, Valley-wide process. This process will be similar to the successful facilitated process that resulted in the SVBGSA serving as the GSA for some or all parts of all six subbasins. The result of this facilitated process will be an agreement on the financing method approved by the SVBGSA. The facilitation will be complete by January 31, 2023, and the financing method will be implemented in all six subbasins immediately following.

(GSP section 10.2, pp. 10-4 to 10-5.) Here, the Plan is apparently describing the adoption of a financing "framework" or "method," *not an actual financing plan or capital budget*. As noted, the actual budget and financing plan will require the completion of Proposition 218 processes for the projects.

In effect, the proposed GSP Implementation improperly treats the actual management of the critically overdrafted 180/400 Foot Aquifer Subbasin as if it were on the same timetable as the rest of the SVGB. This does not meet the mandate of SGMA, which requires more than a plan by 2020. SGMA requires that critically overdrafted basins "shall be *managed* under a groundwater sustainability plan" by January 31, 2020. (Water Code, § 10720.7(a)(1), emphasis added.)

If the development and financing of projects must await completion of the GSP for the remainder of the SVGB, and because substantial delay will inevitably be required to negotiate financing and develop projects, the SVGBGSA should implement all feasible interim measures to manage the 180/400 Foot Aquifer Subbasin pending the implementation of basin-wide projects and financing. As discussed in section I.D above and in section I.H below, that must include immediate pumping reductions.

G. The Plan fails to identify project startup dates.

The Plan identifies various timelines for the nine identified priority water projects in Chapter 9 that include necessary actions in a necessary sequence, such as studies and preliminary engineering, obtaining agreements and right of way, CEQA, permitting, design, bid and construction, and startup. Some projects might be implemented in 2 years from commitment; but most are projected to take from 5 to 9 years from commitment to startup. As noted above, Chapters 9 and 10 do not include estimates of the additional time required for Proposition 218 compliance.

Chapter 9 does not disclose when the timelines for each project would commence running, so it is impossible to determine when these projects would actually deliver results. The Chapter 10 implementation schedule proposes that no projects commence "implementation" before the adoption of the GSP for the remainder of the SVGB in 2023 so that the projects can be coordinated on a basin-wide basis. However, Chapter 10 does not even purport to identify project start up dates. This violates SGMA. (23 CCR, § 354.44(b)(2).) As discussed above, contrary to Figure 10-1 it is not reasonable to assume that the SVGBGSA will be able to "implement" all nine projects between 2023 and 2025. (GSP, p. 10-15.)

Chapter 10 should be revised to reflect realistic timelines for each project and management action that provide a best current estimate of startup that considers all necessary activity before startup, including the Proposition 218 process.

H. The Plan fails to impose pumping restrictions pending startup of new water projects. Interim pumping restrictions are needed in order to restore and maintain the protective groundwater elevations to attain the minimum threshold for seawater intrusion.

The development, permitting, and financing of water projects to replace reliance on current levels of groundwater pumping will take years. It is unlikely that any actual or substantial results toward halting seawater intrusion can be expected from the proposed projects and management actions by 2025, when Figure 10-1 indicates that the projects will be implemented. Projects may not deliver any substantial results before 2030. Interim management measures are required pending completion of projects. Interim measures must either provide additional water supplies or require mandatory pumping restrictions that will (1) actually ensure that pumping remains within the sustainable yield and (2) replace the cumulative storage deficit in order to restore groundwater levels to protective elevations.

Immediate pumping restrictions are feasible and would not require extensive data acquisition.

Pumping restrictions are legally feasible because they could be imposed based on the regulatory authority of GSAs to "control groundwater extractions by regulating, limiting, or suspending extractions from individual groundwater wells or extractions from groundwater wells in the aggregate, construction of new groundwater wells, enlargement of existing groundwater wells, or reactivation of abandoned groundwater wells, or otherwise establishing groundwater extraction allocations." (Water Code, § 10726.4(a)(2).)

SVGBGSA could adopt pumping restrictions much more quickly than it could actually complete a project. In particular, SVGBGSA would not need to complete the proposed three-year negotiation of a water charge framework and would not need to conduct a potentially multi-year Proposition 218 process. And it is likely that pumping restrictions would be exempt from CEQA as a measure to protect natural resources and the environment. (14 CCR §§ 15307, 15308.) And if the SVGBGSA could not or would not adopt needed pumping restrictions through such a CEQA exemption, then the SWRCB could do so under a statutory exemption. (Water Code, § 10736.2.)

Pumping restrictions could be imposed on the basis of readily available information. For example, the Brown and Caldwell report has already been used to in Chapter 6 to identify the historic sustainable yield of 95,700 AFY. (GSP, Table 6-31, p. xii.) The Brown and Caldwell Report also provides an estimate of the cumulative storage deficit, which should be retired through pumping reductions. In its 2013 study for MCWRA, Protective Elevations to Control Seawater Intrusion in the Salinas Valley, Geoscience quantified the needed reductions in groundwater pumping (via in lieu recharge) to control seawater intrusion in the northern Salinas Valley.[23]

Although more precise data may eventually be available to closely calibrate the needed pumping reductions, there is no reason not to estimate and implement needed

[23] Geoscience, Protective Elevations to Control Seawater Intrusion in the Salinas Valley, 2013, p. 11.

reductions in pumping immediately. *There is simply no question that some pumping reductions are essential to halt seawater intrusion.*

Again, the only rationale advanced in the GSP for avoiding a pumping restriction is that stakeholders did not express a "preference for restricting average year pumping." (GSP, section 8.7.2, p. 8-27.) SGMA neither requires nor permits the SVGBGSA to honor a mere preference when that precludes meeting the mandates to meet the minimum thresholds, including the minimum threshold for seawater intrusion.

The GSP already proposes some pumping restrictions in the form of an immediate moratorium on new wells in the Deep Aquifer and an eventual restriction of pumping in the CSIP areas. (GSP, sections 9.3.5 and 9.3.6, pp. 9-16 to 9-20.) There is no reason that the GSP should not also address the need for immediate measures to address seawater intrusion.

Section II: The GSP should be revised.

Set forth in this section II are suggestions to improve the Plan.

A. Requested revisions to Chapter 6

1. Assumptions regarding efficacy of future projects and management actions to address seawater intrusion in the projected future sustainable yield should be spelled out.

We concur with Thomas Virsik's concerns about the projected future sustainable yield. (June 4, 2019 letter from Thomas Virsik to the Planning Committee.) In particular, Chapter 6 does not explain its assumption that seawater intrusion will be reduced from 10,500 AFY to 3,500 AFY by 2030, despite an increase in pumping and an increase in the change in storage. If this assumption is based on the assumed efficacy of existing or future management actions and projects, then Chapter 6 should identify them and the basis for their assumed efficacy.

Future operations of existing projects may in fact be subject to substantial changes. For example, Chapter 6 states that the modeling of the projected future water budget assumes "the current approach to reservoir management taken by MCWRA." (GSP, section 6.10.1.2, p. iv.) However, it is not clear that this assumption is warranted in light of the withdrawal of NOAA's Biological Opinion for the Salinas Valley Water Project on February 20, 2019. Or for example, it is not clear whether and how the projected future water budget reflects the recent actions by the County to restrict pumping in the Area of Impact within the 180/400 Subbasin.[24] The fact that the model projects that net pumping in 2030 and 2070 will be substantially *greater* than historical pumping suggests that the

[24] Monterey County, Urgency Ordinance # 5302, available at https://www.co.monterey.ca.us/government/departments-a-h/health/environmental-health/wells/interim-urgency-ordinance-5302.

model assumes that the County's recent well moratorium in portions of the 180/400 Subbasin will not have any lasting effect on pumping amounts.

The purpose of the water budget is to inform decisions about what projects and management actions the SVGBGSA should implement to control undesirable effects, including seawater intrusion. Assuming a partial solution in the projected future water budget is unjustified unless the projects or management actions responsible for that partial solution are (1) outside the control of the SVGBGSA and (2) certain to be implemented by other parties. If projects or management actions responsible for that partial solution are within the control of the SVGBGSA, then they should be weighed against SVGBGSA's *other* options rather than being hard-wired into the water budget. If projects or management actions responsible for that partial solution are uncertain, then their uncertainty should be disclosed.

2. **Double counting of water withdrawals should be resolved**.

A number of previous comments have objected that the water budget overstates historic pumping, and therefore overstates future sustainable yield, because the historic data double counts groundwater pumping as surface water diversions. The Plan admits this problem. (GSP, section 8.11.2.1, p. 8-64.) In a June 18, 2019 letter, Thomas Virsik proposed a relatively straightforward method to identify or at least estimate this double counting by identifying identical extraction numbers in the eWRIMS data and the MCWRA groundwater pumping submissions. Resolution of double counting may materially affect the sustainable yield calculation in the historic water budget, and can only tend to reduce it. Conservative management under uncertainty requires that, before the GSA relies on the historic sustainable yield calculation, it should at least estimate this potential error and reduce the historic sustainable yield calculation by that estimate.

Chapter 6 states that the modeling of the *future* water budget does not double count extractions. (Section 6.9, p. 6-35.) This means that only the historical water budget's determination of sustainable yield has been overstated by double counting. This is not reassuring because it follows that the actual variance between the projected future sustainable yield determined by the USGS model (107,200 AFY in 2020 per Table 6-31) and the sustainable yield determined historically (95,700 AFY per Table 6-20) is even greater than disclosed by Chapter 6.

3. **Sustainable yield determinations should incorporate climate change-caused variability in precipitation**.

Chapter 6 notes that "projections are based on the available climate change data provided by DWR (2018)." (Section 6.10, p. iii.) The Chapter does not explain whether and how DWR's projections are reconciled with those in California's Fourth Climate Change Assessment Central Coast Region Report.

The Fourth Assessment notes:

- Average precipitation is expected to increase by a relatively small amount, but the annual variability increases substantially by the end of the century.
- Projected future droughts are likely to be a serious challenge to the region's already stressed water supplies.

- Water supply shortages, already common during drought, will be exacerbated. Higher temperatures may result in increases in water demand for agriculture and landscaping. Reduced surface water will lead to increases in groundwater extractions that may result in increased saltwater intrusion. Lower surface flows will lead to higher pollutant concentrations and will impact aquatic species.
- Climate change projections of future extreme and prolonged droughts will exacerbate the region's water supply challenges. [25]

Chapter 6 should discuss how variability and uncertainties in future precipitation patterns will impact groundwater budgets. It is not clear that climate variability effects have been modeled. Increased peak precipitation years may not proportionately benefit the groundwater basin as much as increased drought years harm the basin. Peak precipitation may occur in large storm events discharged down the river and out to sea without resulting in proportionately higher basin recharge. However, it is clear that drought years do result in falling groundwater levels.

B. Chapter 7 should require that pumping be monitored by flowmeters.

Chapter 7 does not provide for an adequate system of monitoring annual groundwater extractions. LandWatch strongly recommends that the Salinas Valley Groundwater Basin Groundwater Sustainability Agency adopt an ordinance that requires

1) Independently calibrated and monitored flowmeters on agricultural pumps throughout the Salinas Valley Groundwater Basin; and
2) Annual pumping reports that are independently validated for accuracy.

The ordinance should also include strict enforcement provisions that help assure full compliance. The proposed use of the existing monitoring program to monitor annual groundwater pumping is not adequate because it will generate inaccurate results and potentially lead to unfair cost allocations.

As LandWatch's previous comments on Chapter 7 explain, Monterey County Water Resource Agency does not enforce Monterey County Ordinance No. 3717 which requires installation of flowmeters meeting MCWRA specifications for all groundwater extraction facilities with a discharge pipe of 3 inches or greater. Many wells report extraction based on electricity consumption instead of the mandated reporting based on flowmeters. However, electricity consumption is a demonstrably inaccurate basis to estimate groundwater pumped.[26] Many wells do not report at all.

The Plan does not require enforcement of the MCWRA flowmeter ordinance, but instead would permit continued reliance on the same methods used in the past. (GSP, section 7.3, p. 7-16.) The Plan does not even require annual reporting by all agricultural users, instead providing for estimates of such pumping using crop data and crop duty

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[25] Langridge, Ruth. (University of California, Santa Cruz), California's Fourth Climate Change Assessment Central Coast Region Report, 2018, pp. 17, 6, 7, 21, available at https://www.energy.ca.gov/sites/default/files/2019-07/Reg%20Report-%20SUM-CCCA4-2018-006%20CentralCoast.pdf.

[26] Irrigation Training and Research Center, California Polytechnic State University, ITRC Paper No. P 17-001, May 2017 available at http://www.itre.org/papers/wellrecords.htm.

estimates. The Plan should be revised to mandate use of flowmeters for all wells with discharge pipes of 3 inches or greater, with annual verification in accordance with Ordinance No. 3717. A monitoring plan that fails to require accurate measurement of groundwater extractions fails to meet SGMA's mandate to rely on best management practices and best available science to obtain the best available information.

Thank you for the opportunity to comment.

Sincerely,

Michael DeLapa
Executive Director

To: SVBGSA Board

From: Robin Lee, SVBGSA Advisory Committee

Re: Comments on GSP draft

Date: 11/14/2019

It is my opinion that the ground water level of sustainable yield has been set at an unsustainable level. The level for sustainable yield should be set at the average depth of domestic wells. This would assure a majority of residential water users would be assured of access to ground water. Ground water depths set near the end of the worst drought in California will not give ground water access to the majority of residential systems. Also, the lower level would put tremendous strains on ground water connected ecosystems.

For projects, a scalping plant should be used for the east side of Salinas. This plant would be closer to connecting the much disrupted hydrologic cycle on the east side, making the scalping plant both an economical and efficient project.

Looking at and correcting the ordinances that prevent the recommendations stated in the GSP from being implemented, should be listed as an administrative project in GSP.

Thank you.

Robin Lee, Environmental Caucus seat, Advisory Committee

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December 12, 2019

By Hand Delivery

Board of Directors
Salinas Valley Basin Groundwater
Sustainability Agency
1411 Schilling Place
Salinas, California 93901

Re: Finalizing Groundwater Sustainability Plan and Adopting Cooperation Agreement with the County of Monterey–SVBGSA Board of Directors December 12, 2019 Meeting, Agenda Items # 7.a and # 7.b

Dear Salinas Valley Basin Groundwater Sustainability Agency Board of Directors:

On behalf of the City of Marina ("City" or "Marina") and the Marina Groundwater Sustainability Agency ("MGSA"), we submit these comments opposing the adoption of two proposed resolutions on the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") Board of Directors' December 12, 2019 Agenda: (1) the resolution adopting SVBGSA's final groundwater sustainability plan ("GSP") for the 180/400 Foot Aquifer Subbasin ("Subbasin"); and (2) the resolution adopting a cooperation agreement between SVBGSA and the County of Monterey ("County") for management of an approximately 400-acre parcel within the Subbasin.

INTRODUCTION

The City and MGSA oppose both resolutions before the SVBGSA Board of Directors' for different reasons. First, the City recognizes the hard work that has gone into the preparation of SVBGSA's GSP. As required by the Sustainable Groundwater Management Act ("SGMA"), SVBGSA circulated its Draft GSP for a 45-day public comment period, and we understand that SVBGSA received a considerable volume of comments. However, according to the Staff Report, SVBGSA has no intention to respond to the timely comments it received after mid-November or to make any changes to its Draft GSP based on those comments. Rather, SVBGSA's proposed resolution seeks to approve its Final GSP without taking these comments into account.

SVBGSA's approach violates SGMA and essentially nullifies the important public comment process. The City and MGSA submitted comments on November 25, 2019 (within the public comment period), but SVBGSA is disregarding these comments and making no changes

to its GSP based on them. This procedural misstep by SVBGSA fundamentally impairs the due process rights of all commenters who filed comments after mid-November. It also undermines the integrity and validity of SVBGSA's Final GSP because it does not address the crucial factual, technical, and scientific issues that MGSA and the City raised in their comments. Accordingly, SVBGSA's Board cannot legally approve the Final GSP without first completing the comment review, response, and GSP revision processes. The Final GSP is thus deficient in its current form.

Second, the City and MGSA oppose the resolution approving a cooperation agreement between SVBGSA and the County of Monterey. SVBGSA failed to negotiate in good faith with MGSA over the terms of a coordination agreement for four months and instead requested that the County take over MGSA's jurisdictional area. This is no less than a "hostile takeover" of MGSA's entire groundwater area. Pursuant to this plan, on December 11, 2019, the County adopted a resolution to utilize Water Code Section 10724 to pursue becoming the groundwater sustainability agency ("GSA") for the approximately 400-acre parcel within the Subbasin where MGSA and SVBGSA have filed overlapping GSA notifications.

However, the County cannot lawfully invoke Section 10724, in part because as a member, majority funder, and architect of SVBGSA and its GSP, the County "is creating or contributing to the [GSA] overlap" it allegedly seeks to solve by becoming a GSA. State Water Resources Control Board, *Frequently Asked Questions on GSAs*, at 3 (Nov. 22, 2017). The County thus has no legal basis for disregarding MGSA, a properly-formed GSA with jurisdiction over the MGSA area. Furthermore, the County's efforts to install SVBGSA's GSP and to delegate management of the overlapping area expose the County's real motive. Together, SVBGSA and the County seek to contravene SGMA's GSA coordination requirements and effectively designate SVBGSA as the exclusive GSA for the Subbasin through a prohibited "backdoor" maneuver. These actions violate SGMA and attempt to unlawfully block the City of Marina and MGSA from exercising their rights under SGMA.[1]

Both of these resolutions would undermine the efforts of the City and MGSA to contribute to the sustainable management of the Subbasin and protect the critical coastal areas in the City's jurisdiction. Accordingly, the City strongly urges SVBGSA not to adopt either proposed resolution and instead begin coordinating with MGSA to develop a GSP or set of GSPs to sustainably manage the Subbasin.

I. SVBGSA's Proposed Resolution To Finalize Its GSP Unlawfully Disregards Timely Filed Public Comments And Has Resulted In A Deficient Final GSP.

The City and MGSA oppose SVBGSA's proposed resolution to adopt its Final GSP after only considering and addressing a portion of the public comments on it. The deadline to submit

[1] The City and MGSA provided a detailed description of these issues in their December 10, 2019 joint opposition letter to the County's GSA Resolution, which is enclosed herewith as Attachment 1 and incorporated herein by reference.

public comments on SVBGSA's GSP was November 25, 2019.[2] Now, after that deadline has passed, SVBGSA seeks to impose an earlier comment deadline by failing to consider and address public comments received "[b]etween mid-November and prior to the closing comment date of November 25, 2019." SVBGSA Board Agenda, *Staff Report on Agenda Item 7a* at 63.

SVBGSA openly admits that "not all" public comments "will be initially addressed individually in the comment matrix." *Id.* SVBGSA plans instead to wait until after it approves and submits its Final GSP before addressing all of the comments. It tries to justify this deferral by stating that it can take the comments into account "as the GSP is implemented and refined." *Id.* Because of SVBGSA's newly announced mid-November comment cutoff, the unaddressed comments include the City and MGSA's November 25, 2019 comment letter and matrix.[3]

SVBGSA's failure to consider the City and MGSA's comments violates SGMA, which mandates that a GSA "shall review and consider comments from any city or county" within its GSP's area. Cal. Water Code § 10728.4; *see also* Cal. Code Regs. tit. 23, § 354.10(c) (requiring a GSP to include the public comments on the GSP "and a summary of any responses by the [GSA]"). SVBGSA's failure to consider and address these comments undermines the purpose of the public comment process and potentially deprives local governments, beneficial users, and interested parties of the opportunity to provide input on the GSP. *See* Cal. Water Code § 10727.8. Accordingly, SVBGSA's efforts to adopt its GSP without considering or addressing the City and MGSA's comments present a clear violation of SGMA.

Failing to consider the City and MGSA's comments also leaves critical gaps in SVBGSA's GSP unaddressed. These gaps include the GSP's failure to (1) utilize the newest and best available science; (2) designate, protect, and manage the Dune Sand Aquifer as a principal aquifer; (3) provide sufficient protections against ongoing or worsening seawater intrusion; (4) meaningfully recognize, address, monitor, and manage groundwater-dependent ecosystems as a beneficial groundwater use; (5) consider state and federal protections for habitats and species in and near the MGSA area; and (6) include an adequate monitoring network in the coastal portion of the Subbasin. These and the other deficiencies delineated in the City and MGSA's comments only heighten the harm from SVBGSA's refusal to consider them. Adopting SVBGSA's GSP without addressing these issues will fail to protect the Subbasin's coastal areas as well as local beneficial uses and users of groundwater.

When taken together, SVBGSA's instigation of the County's new effort to become a GSA and failure to consider the City's public comments would deny the City of its right to contribute to the management of the MGSA area as either a DWR-recognized GSA or a local government entity. In correspondence with MGSA, SVBGSA has confirmed that it will only

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[2] *See* SVBGSA, *Public Notice Release of Groundwater Sustainability Plan 180-400 Foot Aquifer Subbasin*, available at https://svbgsa.org/groundwater-sustainability-plan/180-400-ft-aquifer/.

[3] City of Marina and MGSA, *Comments on SVBGSA Draft Groundwater Sustainability Plan* (Nov. 25, 2019).

agree to meet with MGSA to coordinate on a GSP if MGSA "agrees to give up its GSA."[4] Relinquishing its GSA status would leave the City with only the public comment process to influence groundwater management in its jurisdiction. However, SVBGSA has thus far failed to consider MGSA's public comments before finalizing its GSP. These efforts collectively would deprive the City and MGSA of their ability to ensure sustainable management of the Subbasin and protect the City's coastal areas.

II. The County And SVBGSA's Proposed Cooperation Agreement Confirms SVBGSA's Role As The County's Affiliate In The County's GSA Takeover.

SVBGSA's proposed resolution adopting a cooperation agreement with the County to install SVBGSA's GSP and manage the overlap area demonstrates SVGBSA's role in the County's proposed unlawful GSA takeover. Indeed, both SVBGSA's proposed resolution and the cooperation agreement provide further proof of the unlawful nature of the County's efforts and SVBGSA's status as the County's affiliate. The City and MGSA oppose the adoption of this proposed cooperation agreement because it formalizes the County and SVBGSA's joint effort to exclude MGSA from the management of the MGSA area.

First, the cooperation agreement evidences the County's and SVBGSA's shared intent to deny MGSA the opportunity to collaborate on groundwater management issues in the Subbasin and circumvent SGMA's coordination requirements. SVBGSA's Staff Report demonstrates that SVBGSA had no intention of coordinating with MGSA and instead has sought ways to work with the County to implement its GSP. Only two days after MGSA released its Draft GSP on October 8, 2019, the SVBGSA Board voted to "request[] that Monterey County take all necessary steps to become the GSA for either the entire 180/400 Foot Aquifer Subbasin or the CEMEX site." SVBGSA Board Agenda, *Staff Report on Agenda Item 7b* at 502. This motion included a request that the County also adopt SVBGSA's GSP. *Id.* Thus, before MGSA and SVBGSA even submitted comments on each other's GSPs, SVBGSA already solicited the unlawful intervention of its member and majority funder to override MGSA and implement its GSP.

Second, SVBGSA and the County's proposed cooperation agreement also confirms their plan to have the County become a GSA, not to manage the overlap area, but instead to effectively install SVBGSA as the exclusive GSA for the MGSA area. In particular, Section 5.2 assigns SVBGSA the responsibility of "comply[ing] with SGMA at the CEMEX Site, including taking actions to review, adopt and implement the GSP." SVBGSA and Monterey County Cooperation Agreement at 4. Section 5.3 then provides that the "County GSA authorizes SVBGSA to exercise any and all legal authorities in compliance with applicable law for the CEMEX Site." *Id.* These provisions demonstrate that the County has no interest in acting as the GSA for the overlap area. The County instead only seeks to use Section 10724 to remove MGSA, so its affiliate, SVBGSA, can manage the site. In other words, the County's resolution

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[4] *See* Letter from Layne Long to Gary Petersen (Nov. 21, 2019) (stating SVBGSA's position) (enclosed as Attachment 2).

and the cooperation agreement aim to use Section 10724 to do what SVBGSA cannot on its own—adopt SVBGSA's GSP for the MGSA area without coordinating with MGSA and its GSP.

Third, as explained in the City and MGSA's letter opposing the County's GSA resolution, the County is indisputably creating and contributing to the overlap situation, as a member, majority funder, and driving force in the SVBGSA. The proposed cooperation agreement further links the County and SVBGSA through provisions like Section 14.13's joint defense provision. It provides that SVBGSA and the County may "further coordinate and cooperate by undertaking joint defense, including utilizing a common interest/joint defense agreement" to defend against "any challenge to the Subbasin GSP as it relates to the CEMEX Site." *Id.* at 10. The County created and contributed to the overlap with MGSA through SVBGSA. Now, the two affiliates seek to jointly defend their bad faith takeover of the MGSA area against a potential legal challenge from the City and MGSA. This confirms the County and SVBGSA's affiliation as joint actors and further cements the County's status as a creator and contributor to the overlap area.

CONCLUSION

For the reasons outlined above, the City and MGSA oppose SVBGSA's proposed resolutions. Together, SVBGSA's resolutions threaten to silence MGSA both as a local agency participating in the public comment process and as a DWR-recognized GSA. Accordingly, the City and MGSA strongly urge SVBGSA not to adopt either resolution and instead begin working with MGSA to coordinate on a GSP or set of GSPs to sustainably manage the Subbasin.

Sincerely,

Paul P. "Skip" Spaulding, III

PPS:jla
Enclosures

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ATTACHMENT 1

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December 10, 2019

Via Hand Delivery

Monterey County Board of Supervisors
168 West Alisal Street, First Floor
Salinas, California 93901

Re: Formation of Groundwater Sustainability Agency and Related Actions
County Board of Supervisors December 11, 2019 Meeting, Agenda Item #4

Dear Chair Phillips and Honorable Monterey County Supervisors:

On behalf of the City of Marina ("City" or "Marina") and the Marina Groundwater Sustainability Agency ("MGSA"), we submit these comments opposing the adoption of a resolution by Monterey County ("County") to become the Groundwater Sustainability Agency ("GSA") for a portion of the 180/400 Foot Aquifer Subbasin ("Subbasin") and to take related actions.

INTRODUCTION

The City of Marina and MGSA strongly object to Monterey County's unlawful effort to subvert the intent and explicit text of the Sustainable Groundwater Management Act ("SGMA"). The County proposes to undertake a "hostile takeover" of MGSA's entire groundwater area and then turn over the management of this groundwater to its affiliate, the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA").

The County is hopelessly conflicted and therefore disqualified from taking these actions. It was the moving force in founding SVBGSA, has provided 60% of its funding so far and, until only two months ago, provided all legal services for SVBGSA's SGMA activities and management, including the preparation of SVBGSA's draft groundwater sustainability plan ("GSP"). The County is masquerading as a "neutral" agency coming in to resolve a local agency "overlap" in jurisdiction, but in fact, its sole motivation is to eliminate MGSA and supplant MGSA's GSP in favor of the SVBGSA GSP that it supervised and approved as the most prominent SVBGSA member.

Notably, the County's proposed resolution fails to consider MGSA's GSP, recognize the need for sustainable groundwater management in and near the MGA Area, or make any findings on the merits of SVBGSA's GSP to address these needs. Instead, the proposed resolution demonstrates that the County's true motivation is not collaborative management of the Subbasin,

but rather is to strip the City of Marina of any voice in the management of groundwater within its own jurisdiction.

MGSA is a validly formed SGMA GSA. It took all required SGMA steps and filed all appropriate notices with the Department of Water Resources ("DWR") for MGSA's formation and GSP preparation, and DWR accepted these notices and posted them on its website.[1] MGSA authorized a $275,000 contract for preparation of the GSP and continues to expend these funds as its GSP preparation proceeds. MGSA issued a draft GSP on October 8, 2019, and accepted comments on it until November 25, 2019. Responses to comments and any necessary revisions to the GSP will be completed in the next few weeks, and the GSP is scheduled for MGSA consideration in January 2020. Thus, it is "on track" to be submitted to DWR by the January 31, 2020 deadline prescribed in SGMA.

These actions by the County have been orchestrated by California-American Water Company ("CalAm"), which has encouraged the SVBGSA Board and Committees to eliminate the City of Marina and the MGSA by requesting that the County attempt to "take over" MGSA's groundwater area. CalAm, of course, has no interest in sustainable groundwater management – rather, its sole goal is to eliminate any potential impediments to its foundering Monterey Peninsula Water Supply Project ("MPWSP" or "Project").[2] CalAm does not want the City of Marina to have any groundwater management role in this area, primarily because they prefer the "hands off" approach of SVBGSA. Once SVBGSA made this request to the County, the County immediately notified DWR of its "takeover" plans in a letter and has now published the proposed resolution.

This proposed County action has no precedent under SGMA. The statutory sections which the County relies on are intended to apply only to areas that are "unmanaged" because *no* GSA has filed to manage the groundwater in that area (rather than the situation here where two agencies have filed for the same area). In the only other case where a County has stepped in to

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[1] The County and SVBGSA have tried to create the incorrect impression that MGSA is not a valid GSA because it supposedly did not file to be a GSA by a deadline in SGMA. However, this contention has been completely debunked and has never been supported by DWR. We enclose as Exhibit "1" hereto and incorporate herein a copy of a letter dated August 28, 2019 sent to DWR on behalf of MGSA that explains why this contention lacks any merit.

[2] CalAm has suffered severe, and potentially fatal, setbacks in its efforts to obtain agency permits and authorizations for the MPWSP. After the City of Marina (the certified local coastal agency) denied the primary Coastal Development Permit ("CDP") for the Project, California Coastal Commission Staff recommended that both the appealed CDP application and the CDP application within its original jurisdiction be denied. The Coastal Commission will not consider these permits until March 2020 or later. In the meantime, as the result of a lawsuit brought by Marina Coast Water District, a Monterey County Superior Court Judge has entered an Order enjoining any construction of the Project's desalination plant until at least March 2020. CalAm has also failed to apply for or pursue other key federal and state permits necessary for the Project. If the Project is ever fully approved and constructed, it will be many years behind schedule.

resolve an overlap in jurisdiction, the local agencies *supported* the county action. According to DWR: *"No county has yet sought to use Section 10724 [the SGMA section relied on by the County] to form a GSA against the wishes of agencies within their jurisdiction."*

Monterey County appears to be adopting the simplistic position that DWR has supposedly blessed this action through a letter dated November 5, 2019 ("DWR Letter"). However, the County is making a serious mistake. DWR actually said that the County might be able to do so if certain conditions are satisfied. Ultimately, a court will determine whether SGMA allows the County to take this action in the current context. And under California administrative law, courts give no deference to inconsistent agency statutory interpretations. *See, e.g., Yamaha Corp. of Am. v. State Bd. of Equalization*, 19 Cal. 4th 1, 13 (1998)("*Yamaha*"). DWR has taken inconsistent positions over time on this issue, and the County's current position directly contradicts its position only two months ago. Indeed, on the crucial "creating or contributing" test discussed below, the County's action would violate the published guidance of the State Water Resources Control Board ("State Board") on this issue. Moreover, the latest DWR advice runs directly counter to SGMA's text and purpose. Given the lack of case precedent and the shifting DWR positions, it would be extremely risky for the County to adopt this resolution.

This dispute must be viewed against the larger backdrop of the MGSA and SVBGSA GSPs. The SVBGSA GSP is a regional approach to the management of the Subbasin which is primarily oriented to protecting the interests of the agricultural producers north of the Salinas River and inland from the coastal region. The GSP ignores or disregards the recent site-specific studies by a Stanford University research team and others, based on state-of-the-art airborne electromagnetic ("AEM") techniques, that have resulted in three-dimensional maps and cross-sections of the Subbasin groundwater, which forms the best scientific information on Subbasin groundwater conditions.

The SVBGSA GSP contains a wholly deficient monitoring network south of the Salinas River. No meaningful monitoring of any kind is proposed within several miles of the coast, leaving the area effectively unmanaged under SGMA. The SVBGSA GSP also fails to consider and manage groundwater resources in the Dune Sand Aquifer that are designated by the State Board to be protected, and fails to acknowledge or protect the interconnected surface water features such as the vernal pools and wetlands in and near the City of Marina. Thus, the County's proposed takeover of the MGSA as an "unmanaged area" will have exactly the opposite effect – it will perpetuate a lack of management of groundwater resources in this area by failing to protect local beneficial uses and users of groundwater in favor of the policy preferences of a select group of inland beneficial users.

In contrast, MGSA has prepared a locally-focused GSP that uses the best available science and information to ensure sustainable groundwater management in the MGSA Area, to protect local beneficial users and property, and to support regional efforts to address seawater intrusion and other undesirable results. Unlike the SVBGSA GSP, the MGSA GSP characterizes, monitors and manages the Subbasin groundwater resources south of the Salinas

River in the coastal region and recognizes the important municipal, domestic, groundwater dependent ecosystem, and other beneficial uses and users in this area, including the urban and other users who depend on this drinking water source in the Subbasin and the adjacent Monterey Subbasin.

Five independent reasons, discussed below, prevent Monterey County from invoking Section 10724 in attempt to become the new GSA for the overlap portion of the Subbasin:[3]

- Because Monterey County is creating and/or contributing to the overlap, it cannot invoke Section 10724;
- Section 10724 does not authorize a county to file a GSA notice for areas covered by multiple GSA notices;
- Monterey County's decision to invoke Section 10724 is premature and would unlawfully circumvent SGMA's explicit local agency coordination requirements and GSP resolution provisions;
- Monterey County's resolution to become the GSA for the overlapping area cannot nullify MGSA's GSA notice or solve the underlying coordination problem; and
- Monterey County cannot become the GSA for the overlap portion in time to submit a GSP before SGMA's January 31, 2020 deadline.

The County should be clear that the City of Marina and MGSA view this proposed action and resolution as a direct and unlawful attempt to eliminate the City's SGMA rights and responsibilities and that the City and MGSA will take all necessary steps to protect their SGMA jurisdiction. The City strongly advises Monterey County not to undertake this misguided action.

SGMA CONTEXT

Both MGSA and SVBGSA filed notices of their GSA formation and of their intent to prepare GSPs for the Subbasin. While SVBGSA's notice covers the entire Subbasin, MGSA's notice applies only to an approximately 400-acre portion of the Subbasin within the City of Marina's jurisdictional boundaries that is not under the jurisdiction of a local water agency. Thus, MGSA and SVBGSA have overlapping claims to this portion of the Subbasin.

When competing GSA notices cause overlapping boundaries, SGMA prevents a GSA decision from "tak[ing] effect unless the other notification is withdrawn or modified to eliminate any overlap in the areas proposed to be managed." Cal. Water Code § 10723.8(c). Here, DWR has not recognized an exclusive GSA for the Subbasin. *See* DWR SGMA Portal, *All Posted GSA*

[3] We enclose as Exhibit "2" hereto and incorporate herein a copy of a October 21, 2019 letter on behalf of MGSA to DWR explaining these factual and legal issues.

Notices.[4] SGMA instructs the local agencies to "seek to reach agreement to allow prompt designation of a groundwater sustainability agency." Cal. Water Code § 10723.8(c). SGMA further requires GSAs "intending to develop and implement multiple groundwater sustainability plans" to "coordinate with other agencies preparing a groundwater sustainability plan within the basin." *Id.* § 10727.6. The GSAs must "jointly submit" their GSPs with a coordination agreement "to ensure the coordinated implementation of the groundwater sustainability plans for the entire basin." *Id.* § 10733.4(b); *see also* Cal. Code Regs. tit. 23, § 357. 2.

Accordingly, when GSAs file overlapping claims, SGMA envisions a process where those agencies negotiate in good faith to reach a compromise and enter into a coordination agreement which they submit with their GSPs. MGSA and SVBGSA must file their GSPs and coordination agreement for the Subbasin by January 31, 2020.

LEGAL AND FACTUAL ANALYSIS

I. Monterey County Cannot Invoke Section 10724 Because It Is A Creator And Contributor To This GSA Overlap.

A county cannot invoke Section 10724 if it "is creating or contributing to the [GSA] overlap." State Board, *Frequently Asked Questions on GSAs*, at 3 (Nov. 22, 2017) ("SWRCB FAQs"). The State Board's limitation on Section 10724 prevents counties that contribute to overlapping areas from circumventing SGMA's GSA collaboration requirements.

Here, the County is indisputably creating and contributing to the GSA overlap as a member, majority funder, and architect of SVBGSA and its GSP. As a result, the State Board's limitation precludes the County's proposed resolution, which weaponizes Section 10724 in an attempt to install its affiliate's GSP and disregard a properly-formed GSA with jurisdiction over the MGSA Subbasin area. The necessary implications of SGMA's GSA coordination requirements mandate that the County cannot override MGSA's GSP and deny MGSA the opportunity to collaborate with SVBGSA on the management of groundwater within Marina's jurisdiction.

A. Based On Its Close Affiliation with SVBGSA, The County Is Creating Or Contributing To The Overlap Area.

As discussed in Section II, the Legislature intended counties to use Section 10724 as a backstop to protect groundwater users from facing Water Code Section 5202(a)(2)'s reporting requirements. The County's proposed resolution would attempt to improperly exploit this backstop to install a GSP commissioned by the County as a member of SVBGSA.

The County was the moving force behind SVBGSA's formation and even "pushed for the establishment of the Joint Powers Authority" ("JPA"). SVBGSA Minutes at 2 (Sept. 19, 2019). Section 10.4 of the JPA Agreement for SVBGSA shows that the County has provided almost

[4] Available at https://sgma.water.ca.gov/portal/gsa/all.

60% of all initial funding for SVBGSA during the 2017–19 period, totaling $1.34 million. Monterey County remains a member of SVBGSA, and the County Administrative Officer position (who authored the County's October 9, 2019 letter to DWR) is designated as the official County representative to SVBGSA. *See* Exhibit A to SVBGSA's JPA Agreement. Further, the County played an integral role in the development of SVBGSA's GSP. The Monterey County Counsel's office has served as the attorney for SVBGSA as it filed GSA and GSP notices and prepared the GSP that the County's resolution seeks to adopt after it overrides MGSA.

In short, contrary to the resolution's purported findings, the County, as a member, majority funder, and driving force in the SVBGSA, is indisputably creating and contributing to the overlap situation. The County therefore cannot credibly pose as a disinterested county coming in under a ministerial application of Section 10724 to resolve a dispute among two local GSA agencies. This is precisely the kind of conflict situation that disqualifies a county from attempting to invoke Section 10724 under the "creating or contributing" limitation.

B. The County's Proposed Resolution Would Represent A Bad Faith Attempt To Circumvent SGMA's Coordination Requirements And Implement The GSP Of Its Close Affiliate.

Monterey County's proposed resolution vividly illustrates the dangers of a county misusing Section 10724 to override a local agency instead of cooperating with it. The County's proposed resolution responds to a request by an affiliated entity (SVBGSA) to prevent the City of Marina from exercising its GSA authority. Monterey County then seeks to adopt the same GSP that the County helped design as a member of SVBGSA. Notably, Monterey County fails to even consider adopting any part of MGSA's GSP, addressing SGMA management gaps identified by MGSA, or providing any justification for adopting SVBGSA's GSP. The County likewise fails to present any groundwater management justification for asserting control over the overlap area.

It is striking that the County actually has no intention of managing the overlap area, which is exactly what it would be required to do under Section 10724. Rather, the County blatantly announces its intention to instead delegate management authority to SVBGSA, whose GSP provides no framework for sustainable groundwater management in or near the MGSA Area, and does not consider the needs and rights of coastal beneficial groundwater users and uses. These County actions lead to only one conclusion. The County's resolution seeks to use Section 10724 to do what the County's affiliate SVBGSA cannot: adopt only the SVBGSA GSP for the MGSA jurisdictional area without coordinating with MGSA and its GSP. Indeed, the intent appears to be retain the area as essentially unmanaged under SGMA, leaving CalAm to implement the MPWSP unhindered by any requirements for sustainable groundwater management for the benefit of beneficial users in inland portions of the Subbasin. The State Board's guidance aims to quash these exact types of bad-faith maneuvers.

While the County's proposed resolution blames the overlap on Marina's GSA notice, the County and SVBGSA continue to contribute to the overlap by refusing to collaborate with MGSA. The County and SVBGSA are engaging in this waiting game at the behest of CalAm,

which has encouraged these actions to promote its Project. In its October 9, 2019 letter to SVBGSA, copied to the Monterey County Administrative Officer, CalAm requests both entities to "defer any action on a coordination agreement" with MGSA and instead advocates that the County should become the GSA for the overlap area. CalAm takes the ridiculous position that MGSA is only preparing a GSP to stop its Project and attempts to enlist the County's help so that it can build the Project. CalAm is not a GSA, and, as a private corporation intent on profit, it has no interest in ensuring sustainable groundwater management in the Subbasin. Rather, it is a third party with no official role in this SGMA process, attempting to pressure public agencies to achieve its corporate goals. By advocating to stop any coordination agreement discussions, CalAm wanted to artificially create an impasse in hopes of a County takeover. And by acquiescing to CalAm's demands, the County and SVBGSA have needlessly created this situation.

We note that the MGSA has been working in good faith to negotiate a Coordination Agreement with SVBGSA and, in August 2019, prepared, approved and transmitted to SVBGSA a draft agreement based on a template provided by SVBGSA. Since that time, SVBGSA staff has not negotiated in good faith with MGSA to reach agreement. In contrast, in the last month, SVBGSA has developed a Coordination Agreement with the County, which is being considering for adoption at the SVBGSA Board meeting on December 12, 2019. This backroom Coordination Agreement effort with the County vividly illustrates that SVBGSA knows how to negotiate such an Agreement when it really wants to.

SGMA, in contrast, "requires the agencies to resolve" boundary disputes. SWRCB FAQs at 3. The State Board only deems an area unmanaged until the GSAs resolve their conflict. *Id.* This limitation aligns with the intended purpose of Section 10724 to function as a backstop, allowing a county to assume the role of a GSA in a ministerial manner as a last resort or as a temporary solution before a local agency can take control. Instead of serving that purpose, Monterey County's proposed resolution uses Section 10724 to target only the City of Marina and block it from exercising its GSA authority and implementing its GSP. This bad-faith effort contravenes SGMA's emphasis on and processes for local agency cooperation and basin management.

C. DWR's Latest Inconsistent Interpretation Of Section 10724 Does Not Apply.

DWR has articulated inconsistent standards for when a county is disqualified from invoking Section 10724. First, DWR guidance authored in May 2019 prohibits a county who "is responsible for creating the overlap" from becoming a GSA under Section 10724. DWR, *GSA Frequently Asked Questions*, at 4 (May 10, 2019) ("DWR FAQs"). A DWR representative (Tom Berg) expanded on DWR's position at the September 19, 2019 SVBGSA Advisory Committee meeting, stating to SVBGSA that:

> **Monterey County can remove itself from the SVBGSA and become the GSA for the unmanaged area and enter into a coordination agreement.** The cleaner approach is if Monterey County decides there is an overlap and becomes the GSA for the

> entire 180/400 Subbasin. **They can become the GSA for only Marina if they do not create the GSA with the intent to take over Marina's portion.** You can resolve the overlap and trust Marina will timely submit their Plan. If the Plan is determined to be insufficient during the two-year review, the Water Board could determine the entire Subbasin to be insufficient. He expects legal fights if Monterey County takes over the Subbasin. **Mr. Berg referenced the determination that Kern County had created their overlap conflict, and they were prevented from becoming the GSA as a result.**
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>
> Tom Berg stated that during the telephone conversation with Mr. Nordberg, DWR, it was suggested that the cleaner approach is for Monterey County to become the GSA for the entire basin. **If the County becomes the GSA only for Marina, it is no longer ministerial in terms of taking out Marina instead of just trying to clear the overlap.**[5]

Id. at 3–4 (emphasis added).

As you can see, the requirements for County use of Section 10724 articulated by DWR at this meeting contains several important elements. First, the County would need to remove itself as a member of the SVBGSA before undertaking any action under Section 10724 to eliminate the conflict of interest and associated County contribution to the overlap. Second, the County is barred from creating the GSA "with the intent to take over Marina's portion." Third, if the County does not take over management of the entire Subbasin, it would contravene SGMA because it is clearly only trying to take out Marina. The County's resolution fails to address and follow these DWR requirements. It plans to remain a member of the SVBGSA, its transparent intent is to take over Marina's portion, and it is not installing itself as the GSA for the entire Subbasin.

Despite recently articulating these positions, DWR's November 5, 2019 letter attempts to constrict the standard for precluding a county from invoking Section 10724. The DWR Letter states, "that it would be inappropriate to accept a Section 10724 notice from a county that had deliberately created the overlap that led to the existence of an unmanaged area with the purpose of doing so, and simply waited out other actual or potentially overlapping agencies."[6] DWR

[5] The minutes reflect that a representative of Monterey County (Charles McKee) attended this meeting.

[6] Even under its narrower test, DWR also appears to share concerns about Monterey County's contribution to the overlap. In particular, the DWR Letter requests further "information related to the decision-making role of the County as part of the SBVGSA, and the intent of the SBVGSA in filing the notice that resulted in overlap" if the County decides to submit a GSA notification. DWR Letter at 2.

Letter at 2. This standard purports to narrow and change the exception that DWR previously recognized in its own guidance and articulated to SVBGSA. And unlike the State Board's "creating or contributing" standard (SWRCB FAQs at 3), DWR's new standard potentially only guards against situations where a county files a GSA notice after another GSA. However, as the County's current actions demonstrate, a county can act in bad faith even if it or its affiliate filed its GSA notice first by refusing to coordinate with the other GSP and invoking Section 10724 to install its affiliate's GSP.

DWR's failure to consistently articulate its standard for precluding bad-faith actions under Section 10724 undermines the weight a reviewing court will grant it. Although California courts consider an agency's interpretation of a statute, "the binding power of an agency's interpretation of a statute or regulation is contextual . . . and depend[s] on the presence or absence of factors that support the merit of the interpretation." *Yamaha*, 19 Cal. 4th at 7. When applying this standard, courts further recognize that an agency's "vacillating position . . . is entitled to no deference." *United Artists Theatre Circuit, Inc. v. Reg'l Water Quality Control Bd.*, No. A152988, 2019 WL 6337763, at *18 (Cal. Ct. App. Nov. 27, 2019) (quoting *Yamaha*, 19 Cal. 4th at 13) (internal quotation marks omitted).

Here, the DWR Letter attempts to change its previous standard and limit its Section 10724 exception to situations where a county or its affiliate files its GSP notice after another GSA. This limitation contradicts DWR's previously issued guidance and statements to SVBGSA. Further, the DWR's Letter fails to explain or even acknowledge this switch. DWR likewise offers no justification for the fact that its new standard potentially only covers one of many scenarios in which a county could use Section 10724 in bad faith to override an overlapping GSA and circumvent SGMA's coordination requirements. DWR's interpretation warrants even less deference given the unprecedented nature of the County's actions. DWR Letter at 2 (noting that "[n]o county has yet sought to use Section 10724 to form a GSA against the wishes of agencies within their jurisdiction"). Accordingly, a Court will likely disregard DWR's latest articulated standard, and that standard cannot serve as the basis for the County's proposed resolution.

D. The County's Bad Faith Intentions Also Preclude It From Invoking Section 10724.

As described in Section I(A), the County's failure to (1) offer a groundwater management justification for invoking Section 10724, (2) consider adopting any part of MGSA's GSP, or (3) support its decision to adopt SVBGSA's GSP, demonstrate that the County's intention in adopting the proposed resolution is only to adopt its affiliate's GSP without coordinating with MGSA. The County's plan to delegate management of the overlap area to SVBGSA provides further evidence of its bad faith intentions. Indeed, the County's plan to adopt the SVBGSA GSP will leave the coastal area south of the Salinas River without a monitoring and management framework for sustainable groundwater management in violation of SGMA and its own General Plan policies. These intentions contravene SGMA's purpose of promoting collaborative groundwater basin management, and as result, they cannot be permitted.

As DWR's representative stated to SVBGSA, the County "can become the GSA for only Marina if they do not create the GSA with the intent to take over Marina's portion." SVBGSA Minutes at 3 (Sept. 19, 2019). For example, a determination that Kern County created its overlap conflict prevented it from becoming the GSA. *Id.* Only one county has successfully relied on Section 10724 to become a GSA for an area with overlapping GSAs. DWR Letter at 2. And unlike the current situation, the overlapping GSAs there *supported* the county's decision. *Id.* Indeed, no county has ever attempted to form a GSA using Section 10724 "against the wishes of agencies within their jurisdiction." DWR Letter at 2. Therefore, Monterey County is the first county to invoke Section 10724 as part of a strategy to veto the GSP of a valid GSA within its jurisdiction. Moreover, the proposed resolution creates a dangerous precedent, not intended by SGMA, that enables counties to ignore and override the actions of GSAs within their county area.

II. SGMA Section 10724 Does Not Apply To This Situation Because Multiple GSAs Have Asserted SGMA Jurisdiction Over The Overlap Area.

The County relies primarily on Water Code Section 10724(a) for its potential plan to eliminate MGSA and take over its SGMA jurisdictional area. This provision states:

> In the event that there is an area within a high- or medium-priority basin **that is not within the management area of a groundwater sustainability agency**, the county within which that unmanaged area lies will be presumed to be the groundwater sustainability agency for that area.

Cal. Water Code § 10724(a) (emphasis added).

The County is mistaken in asserting that this provision applies here. As SGMA's legislative history reflects,[7] the Legislature intended Section 10724 to cover situations where *no* GSA asserts jurisdiction over an area within a basin, not where multiple GSAs assert jurisdiction and prepare GSPs for a particular area. Indeed, the DWR Letter characterizes Section 10724 as a "backstop" to prevent Section 5202(a)(2)'s reporting requirements from applying. DWR Letter at 2. Section § 5202(a)(2) requires persons who extract groundwater within a high- or medium-priority basin on or after July 1, 2017, to file a report of groundwater extraction if (1) the area "is not within the management area of a groundwater sustainability agency" and (2) "the county does not assume responsibility to be the groundwater sustainability agency" for that area. This implicitly provides that the overlapping GSA notices did not render the area unmanaged under

[7] The Legislature intended Section 10724 to apply "in the case of an area where no local agency has ***assumed*** management." S. Rules Comm., Floor Analysis on S.B. 11168 at 4 (Aug. 29, 2014) (emphasis added). In particular, the Legislature linked this provision to whether a local agency has acted to assume management over an area—not whether the local agency has become the exclusive GSA.

Section 5202(a)(2).[8] The overlapping GSA notices likewise do not render the Subbasin unmanaged under Section 10724. Indeed, because no reporting requirements currently apply to the Subbasin, no need exists for the County to intervene to prevent the triggering of Section 5202(a)(2)'s reporting requirements.

The County's interpretation of Section 10724 inaccurately conflates the provisions for establishing an exclusive GSA under SGMA Section 10723.8 with Section 10724 to reach a faulty conclusion that, because of the overlapping area in MGSA's and SVBGSA's GSA notices, SGMA deems the areas "unmanaged." Section 10724(a) does not address disputes arising under the process for determining an exclusive GSA under Section 10723.8, and the purpose of Section 10724 weighs against reading Sections 10723.8 and 10724 together in this manner. Rather, these GSA and GSP provisions are best understood as operating at the same time on parallel tracks. Consistent with this interpretation, the plain language of Section 10724(a) does not require that a basin be within the management area of an exclusive GSA. Therefore, where multiple GSAs file to manage the same basin area, Section 10724(a)'s text cuts against the County's ability to claim the area is unmanaged. This is especially true when, as here, both of the GSAs are on track to submit their GSPs, and a coordination agreement is not due for any overlapping areas until the January 31, 2020 GSP submittal deadline.

Accordingly, when multiple GSAs adopt GSPs to manage a basin, that area falls within the management area of several GSAs, and Section 10724 does not apply. No DWR regulations or any judicial decisions interpret this section or alter its plain meaning.[9]

III. Monterey County's Resolution Is Premature And Would Fatally Undermine SGMA's Required GSA Collaboration Process.

SGMA establishes a specific process for GSAs who file overlapping notices to coordinate and submit a joint GSP or set of GSPs. *See* Cal. Water Code §§ 10727.6 and 10733.4(b). The Water Code likewise provides a process for resolving disputes if GSAs fail to coordinate and submit joint GSPs for a critically overdrafted basin by the January 31, 2020 deadline. In that situation, the State Board can designate that basin as probationary. *Id.* §§ 10735.2(a)(2) and 10735.2(a)(3) (providing that the State Board can also make a probationary designation after finding that a GSP is inadequate). The State Board must give the local agencies or GSAs "180 days to remedy the deficiency," and "[t]he board may appoint a mediator or other facilitator . . . to assist in resolving disputes, and identifying and implementing actions that will remedy the

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[8] Although State Board guidance suggests that overlapping GSA notices would trigger Section 5202(a)(2)'s reporting requirements, this has not been the case in practice. State Board, Frequently Asked Questions on GSAs, at 5 (Nov. 22, 2017) ("SWRCB FAQs").

[9] MGSA acknowledges that one guidance document from the State Board opines that "[i]f two or more local agencies overlap, the combined area will be deemed unmanaged" and asserts that a county potentially could become a GSA in this situation. SWRCB FAQs at 3. However, this interpretation is not consistent with the intent, legislative history, and text of Section 10724 and is unsupported by any official regulation or case law.

deficiency." *Id.* § 10735.4(a). This provision covers disagreements over overlapping portions of the basin.

The County's resolution seeks to strip MGSA of its authority over the overlap area and to intervene as the exclusive GSA. In doing so, the County is misusing Section 10724 to implement the GSP of its affiliated GSA entity, violating State Board and DWR guidance directly on point, and undermining SGMA's dispute resolution processes. This action would set a dangerous precedent that could incentivize the misuse of Section 10724 by counties.

IV. Monterey County Cannot Use Section 10724 To Nullify MGSA's GSA Notice Or The Need For MGSA And SVBGSA To Resolve The Overlap.

The County appears to assume that by invoking Section 10724 and becoming the GSA for the overlap area, the County will nullify MGSA's GSA notice. However, nothing in SGMA or its regulations provides that a county or other local agency can nullify the GSA notice of another. Indeed, SGMA specifically provides that to resolve an overlapping area, a GSA "notification [must be] withdrawn or modified to eliminate any overlap in the areas proposed to be managed"—not overridden by another local agency. Cal. Water Code § 10723.8(c). Similarly, Section 10724 does not change this fundamental premise or grant a county the power to nullify a GSA notification. Accordingly, even if the County attempts to become the GSA for the overlap area, MGSA's GSA notification will remain valid.

Section 10724 also does not give the County the power to designate another local agency as an exclusive GSA. Instead, DWR has responsibility for posting GSA notifications. *See* § 10723.8(b). On the SGMA portal, DWR currently does not list either MGSA or SVBGSA as the exclusive GSA for any portion of the Subbasin. See DWR SGMA Portal, All Posted GSA Notices; DWR SGMA Portal, Salinas Valley Basin GSA - 180/400 Foot Aquifer Map.[10] DWR instead identifies the GSA notices of both MGSA and SVBGSA as overlapping. *Id.* DWR will not recognize MGSA's and SVBGSA's notices until they resolve their conflict,[11] and the County's intervention under Section 10724 for the overlapping portion will not change this. Both MGSA's and SVBGSA's notices will remain valid, but non-exclusive, GSA notifications. Accordingly, the only way for SVBGSA to become the exclusive GSA for any part of the Subbasin is for MGSA and SVBGSA to reach a coordination agreement.

The fact that SVBGSA and MGSA will remain nonexclusive GSAs even if the County invokes Section 10624 raises additional logistical issues. Under SGMA, a GSP or set of GSPs must "cover[] the entire basin." Cal. Water Code § 10727(b); *see also* Cal. Code Regs. tit. 23,

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[10] This map is available at https://sgma.water.ca.gov/portal/gsa/print/461.P

[11] Indeed, State Board guidance provides that "[i]f two local agencies file notices with DWR to be a GSA for the basin, and all or a portion of their proposed management areas overlap as of June 30, 2017, neither of the local agencies will become a GSA. As a result, the proposed management areas of both local agencies will be unmanaged." SWRCB FAQs at 4; *see also* DWR FAQs at 4 ("If overlap exists, the decision to become a GSA will not take effect unless the overlap is eliminated.").

§ 355.4(a)(3); Cal. Water Code § 10733.4(b)) ("If groundwater sustainability agencies develop multiple groundwater sustainability plans for a basin, the submission" of a GSP "shall not occur until the entire basin is covered by groundwater sustainability plans"). Thus, if the County maintains that only GSAs who DWR has designated as exclusive GSAs may file a GSP, then SVBGSA and MGSA will not be able to file GSPs. The County likewise will not be able to file a GSP for the overlapping area because the GSP would not cover the entire basin. As a result, the County would instead have to become the GSA and submit a GSP for SVBGSA's entire jurisdiction in the Subbasin. The County would then have to manage the entire Subbasin until MGSA and SVBGSA resolve the overlap. This would cause needless and extensive organizational and financial harm to all the parties involved and would completely undercut SGMA's goals. Therefore, the County's attempt to become the GSA for only the overlap area will not result in efficient or effective management of the Subbasin or relieve SVBGSA of the need to coordinate with MGSA to resolve the overlap.

V. The County Must Wait 90 Days For Its GSA Notice To Take Effect, So It Cannot Meet SGMA's January 31, 2020 Deadline.

Although the DWR Letter asserts that the County would immediately become the exclusive GSA when DWR posts the County's GSA notice, DWR fails to cite any legal authority for instantly granting a county exclusive GSA status.[12] DWR Letter at 3. Instead, DWR states that its "practice has been to immediately declare the GSA exclusive." DWR Letter at 3. However, this statement contradicts DWR's statement earlier in the letter that no other county has attempted to use Section 10724 despite opposition from a GSA within its jurisdiction – so, in fact, DWR has *never* immediately posted a county notice letter in this situation. *Id.* at 2.

The DWR Letter also states that it "adopted that practice on the assumption that counties would be taking responsibility for areas in which no other agency had any interest," and that "same logic applies for notices filed in areas that are unmanaged as a result of the overlapping GSA notices of other entities." *Id.* at 3. However, the same logic does not apply because SGMA provides a specific process for GSAs who file overlapping notices to coordinate and submit a joint GSP or set of GSPs. *See* Cal. Water Code §§ 10727.6 and 10733.4(b).

Further, in an overlap situation, multiple GSA's have an "interest" in an area and applying the 90-day notice period allows the overlapping GSAs to engage in the coordination process before the county's GSA notice takes effect. This interpretation promotes SGMA's collaboration process. It also recognizes the fact that given the opportunity, GSAs may resolve an overlap situation without the need for county intervention, which aligns with Section 10724's purpose of serving as a backstop for when SGMA's other processes fail. As a result, the County must wait 90 days before becoming a GSA for the overlapping area to allow SVBGSA and MGSA to resolve the overlap and collaborate on a GSP or set of GSPs. The County therefore could not submit a GSP before the January 31, 2020 deadline.

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[12] MGSA acknowledges that State Board guidance also states that "[t]here is no 90-day waiting period for the county's intent to become the GSA to take effect" in this scenario. SWRCB FAQs at 4.

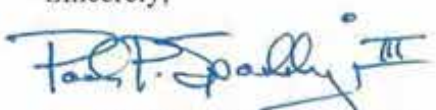
CONCLUSION

For the foregoing reasons, the County cannot lawfully invoke Section 10724 to become the GSA for the overlap portion of the Subbasin. Bending to the will of CalAm and its reluctance to be governed and monitored by the government entity with the overlying interest (or to be subject to negotiation under sustainable management criteria at all), is fatally inconsistent with SGMA and the intention of the Legislature to sustainably manage groundwater. The City of Marina formed MGSA to prepare its own GSP to govern critical groundwater resources within its jurisdiction in this Subbasin and is completely consistent with the spirit and language of SGMA.

MGSA is complying in all respects with SGMA and MGSA is prepared to take the necessary steps to protect its jurisdiction over the CEMEX site. In the first instance, this means continuing its efforts to finalize and submit its GSP for the overlapping area by the January 31, 2020 deadline. By committing significant financial resources and following the prescribed SGMA process, MGSA has been doing exactly what the law requires and is entitled to complete the process.

The proposed resolution by which the County would attempt to take over MGSA's jurisdictional area and to install its affiliate SVBGSA as the manager of this area using SVBGSA's GSP is a bad faith attempt to misuse SGMA to eliminate MGSA and achieve a hostile takeover of its area. This action, which was conceived and encouraged by CalAm and SVBGSA, would violate SGMA and deprive the City of Marina and MGSA of their SGMA rights, leaving the area effectively unmanaged under SGMA. The City and MGSA strongly oppose this resolution and encourage the County not to pursue this misguided course of action.

Sincerely,



Paul P. "Skip" Spaulding, III

PPS:jla

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EXHIBIT 1

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August 28, 2019

Via SGMA Portal and E-Mail

Ms. Taryn Ravazzini (*taryn.ravazzini@water.ca.gov*)
Deputy Director of Statewide Groundwater Management
Department of Water Resources
P.O. Box 942836
Sacramento, California 94236-0001

Re: City of Marina GSA Groundwater Sustainability Plan
Response to California-American Water Company Comment Letter

Dear Ms. Ravazzini:

We submit this letter on behalf of the City of Marina Groundwater Sustainability Agency ("MGSA"), which recently filed an initial notification of its intent to prepare a Groundwater Sustainability Plan ("GSP") for a portion of the 180/400 Foot Aquifer Subbasin ("Subbasin") as authorized by the Sustainable Groundwater Management Act ("SGMA"). This letter responds to the August 12, 2019 comment letter submitted by the Ellison Schneider law firm on behalf of California-American Water Company ("CalAm").

In this "comment letter," CalAm requests that the Department of Water Resources ("DWR") "reject" MGSA's Groundwater Sustainability Agency ("GSA") formation notice and its GSP initial notification. However, CalAm has no legal standing under SGMA to make the request and lacks any legal authority or precedent to obtain the relief it seeks. In fact, CalAm's letter is no more than a misguided attempt by a third party to short-circuit the processes prescribed by SGMA for resolution of local groundwater management issues. Moreover, CalAm has mischaracterized the underlying facts and invented non-existent policy reasons to support its unprecedented request. DWR is not required to respond to or to take any action in response to this letter. *See* 23 C.C.R. § 353.8(f). However, if DWR does respond, it must deny CalAm's request in all respects.

BACKGROUND FACTS

The MGSA was validly formed in full compliance with SGMA. On March 20, 2018, the Marina City Council adopted a resolution forming the MGSA to "undertake sustainable groundwater management within the portion of the Salinas Valley Ground Water Basin 180/400

Foot Aquifer Subbasin within the City and outside of the Marina Coast Water District service area." On April 16, 2018, MGSA properly filed a notice of its GSA formation with DWR pursuant to Water Code Section 10723.8. DWR duly accepted and posted MGSA's notice of GSA formation on its SGMA Portal.

On July 31, 2019, pursuant to Water Code Section 10727.8(a), the City filed an initial notification of intent to prepare a GSP for its jurisdictional area. This notice provides a written statement describing the manner in which interested parties may participate in the development and implementation of the GSP and contains the other required elements for this initial notice. MGSA also provided the notice to all required persons. MGSA is proceeding forward rapidly with preparation of the GSP and, in its initial notice, specifically identified the MGSA meeting dates and other opportunities for the public to provide comments and other input on the GSP. MGSA's GSP is expected to be completed and submitted to DWR by January 31, 2020.

CALAM'S COMMENT LETTER LACKS ANY LEGAL, FACTUAL OR POLICY BASES TO SUPPORT ITS "REJECTION" REQUESTS.

CalAm's comment letter makes a series of unsupported legal contentions in which it attempts to question the validity of MGSA's formation and to argue that the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") must or should be the exclusive GSA for the entire Subbasin. However, not only do these arguments lack any factual and legal support, but they improperly attempt to undermine decisions already made by DWR and to thwart the ongoing collaborative local processes that are embedded in SGMA.

For the reasons explained below, CalAm's arguments should be disregarded in their entirety. Instead, the processes contemplated by SGMA should continue without the partisan interference reflected in CalAm's letter. We will address each CalAm argument in turn.

A. The MGSA Was Validly Formed In A Timely Manner And There Is No Factual Or Legal Basis For Attempting To "Reject" Its GSA Formation Notice.

CalAm contends that the MGSA should not be recognized as a valid GSA because it was not formed before June 30, 2017. However, CalAm has made several fundamental analytical errors that have led to this spurious contention.

First, SGMA does not contain a mandatory final deadline for the formation of all GSAs, even for medium and high priority basins. The only SGMA mention of the June 30, 2017 date in this context is in Water Code Section 10735.2 (a)(1), which relates to the circumstances under which the State Water Resources Control Board ("State Board") can designate a basin as a probationary basin and thereafter take steps to develop its own interim groundwater sustainability plan for that basin. *See* Water Code §§ 10735.4-10736.6. The June 30, 2017 date is only the trigger date for a potential probationary basin finding if one or more GSAs, or a local agency "alternative" plan, has not been noticed for an entire basin. Contrary to CalAm's contention, it is not a drop-dead date for all GSAs to have been formed and it is not true that no additional GSAs can form in a basin after that date.

Second, CalAm attempts to buttress its erroneous analysis with a quotation, taken out of context from DWR's website, that supposedly stands for the proposition that June 30, 2017 is the absolute deadline for forming a GSA. To the contrary, DWR characterizes the June 30, 2017 date on its website as only an "initial planning milestone" and recognizes that new GSAs can, will and have been formed thereafter as SGMA implementation continues. This portion of the DWR website states in full (emphasis added):

> SGMA required Groundwater Sustainability Agencies (GSAs) to form in the State's high- and medium- priority basins and subbasins by June 30, 2017. Over 260 GSAs in over 140 basins were formed by *SGMA's initial planning milestone*. However, *as SGMA continues to be implemented* and the priorities and boundaries of some basins change, *new GSAs will be formed*, and existing GSAs may want to reorganize, consolidate, or withdraw from managing in all of part of a basin. All GSA notifications are managed on DWR's SGMA Portal.[1]

Thus, the GSA formation process was expected to and has in fact continued after June 30, 2017 as SGMA continues to be implemented. Indeed, after June 30, 2017, at least ten other new GSA formation notices were posted, including those for the Fresno County Pleasant Valley GSA Area, City of Coalinga GSA, Vina GSA, Montecito Groundwater Basin GSA, Owens Valley Groundwater Authority GSA (for two different basin areas), Castaic Basin GSA, Triangle T Water District GSA, Santa Barbara County Water Agency GSA – Goleta Fringe Areas, and Corning Subbasin GSA. It appears that all but one of these post-June 30, 2017 GSA formations cover high or medium priority basins.

In sum, CalAm's assertion that MGSA's GSA formation notice should be rejected because it was filed after June 30, 2017 has no factual or SGMA legal basis. There was not an absolute June 30, 2017 deadline for forming GSAs because this process is intended to be fluid and not frozen in time. Rather, it was an initial planning milestone for determining what basins may qualify for probationary status. Indeed, this has consistently been DWR's position. Although CalAm would like to override both SGMA and DWR's judgment on this point for its own private financial purposes, it cannot do so here.

B. The SVBGSA Never Became The Exclusive GSA For The 180/400 Foot Subbasin.

CalAm makes a tortured and wholly frivolous argument that SVBGSA became the exclusive GSA for the 180/400 Foot Aquifer Subbasin on July 26, 2017, thereby supposedly preventing the City of Marina from forming a GSA or preparing a GSP for any portion of the Subbasin. However, once again, this argument defies the considered judgment of DWR and

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[1] This website page is found at https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainable-Agencies.

lacks any factual or legal basis.

CalAm's line of reasoning is that, on April 27, 2017, DWR posted the notice of SVBGSA to become the GSA for the entire Subbasin and that, in its view, no other GSA filed a valid GSA notice for this Subbasin within 90 days, thereby essentially resulting in SVBGSA becoming the exclusive GSA for this Subbasin.[2]

In making this argument, CalAm relies on Water Code Section 10723.8, which provides that a local agency notice to become a GSA for a particular basin/subbasin "shall take effect" 90 days after posting if no other local agency has filed a notification of its intent to undertake groundwater management in all or a portion of the same area prior to expiration of this 90-day period. If another agency has such a notice posted before the expiration of this period, the GSA notice shall *not* take effect.

CalAm's first critical error in making this argument is that another local agency – Marina Coast Water District ("MCWD") – did file a GSA formation notice for a portion of the 180/400 Foot Aquifer Subbasin area that SVBGSA claimed in its GSA notice. It is undisputed that, on February 6, 2017, MCWD formed a GSA for the Fort Ord portion of this Subbasin and, on March 14, 2017, DWR posted the notice of this formation (even before SVBGSA filed its notice). Thus, since MCWD filed a GSA formation notice for a portion of the same Subbasin area that SVBGSA's later notice covered, SGMA Section 10723.8 prescribes that SVBGSA's notice did not take effect and SVBGSA never became the exclusive GSA for the Subbasin area it claimed.

CalAm attempts to explain away this complete roadblock to its Section 10723.8 contention by making a convoluted set of arguments that MCWD GSA's notice supposedly was not valid or effective and therefore should be completely ignored for SGMA purposes. It cites to a November 2, 2017 letter authored by a State Board attorney (attached as Exhibit G to its comment letter) that supposedly supports this argument. However, CalAm is mistaken and its citation is misleading.

At the outset, CalAm misrepresents the nature of the State Board letter by implying that it is somehow a dispositive determination by the State Board regarding the status of MCWD's GSA March 14, 2017 formation notice. To the contrary, the letter explicitly states that it is "merely advisory" and that "[t]hese opinions [in the letter] are not a declaratory decision and do not bind the State Water Board in any future determination." Moreover, CalAm also attempts to create the erroneous impression that the letter found that MCWD's GSA notice was void and must be disregarded by DWR. However, in so arguing, CalAm has entirely missed the central point of the letter. Rather than attempting to void MCWD's notice, the State Board letter was

[2] MCWD also formed a separate GSA for another portion of the 180/400 Foot Aquifer Subbasin (Marina Coast Water District GSA – Marina) at the same time and DWR posted notice of this GSA formation on February 24, 2017. This area was excluded from the area SVBGSA claimed in its own GSA formation notice.

explicitly intended to encourage SVBGSA and MCWD GSA to meet and work out their differences: "By way of this letter, I would like to encourage local resolution of the conflicts over groundwater management in Salinas Valley."

Indeed, that is exactly what occurred here. MCWD GSA and SVBGSA negotiated an agreement that resolved most of their various conflicting issues regarding the 180/400 Foot Aquifer Subbasin and Monterey Subbasin. In addition, in the advisory letter, the State Board attorney suggested that, if MCWD could expand its jurisdictional boundaries by annexation to include Fort Ord, it could become the "exclusive GSA" for the Fort Ord area. MCWD thereafter did annex this area with the final approval occurring in or about July 2019. Thus, rather than the MCWD GSA – Fort Ord notice being void (as CalAm contends), this notice eventually led to MCWD establishing its SGMA jurisdiction for the area covered by the GSA formation notice in the 180/400 Foot Aquifer Subbasin.

Notably, DWR does not agree with CalAm's argument regarding SVBGSA's alleged Subbasin exclusivity. To the contrary, DWR has consistently informed all parties that SVBGSA never achieved exclusive GSA status for the Subbasin under Section 10723.8 because of the timely filings of MCWD GSA for this Subbasin. Consistent with the local and collaborative policies contained in SGMA, DWR has encouraged the various GSAs in the Subbasin to work together to resolve any GSP conflicts. And, as prescribed by SGMA, DWR has clearly stated to all parties that no GSPs for Subbasin overlap areas will be accepted until such a resolution has occurred.

Thus, in light of this law and factual context, CalAm's demand that DWR "reject" MGSA's GSA formation and GSP preparation notices based on SVBGSA's alleged "exclusivity" is baseless. CalAm is not trying to further the purposes of SGMA or promote more effective groundwater management. Rather, it is only trying to promote is own narrow corporate agenda.

C. Contrary To CalAm's Innuendos, There Is Every Reason To Believe That MGSA's Sustainable Management of Groundwater In Its Subbasin Area Can And Will Be Effective.

CalAm attempts to create the erroneous impression that MGSA will not be successful in meeting the requirements of SGMA for its jurisdictional area. CalAm states that the covered area is "extremely small," that some of the technical information MGSA may rely on in forming its GSP is supposedly discredited, and that it is unlikely that MGSA will meet the January 31, 2020 deadline for completing the GSP. However, this is no more than the SGMA equivalent of throwing spaghetti against the wall to see if any will stick.

First, SGMA does not contain any minimum or maximum basin size for sustainable groundwater management. Rather, it implicitly recognizes that these sizes may vary substantially. Indeed, some of the GSA formation notices cover very small areas of larger basins. *See, e.g.*, Santa Barbara County Water Agency GSA -- Fringe Areas notice, posted on the SGMA Portal on September 22, 2017. Rather, one of the hallmarks of SGMA is its

recognition that local agencies will be in the best position to determine initially who should manage basins, to analyze local conditions, and to apply SGMA's sustainability criteria to these conditions. SGMA envisions local flexibility and has not mandated any artificial GSA jurisdictional area size requirements.

Second, CalAm complains (incorrectly) that some of the technical data and reports that MGSA may rely on in preparing its GSP "conflicts with the weight of the modeling and science supporting the MPWSP and has been repeatedly rejected by regulatory bodies and courts…." Although CalAm does not identify what reports it means, MGSA assumes that it refers to the Stanford University research studies regarding groundwater basin conditions that cover this exact area of the Subbasin. Unfortunately, CalAm misleads DWR regarding this technical information.

The Stanford University studies used well-accepted scientific methodologies (including state-of-the-art electrical resistance tomography ("ERT") and airborne electromagnetic ("AEM") techniques) to create two- and three-dimensional images of the actual hydrostratigraphic and groundwater quality conditions, and seawater intrusion characteristics, in portions of the 180/400 Foot Aquifer Subbasin, including the MGSA jurisdictional area. In brief, the studies found that there are significant areas of higher quality groundwater in areas of some seawater intrusion, identified an existing freshwater wedge that was retarding seawater intrusion, and identified gaps in the soil layers (aquitards) that are allowing vertical migration of saline water to the deeper aquifers. This is valuable data, gathered by one of our country's leading educational institutions, that should be utilized, along with all other available data, to prepare a GSP for this area.

It is significant that the northward extension of the same datasets are being used by other agencies for SGMA groundwater sustainability planning purposes. For example, in its recent draft GSP for the Santa Cruz Mid-County Subbasin, the Santa Cruz Mid-County Groundwater Agency (MGA) notes the following:

> In May 2017, the MGA successfully completed an offshore Airborne Electromagnetic (AEM) geophysical survey to assess groundwater salinity levels and map the approximate location of the saltwater/freshwater interface in the offshore groundwater aquifers. This important data will inform the assessment of the extent and progress of seawater intrusion into the Basin and the management responses. The MGA anticipates repeating the AEM survey on a five-year interval (2022) to identify movement of the interface and assess seawater intrusion.

This is only one example of the use of this state-of-the-art technology for sustainable groundwater management planning in California.

CalAm appears to be making a ridiculous argument that this Stanford data must be ignored in preparation of the GSP. However, a GSA is not a court of law. Rather, it is a groundwater management agency that has an obligation to gather and evaluate all water basin

data potentially relevant to SGMA's sustainability criteria. By trying to inject an issue regarding what data supposedly supports or contravenes "the weight of the modeling and science" for CalAm's particular project, CalAm is misperceiving the purpose and function of a GSA that is in the midst of preparing a GSP. Further, CalAm's has misled DWR by stating that this technical information "has been repeatedly rejected by . . . courts." In fact, no court has rejected this technical information. Indeed, the one regulatory agency that even considered a small early subset of this data – the California Public Utilities Commission – did not "reject" it.

Third, CalAm asserts that one "practical" ground for rejecting MGSA's GSP preparation notice is that MGSA supposedly will not be able to meet SGMA's January 31, 2020 deadline for submitting a GSP. To the contrary, MGSA has a schedule in place that meets all of SGMA's requirements for public notice and comment, MGSA consideration and decision on the GSP, and timely submittal of the GSP to DWR. Even so, CalAm's uninformed speculation about completion of the GSP is not, of course, a credible ground for rejecting a GSP preparation notice. SGMA does not prescribe any minimum time period for the actual preparation of a GSP. Indeed, given the focused nature of the GSP here, there is every reason to believe that it will be completed in a timely manner.

Finally, CalAm's letter displays a dismissive attitude toward the City of Marina[3] and questions the legitimacy of its interest in managing the groundwater in this Subbasin. In so doing, CalAm ignores the City's long-standing track record in protecting groundwater at the property (sometimes referred to as the "CEMEX" property) that is the subject of the MGSA notices. For example, in 1996, the City entered into an extensive Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands ("Annexation Agreement") with several other parties, including the CEMEX property owner. The expressed purpose of the Annexation Agreement is "to help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin through voluntary commitments by the Parties to limit, conserve and manage the use of groundwater from the Salinas River groundwater basin. . . ." The groundwater conditions on the CEMEX property were one main focus of the Annexation Agreement.

The City also worked closely with the California Coastal Commission and the State Lands Commission in a series of combined enforcement actions in 2016-17 to end the current sand mining operation on the CEMEX site by December 31, 2020. After decades of efforts to end this environmentally destructive use, this termination was achieved through a settlement approved by all three agencies. In addition to terminating this mining use at the end of next year and gaining full restoration of the site, the settlement requires CEMEX to transfer the entire site at a reduced purchase price to a non-profit organization or government entity approved by the Coastal Commission and the City. As part of this conveyance, a deed restriction will be put in

[3] The City of Marina has a working class, ethnically diverse population, many of whom do not speak English. Marina is a recognized "disadvantaged community" at state, federal and local government levels. The groundwater under the City is an important and valuable community resource because it is provides a clean, local and affordable groundwater source for City residents.

place to protect the CEMEX property and limit its potential uses to public access, conservation, low-impact passive recreation, and public education.

In sum, the City has a demonstrated interest and a 25-year track record in taking action to identify and protect this groundwater under MGSA's jurisdiction. MGSA expects to file a GSP with DWR by January 31, 2020 that fully complies with the groundwater sustainability requirements of SGMA and results in effective and sustainable groundwater management for many years.

D. CalAm's Articulated "Policy" Reasons For Rejecting MGSA's GSP Notice Are Contrived And Unpersuasive.

CalAm argues that rejection of MGSA's GSP notice is required to eliminate "uncertainty" about SVBGSA's GSA and GSP status and that MGSA's notice of GSP preparation supposedly could cause "significant damage" (unspecified) to the work that SVBGSA has undertaken. This is no more than empty rhetoric. The "uncertainty" that CalAm refers to is inherent in the structure of SGMA and has not been created by MGSA, SVBGSA or DWR. SGMA contemplates that there will be overlapping GSA jurisdictional claims and GSP notices and it contains built-in incentives and provisions for the involved parties to resolve these claims on the local level and, if these are unsuccessful, a resolution process at the State level. At this point, these processes are just beginning and they will be concluded in the manner SGMA contemplates.

Contrary to CalAm's rhetoric, MGSA's notices are not causing any damage, much less "significant damage," to SVBGSA's work. By all appearances, SVBGSA is moving forward in preparing and completing its GSP. Regardless of the outcome of the overlap in the jurisdictional area, SVBGSA's work will be valuable and important to completing its GSP. There is no indication that SVBGSA has violated or will violate the terms of the grants it has received, so CalAm's assertion that SVBGSA could potentially lose or need to return such funds is wholly unsupported and unrealistic.

In contrast, the action that CalAm seeks in its letter (DWR rejection of MGSA's GSA and GSP notices) would be catastrophic to MGSA. MGSA has properly formed, begun preparation of a GSP and committed all of the funds necessary to complete and file its GSP by January 31, 2020. CalAm's request is no more than an unlawful attempt to disenfranchise MGSA of its SGMA rights and would plainly thwart the goals of SGMA.

CALAM'S ATTEMPTED INTERVENTION INTO THE GSA/GSP PROCESS WOULD UNDERMINE SGMA'S LOCAL COLLABORATIVE GSP PROCESSES.

CalAm is a private party with its own narrow corporate interest in promoting a project that it would like to build in Monterey County. It is not a GSA and it is not preparing a GSP to sustainably manage groundwater in the 180/400 Foot Aquifer Subbasin. Rather, it is a member of the public that has been and will be provided with many opportunities under SGMA (which is

notable for its robust public participation provisions) to participate in the preparation of GSPs for the Subbasin and to participate in other ways as the SGMA process proceeds. Apparently not content with this role, CalAm is trying to interfere in and short-circuit the SGMA process. However, this interference is unauthorized and cannot be allowed.

One bedrock set of principles in SGMA is its structural recognition of local control and cooperative local management of groundwater. Its overall goal is to "enhance local management of groundwater." Water Code § 10720.1(b). SGMA also contemplates that state intervention only occur when absolutely necessary. SGMA articulates the Legislature's intent to "manage groundwater basins through the actions of local government agencies to the greatest extent feasible, *while minimizing* state *intervention to only when necessary to ensure that local agencies manage groundwater in a sustainable manner*." *Id.*, § 10720.1(h)(emphasis added). Moreover, "[i]t is the intent of the Legislature to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdiction." *Id.*, § 10750(a).

These themes of local management, minimization of state intervention, and local agency cooperation run throughout SGMA. This is especially the case with regard to formation of GSAs and to basin management through GSPs. SGMA recognizes that multiple GSAs can be formed and multiple GSPs can be prepared to manage a single groundwater basin or subbasin. *See, e.g.*, *id.*, § 10720.7(a)(1)(recognizing that subbasins can be managed by "coordinated groundwater sustainability plans"); *id.*, § 10727(b)(recognizing that multiple GSP's can be used to manage a basin pursuant to a "single coordination agreement"). The SGMA mechanism for achieving this coordination is a coordination agreement, which means "a legal agreement adopted between two or more GSAs that provides the basis for coordinating multiple agencies or groundwater sustainability plans within a basin." *Id.* § 10721(d).

SGMA envisions that, when there are jurisdictional overlaps in a basin, the GSAs first negotiate in good faith with one another to resolve the overlap. If these overlaps are not resolved and both GSAs submit a GSP for the overlap area, the GSPs will not be accepted (as DWR has confirmed). MGSA staff has met with SVBGSA staff and is working in good faith to negotiate a coordination agreement and will continue to do so.

CalAm is attempting to precipitate premature state action to undermine the SGMA collaborative local GSP processes. This would violate the legislative directive to minimize State intervention "to only when necessary to ensure that local agencies manage groundwater in a sustainable manner." *Id.*, § 10720.1(h). At this stage of the process, the MGSA and SVBGSA GSPs have not been prepared and submitted to DWR, and no determination can yet be made as to whether they ensure sustainable groundwater management. CalAm cannot be allowed to subvert these important, ongoing SGMA processes.

CONCLUSION

For all of the reasons set forth above, MGSA respectfully requests that DWR take no action in response to the CalAm August 12, 2019 comment letter. As DWR's regulations state, DWR "is not required to respond to comments, but shall consider comments as part of its

evaluation of a Plan." 23 C.C.R. § 353.8(f). However, if DWR believes that any response is necessary, it should deny in its entirety CalAm's request to "reject" MGSA's GSA formation notice and/or GSP preparation notice.

Very truly yours,

Paul P. "Skip" Spaulding, III

PPS:jla

cc: Karla Nemeth, DWR (via e-mail Karla.Nemeth@water.ca.gov)
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EXHIBIT 2

FARELLA
BRAUN + MARTEL LLP

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October 21, 2019

Via E-mail and Mail

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Re: Monterey County's October 9, 2019 SGMA Letter
Marina Sustainable Groundwater Agency Jurisdictional Area

Dear Ms. Ravazzini and Ms. Sobeck:

On behalf of the City of Marina Groundwater Sustainability Agency ("MGSA"), we are responding to Monterey County's October 9, 2019 letter informing the Department of Water Resources ("DWR") and the State Water Resources Control Board ("State Board") of its intent to consider becoming the Groundwater Sustainability Agency ("GSA") for a portion of the 180/400 Foot Aquifer Subbasin ("Subbasin").[1]

INTRODUCTION

In brief, Monterey County ("County") apparently plans to supplant MGSA and become the exclusive GSA for MGSA's jurisdictional area because MGSA and the Salinas Valley Basin GSA ("SVBGSA") have filed overlapping GSA notices for the approximate 400-acre portion of the Subbasin within the City of Marina. DWR and the State Board should firmly reject any County effort to usurp MGSA's GSA authority. The Sustainable Groundwater Management Act ("SGMA") provides for a local agency resolution process to resolve overlapping GSA notices and uncoordinated Groundwater Sustainability Plans ("GSPs"). MGSA and SVBGSA have until January 31, 2020 to negotiate and submit a coordination agreement. Then, if an overlap has not been resolved, SGMA specifies a resolution process implemented by the State Board, which includes a mandatory 180-day negotiation/mediation provision.

[1] In its letter, the County states in several places that it "will consider" taking actions to become the GSA for this property. However, at the end of the letter, the County requests that the agencies let them know if they "have concerns about **the County's plans** to become a GSA for the CEMEX property, as outlined above." (Emphasis added.)

Four independent reasons compel cessation of any Monterey County efforts to become the GSA for this overlap portion of the Subbasin:

- SGMA Section 10724 does not provide a platform for Monterey County to replace MGSA for this area;
- Since it is creating and/or contributing to the overlap, Monterey County cannot invoke Section 10724;
- If it tried to invoke Section 10724, Monterey County would be unlawfully circumventing the explicit local agency coordination requirements and GSP resolution provisions in SGMA; and
- Intervention by DWR or the State Board in support of Monterey County would be premature and inappropriate.

SGMA CONTEXT

Both MGSA and SVBGSA filed notices of their GSA formation and of their intent to prepare GSPs for the Subbasin. While SVBGSA's notice covers the entire Subbasin, MGSA's notice applies only to an approximate 400-acre portion of the Subbasin within the City of Marina's jurisdictional boundaries. Thus, MGSA and SVBGSA have overlapping claims to this portion of the Subbasin.

When competing GSA notices cause overlapping boundaries, SGMA prevents a GSA decision from "tak[ing] effect unless the other notification is withdrawn or modified to eliminate any overlap in the areas proposed to be managed." Cal. Water Code § 10723.8(c). SGMA instructs the local agencies to "seek to reach agreement to allow prompt designation of a groundwater sustainability agency." *Id.* SGMA further requires GSAs "intending to develop and implement multiple groundwater sustainability plans" to "coordinate with other agencies preparing a groundwater sustainability plan within the basin." *Id.* § 10727.6. The GSAs must "jointly submit" their GSPs with a coordination agreement "to ensure the coordinated implementation of the groundwater sustainability plans for the entire basin." *Id.* § 10733.4(b); *see also* Cal. Code Regs. tit. 23, § 357.

Accordingly, when GSAs file overlapping claims, SGMA envisions a process where those agencies negotiate in good faith to reach a compromise and enter into a coordination agreement which they submit with their GSPs. The GSPs and coordination agreement between MGSA and SVBGSA for the Subbasin must be filed by January 31, 2020.

MGSA is complying in all respects with SGMA. It properly formed its GSA, provided the requisite notice of its intent to prepare a GSP, issued a draft GSP on October 8, 2019 and is on schedule to file an approved GSP with DWR by the January 31, 2020 deadline. By

committing the necessary (and significant) financial resources and following the prescribed SGMA process, MGSA has being doing exactly what the law requires and it is entitled to complete this process.

I. SGMA Section 10724 Does Not Apply To This Situation Because Multiple GSAs Have Asserted SGMA Jurisdiction Over The Overlap Area.

The County relies primarily on Water Code Section 10724(a) for its potential plan to eliminate MGSA and take over its SGMA jurisdictional area. This provision states:

> In the event that there is an area within a high- or medium-priority basin **that is not within the management area of a groundwater sustainability agency**, the county within which that unmanaged area lies will be presumed to be the groundwater sustainability agency for that area.

Cal. Water Code § 10724(a) (emphasis added).

The County is mistaken in asserting that this provision is applicable here. As SGMA's legislative history reflects,[2] Section 10724 is intended to cover situations where no GSA asserts jurisdiction over an area within a basin, not where multiple GSAs assert jurisdiction and prepare GSPs for a particular area. When multiple GSAs adopt GSPs to manage such an area, the area is within the management area of several GSAs. Section 10724 comes into play when no local agency shows an interest in a particular basin area (thereby making it "unmanaged") and a county is thereafter given the option to become the GSA of that area. If the county declines, the area will instead be managed by the State Board. No DWR regulations or any judicial decisions interpret this section or alter its plain meaning.

The County argues that this provision should also be applied in a multiple GSA situation. The County attempts to conflate the provisions for establishing an exclusive GSA under SGMA Section 10723.8 with Section 10724 to reach a faulty conclusion that, because of the overlapping area in MGSA's and SVBGSA's GSA notices, the areas should be deemed to be "unmanaged." However, the County inaccurately reads Section 10724(a) as addressing disputes arising under the process for determining an exclusive GSA under Section 10723.8 and incorrectly presumes that where overlapping GSAs jurisdictional claims exist, there is no GSA to manage an area.

MGSA acknowledges that one guidance statement from the State Board opines that "[i]f two or more local agencies overlap, the combined area will be deemed unmanaged" and asserts that a county potentially could become a GSA in this situation. State Board, Frequently Asked

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[2] The Legislature intended Section 10724 to apply "in the case of an area where no local agency has ***assumed*** management." S. Rules Comm., Floor Analysis on S.B. 11168 at 4 (Aug. 29, 2014) (emphasis added). In particular, the Legislature linked this provision to whether a local agency has acted to assume management over an area – not whether the local agency has become the exclusive GSA.

Questions on GSAs, at 3 (Nov. 22, 2017) ("SWRCB FAQs"). However, this interpretation is not consistent with the intent, legislative history, and text of Section 10724 and is unsupported by any official regulation or case law. Even so, the State Board attaches an important caveat to this interpretation: if a county is "creating or contributing to the overlap, the county does not become the presumptive GSA." As explained in the next section, this rule disqualifies Monterey County from taking such an action.

In sum, it is not a reasonable interpretation of SGMA to read Sections 10723.8 and 10724 together in this manner, nor does SGMA define its use of the term "unmanaged." Rather, these GSA and GSP provisions are best read as operating at the same time on parallel tracks. Consistent with this interpretation, Section 10724(a) does not require that a basin be within the management area of an exclusive GSA. Where multiple GSAs file to manage the same basin area, the clear text in Section 10724(a) does not support Monterey County's ability to claim the area is unmanaged. This is especially true when, as here, both of the GSAs are on track to submit their GSPs, and a coordination agreement is not due for any overlap areas until the January 31, 2020 GSP submittal deadline.

II. Since Monterey County Is Creating And/Or Contributing To This GSA Overlap, It Is Disqualified From Invoking Section 10724.

Guidance from the State Board and DWR places a very important limitation on Monterey County's authority to become a GSA for an unmanaged area under Section 10724: "If a county is creating or contributing to the overlap, the county does not become the presumptive GSA." SWRCB FAQs at 3; *see also* DWR, *GSA Frequently Asked Questions,* at 4 (May 10, 2019).

The County argues that it is a completely separate entity from SVBGSA and thus could not be creating or contributing to the overlap. However, the facts do not support this claim. Monterey County was a moving force behind SVBGSA's formation and even "pushed for the establishment of the Joint Powers Authority" ("JPA"). SVBGSA Minutes at 2 (Sept. 19, 2019). Monterey County is a member of SVBGSA and the County Administrative Officer position (who authored the County's October 9, 2019 letter) is designated as the official County representative to SVBGSA. (*See* Exhibit A to SVBGSA's JPA Agreement.) Section 10.4 of the JPA Agreement for SVBGSA reflects that the County has provided almost 60% of all initial funding for SVBGSA during the 2017–19 period, totaling $1.34 million. The Monterey County Counsel's office has served as the attorney for SVBGSA as it filed GSA and GSP notices and even prepared the GSP that the County now proposes to adopt after it eliminates MGSA. Indeed, the law reflects that a JPA agreement allows "two or more public agencies by agreement [to] jointly exercise any power common to the contracting parties." Cal. Gov't Code § 6502.

In short, it is wholly unpersuasive for the County to assert that it is a separate entity from SVBGSA and therefore is not creating or contributing to the overlap situation. In actuality, the County, as a member, majority funder and driving force in the SVBGSA, is indisputably creating and/or contributing to the overlap situation and cannot masquerade as a disinterested county

agency coming in under a ministerial application of Section 10724 to resolve a dispute among two local GSA agencies.

This is exactly the kind of conflict situation envisioned by the DWR/State Board guidance where a county is disqualified from attempting to invoke Section 10724. Monterey County's contemplated actions here vividly illustrate these dangers. The County is responding to a request by an affiliated entity (SVBGSA) of which it is the primary funder, to consider using its powers to prevent the City of Marina from exercising its GSA authority. Monterey County has announced its intention to adopt SVBGSA's GSP for the overlap area – the same GSP that the County helped design as a member of SVBGSA. Notably, Monterey County fails to present any groundwater management justification for asserting control over the overlap area. It is exactly to prevent such county conflicts that the "creating or contributing" limitation was adopted.

SVBGSA and the County are being encouraged by California-American Water Company ("CalAm") to take these actions to promote its Monterey Peninsula Water Supply Project ("Project"). In its October 9, 2019 letter to SVBGSA, copied to the Monterey County Administrative Officer, CalAm requests both entities to "defer any action on a coordination agreement" with MGSA and instead requests that the County become the GSA for the overlap area. CalAm takes the ridiculous position that MGSA is only preparing a GSP to stop its Project and attempts to enlist the County so it can build the Project. CalAm is not a GSA and, as a private corporation intent on profit, it has no interest in ensuring sustainable groundwater management in the Subbasin. Rather, it is a third party with no official role in this SGMA process attempting to pressure public agencies to achieve its corporate goals. By advocating to stop any coordination agreement discussions, it is also trying to artificially create an impasse in hopes of a County takeover or state intervention.

As a DWR representative has already informed SVBGSA, the County would need to withdraw from the SVBGSA if it intends to take any action under Section 10724. According to the minutes of the September 19, 2019 SVBGSA Advisory Committee meeting, a DWR representative (Tom Berg) stated to SVBGSA:

> Monterey County can remove itself from the SVBGSA and become the GSA for the unmanaged area and enter into a coordination agreement. The cleaner approach is if Monterey County decides there is an overlap and becomes the GSA for the entire 180/400 Subbasin. **They can become the GSA for only Marina if they do not create the GSA with the intent to take over Marina's portion.** You can resolve the overlap and trust Marina will timely submit their Plan. If the Plan is determined to be insufficient during the two-year review, the Water Board could determine the entire Subbasin to be insufficient. He expects legal fights if Monterey County takes over the Subbasin. **Mr. Berg referenced the determination that Kern County had created**

> **their overlap conflict, and they were prevented from becoming the GSA as a result.**
>
> * * *
>
> Tom Berg stated that during the telephone conversation with Mr. Nordberg, DWR, it was suggested that the cleaner approach is for Monterey County to become the GSA for the entire basin. **If the County becomes the GSA only for Marina, it is no longer ministerial in terms of taking out Marina instead of just trying to clear the overlap.**[3]

Id. at 3–4 (emphasis added).

There are explicit withdrawal provisions in Sections 11.6 and 11.8 of SVBGSA's JPA Agreement that the County could utilize to accomplish this withdrawal. Moreover, after withdrawal, the County would need to assert jurisdiction over all overlap areas in the Subbasin. This would, of course, cause needless and extensive organizational and financial harm to all GSAs with overlapping claims and would completely undercut SGMA's goals.

In actuality, "SGMA requires the agencies to resolve" boundary disputes. SWRCB FAQs at 3. The State Board only deems an area unmanaged until the GSAs resolve their conflict. *Id.* This limitation aligns with the intended purpose of Section 10724 to function as a safety valve, allowing a county to assume the role of a GSA in a ministerial manner as a last resort or as a temporary solution before a local agency can take control. Instead of serving that purpose, Monterey County would be using Section 10724 to target only the City of Marina and block it from exercising its GSA authority and implementing its GSP. This effort would contravene SGMA's emphasis on and processes for local agency cooperation and basin management.

III. Monterey County's Potential Action Would Fatally Undermine SGMA's GSA Collaboration Process.

SGMA specifies a specific process for GSAs who file overlapping notices to coordinate and submit a joint GSP or set of GSPs. *See* Cal. Water Code §§ 10727.6 and 10733.4(b). The Water Code likewise provides a process for resolving disputes, in the event that GSAs fail to coordinate and submit joint GSPs for a critically overdrafted basin by the January 31, 2020 deadline. In that situation, the State Board can designate that basin as probationary. *Id.* §§ 10735.2(a)(2) and 10735.2(a)(3) (providing that the State Board can also make a probationary designation after finding that a GSP is inadequate). The State Board must give the local agencies or GSAs "180 days to remedy the deficiency," and "[t]he board may appoint a mediator or other

[3] The minutes reflect that a representative of Monterey County (Charles McKee) attended this meeting.

facilitator . . . to assist in resolving disputes, and identifying and implementing actions that will remedy the deficiency." *Id.* § 10735.4(a). Disagreements over overlapping portions of the basin are covered by this provision.

If it tried to eliminate MGSA's authority over the overlapping area and intervene as the exclusive GSA, the County would be improperly using Section 10724 to implement the GSP of its affiliated GSA entity, violating State Board and DWR guidance directly on point, and undermining SGMA's dispute resolution processes. This action would set a dangerous precedent that could incentivize the misuse of Section 10724 by counties.

IV. DWR And State Board Intervention Is Premature And Legally Unauthorized.

MGSA and SVBGSA are entering a critical time for collaboration to meet the January 31, 2020 GSP submission deadline. Monterey County's potential plan to assert itself as the GSA for the MGSA jurisdictional area threatens to derail this process. Intervention by DWR or the State Board to support Monterey County would similarly quash any possibility of compromise between the two GSAs. Unfortunately, CalAm is urging a strategy to promote its own narrow agenda, likely because it does not want to comply with the GSP of MGSA or with MGSA oversight of its potential groundwater source. However, MGSA and SVBGSA must negotiate in good faith and be given the opportunity to complete the local agency coordination process prescribed by SGMA. The Water Code specifically provides for State Board intervention if MGSA and SVBGSA cannot meet the January 31, 2020 deadline. *See* Cal. Water Code § 10735.2(a)(2). Any actions that interfere with or undermine these SGMA processes are premature and inappropriate.

CONCLUSION

For the foregoing reasons, DWR and the State Board must immediately inform Monterey County that Section 10724 is not applicable in this situation. The County, as the moving force, member, primary funder and general legal advisor to SVBGSA, has created and or contributed to the overlap situation and is therefore disqualified from using this provision. Supporting CalAm's reluctance to be governed and monitored by the government entity with the overlying interest, does not support SGMA and the intention of the Legislature to sustainably manage groundwater. The City of Marina's formation of MGSA to prepare its own GSP to govern critical groundwater resources within its jurisdiction is consistent with the spirit and language of SGMA.

Thank you for giving MGSA the opportunity to provide comments on this important issue. We are certainly available to discuss these issues with you.

Very truly yours,

Paul P. "Skip" Spaulding, III

PPS:jla

cc: Mark Nordberg, Department of Water Resources
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ATTACHMENT 2

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November 21, 2019

Gary Petersen
General Manager
Salinas Valley Basin Groundwater Sustainability Agency

Re: MGSA/SVBGSA Coordination Agreement Discussions

Gary,

I wanted to follow up on our previous discussions regarding a coordination agreement with SVBGSA and next steps to move this forward. I understand from our last telephone conversation that you have received direction that the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) will only agree to meet with the Marina Groundwater Sustainability Agency if MGSA "agrees to give up its GSA." From MGSA's viewpoint, this is not a negotiation on a coordination agreement; rather, it is a request that MGSA go out of existence, which is of course not acceptable.

We continue to be ready to have a discussion on a coordination agreement that will comply with the Sustainable Groundwater Management Act. We strongly encourage SVBGSA to negotiate in good faith to achieve this goal.

Sincerely,

Layne Long
City Manager/Executive Director
City of Marina-Marina Groundwater Sustainability Agency

November 21, 2018

MEMORANDUM

To: Gary Peterson, Salinas Valley Basin Groundwater Sustainability Agency
Derrik Williams, P.G., C.Hg., Montgomery & Associates

From: Keith Van Der Maaten, P.E., Marina Coast Water District
Patrick Breen, Marina Coast Water District
Vera Nelson, P.E., EKI Environment and Water, Inc.
Tina Wang, P.E., EKI Environment and Water, Inc.

Subject: Preliminary Comments Regarding Salinas Valley Basin Groundwater Sustainability Agency Draft Groundwater Sustainability Plan Chapters 1 through 3
(EKI B60094.03)

The Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA) prepared the following preliminary comments on the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) draft 180/400 Foot Aquifer Subbasin and Salinas Valley Integrated Groundwater Sustainability Plans (GSPs) Chapters 1 through 3 ("Draft Chapters"), dated October 2018.

We understand that SVBGSA is preparing a revised version of the Draft Chapters for the 180/400 Foot Aquifer Subbasin for the Board Meeting on December 13th. Comments received by the week of November 19 will be considered for incorporation in the revised draft.

These preliminary comments are for SVBGSA's consideration and incorporation into its revised version of Draft Chapters for the December 13th Board Meeting.

PRELIMINARY COMMENTS FOR DRAFT 180/400 FOOT AQUIFER SUBBASIN GSP, CHAPTERS 1 – 3

Page/Section	Comment
1, last ¶	GSP developed with cooperation with MCWD. The word "coordination" needs to be substituted for "cooperation".
Top of p. 2	Need to add City of Marina to list.
4	Reword the 2nd sentence to read, "None of these three GSAs are exclusive GSAs for the entire Subbasin; however, MCWD is an exclusive GSA for that portion of the Subbasin within its jurisdictional boundaries."
6, § 2.1	Recommend including contact and website information for each agency, similar to how they are presented in the SVIGSP.
8, §2.3.1.2	Reword the last sentence to read, "MCWD is an exclusive GSA for a portion of the Subbasin. MCWD also has existing rights as a county water district to manage groundwater within its service areas."
10, §3.1, 2nd ¶	The City of Marina needs to be added to the sentence: "The Subbasin contains the municipalities of …."
10, §3.2, 2nd ¶	2nd sentence: The reference should be to Figure 2-1, not Figure 3-1.
11, Fig. 3-1	The Marina city limits need to be shown on the map.
13, §3.3.1	Add the following to the end of the paragraph: "Within the former Fort Ord, Marina Coast Water District is the exclusive water purveyor to all non-Federal lands and to the Army for all Army and Federal facilities within the former Fort Ord. By a 2001 deed from the Army through the Fort Ord Reuse Authority, Marina Coast Water District owes all of the water infrastructure within the former Fort Ord."
13, §3.3.4	Amend the entire paragraph as follows: "The cities of Salinas, Gonzales, and Marina have water management authority in their incorporated areas. The Castroville Community Service District provides water and sewer collection services in the town of Castroville. The Marina Coast Water District provides water and sewer collection services within its jurisdictional boundaries and within its Ord Community service area, which consists of the former Fort Ord. As a county water district, MCWD has water management authority over those areas. MCWD has filed an application with LAFCO to include all of the Ord Community service parcels that currently receive potable water or that have received final land use development approvals by the applicable land use jurisdiction. Marina Coast Water District is an exclusive GSA for a small portion of the 180/400-Foot Aquifer Subbasin. The jurisdictional boundaries of these areas are shown on Figure 3-4."
14, Fig. 3-3	The area shown on the map as Federal Jurisdiction is now within the City of Marina.
19, Fig. 3-6	The map needs to show the 180/400 Subbasin areas within the Marina City Limits that are dependent on groundwater.

Page/Section	Comment
25-30, §3.6	Please provide references for existing monitoring programs, such as monitoring plans and monitoring program websites.
27, §3.6.3.1	It states that the MCWRA monitors 121 "monitoring" wells located in the 180/400 Subbasin. Are the location and depths of these wells known? If so, then their locations and depths (but not well owner's names) should be included in the technical chapters .
28, §3.6.3.2	Add the following fourth bullet: "Required CalAm and MCWRA monitoring wells for CalAm's proposed source wells for the Monterey Peninsula Water Supply Project (MPWSP)."
28, §3.6.3.2	Please state how many of the USGS GAMA wells are environmental monitoring wells, irrigation wells, and public water supply wells.
36, §3.7.3.2	Substitute along the following lines for: **3.7.3.2 Marina Coast Water District Urban Water Management Plan [180/400]** **3.7.3.3 Marina Coast Water District Urban Water Management Plan [Valley-wide]** Marina Coast Water District (MCWD), a county water district, was formed in 1960. Today MCWD serves municipal and industrial water uses within the City of Marina and the former Fort Ord. Pursuant to the 1996 Marina Area Lands Annexation Agreement (Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands dated March 1996), MCWRA allocated to MCWD the right to 3,020 AFY of potable groundwater. Under the 1993 Fort Ord Annexation Agreement (Agreement concerning the Annexation of Fort Ord into Zones 2 and 2A of the MCWRA dated September 21, 1993), MCWRA allocated to the Army the right to 6,600 AFY of potable groundwater. In 2000, the Army entered into an exclusive contract with MCWD to meet all potable water demands by the Army and the BLM within the former Fort Ord and authorized MCWD to use the Army's reserved groundwater rights to meet those demands. In October 2001, the U.S. Army transferred to the Fort Ord Reuse Authority (FORA) and FORA in turn transferred to MCWD title to all of the Army's then existing water and sewer infrastructure and the 6,600 AFY of potable groundwater, except for 1,577 AFY reserved by the Army to meet Federal water demands within the former Fort Ord. In 2007, the California Department of Public Health granted MCWD's request to combine the Central Marina and Ord Community services areas into one combined water system permit. Consequently, MCWD owns or manages 9,620 AFY of potable groundwater rights to serve its combined Central Marina and Ord Community service areas.

Page/Section	Comment
	As a retail water service provider, MCWD is required to periodically prepare an UWMP. The 2010 UWMP was updated in 2015 (Schaff & Wheeler, 2016). [Continue with the rest of the existing paragraph,] [Move the existing 3rd ¶ to here.] The MCWD UWMP includes a number of demand management measures including: [Continue with the existing bullet list] MCWD's implementation of demand management measures resulted in MCWD receiving state-wide recognition of its water conservation achievements during the last drought. MCWD currently relies solely on groundwater. However, in 2019, MCWD will receive the first 600 AFY of advanced treated water from the Pure Water Monterey (PWM) Project out of MCWD's total 1,427 AFY PWM entitlement. In addition, MCWD is working with FORA and Monterey One Water (M1W) to identify new water sources (including recycled water, brackish water desalination, stormwater flows, water conservation) to develop an additional 927 AFY for the Fort Ord Base Reuse Plan. MCWD is also a key water transmission hub owner connecting the Central Marina and North Ord areas with the yet to be developed South Ord area, which includes portions of the Cities of Seaside, Del Rey Oaks, and Monterey. MCWD owns the potable water transmission pipeline, which MCWD will use to serve the South Ord area. The pipeline is currently being used by CalAm for its Carmel River ASR Project to convey injection water and to convey recovered water to its Monterey District, but MCWD has the first priority of use as the pipeline's owner. The pipeline will also be used to convey recovered PWM water for direct use in CalAm's Monterey District. MCWD also owns the new 10-mile transmission pipeline for the PWM Project, which will deliver advanced treated water to MCWD recycled water customers and to the PWM injection wells in the Seaside Groundwater Basin.
37, §3.8.1	Insert the new §3.8.1, District Act/Agency Act – Pre-SGMA Foundation of Groundwater Management within Monterey County, following this table and renumber other subsections.

Page/Section	Comment
38, §3.8.3	Add to the end of the 2nd ¶: "The SWRCB's Sources of Drinking Water Policy adopted in Resolution No. 88-63 and incorporated in its entirety in the CCRWQCB's Basin Plan provides that water with water quality equal to or less than 3,000 mg/L TDS is considered suitable or potentially suitable for drinking water beneficial uses." Add to the end of the 3rd ¶: "and the prevention or repelling of seawater intrusion."
39, §3.9	Substitute the revised Section 3.9, Conjunctive Use Programs, following this table.
40-51, §3.10	Please provide references and document dates for land use plans discussed.
40-51, §3.10	Please provide a discussion of FORA's Base Reuse Plan as a land use plan in the GSP plan area, per § 354.8 (f) of GSP Regulations.
49, §3.10.4	Please ask City of Marina to review this discussion of its General Plan. The City should also include a discussion about any Local Coastal Plan restrictions on new groundwater wells.
49, §3.10.5	A description of the existing prohibitions and restrictions on well drilling within the 180/400 Foot Aquifer Subbasin needs to be added, including the County's 2018 Interim Ordinance, the County's Well Prohibition in Fort Ord (Ordinance No. 04011), MCWD's Well Ordinance (Municipal Code Chapter 3.32), and ordinances by other municipalities in the 180/400 Foot Aquifer Subbasin, if any. Check the Monterey County General Plan on additional restrictions on drilling new wells within the Coastal Zone. Possible placeholder description of the County's Moratorium: County Moratorium on Accepting and Processing New Well Permits. On May 22, 2018, the Monterey County Board of Supervisors adopted Ordinance No. 5302 pursuant to Government Code Section 65858. The ordinance imposed a moratorium on the County Health Department accepting and processing new well permits; it was not a moratorium on additional groundwater pumping from existing wells. The ordinance was an Interim Urgency Ordinance, which took effect immediately upon adoption. The ordinance prohibits the acceptance or processing of any applications for new wells in the defined "Area of Impact" with stated exceptions, including municipal wells and replacement wells. Pursuant to Section 65858, the ordinance was originally only effective for 45 days to July 5, 2018, but at the June 26 Board meeting, the Board of Supervisors on a 4-1 vote extended the ordinance to May 21, 2020, by adoption of Ordinance No. 5303. During the moratorium, the County has indicated that it will conduct studies. [Insert map of "Area of Impact."]

[Comment: Insert the following as a new Subsection 3.8.1 and renumber following subsections. Note that we are seeking a copy of the Final Allocation Formula Information Report from the Clerk to the Board of Supervisors and will provide to SVBGSA once received.]

3.8.1. District Act/Agency Act – Pre-SGMA Foundation of Groundwater Management within Monterey County

The Monterey County Flood Control and Water Conservation District Act (District Act) was enacted by Chapter 699 of the Statutes of 1947. The original District Act provided for the establishment of zones to finance projects and to take actions to prevent or deter seawater intrusion. The Zone 2 benefit assessment zone was established to fund the construction of Nacimiento Reservoir, construction of which was completed in 1957. The Zone 2A benefit assessment zone was established to fund the construction of San Antonio Reservoir, construction of which was completed in 1967.

In 1990, the District Act was repealed and replaced by the existing Monterey County Water Resources Agency Act (Agency Act); however, much of the District Act was carried over into the Agency Act. For example, Agency Act §52.21 (or §21)[1] quoted below in Section 3.8.2 and Agency Act §22, Action to prevent or deter intrusion of underground seawater, are based upon similar provisions in the District Act.

<u>Water Allocation Formula</u>: Agency Act §45 was added and, in 1991, was amended to read as follows:

> Section 45. Water allocation formula
>
> The board shall appoint a task force to recommend a water allocation formula for urban and agricultural areas in the county that are not within the jurisdiction of the Monterey Peninsula Water Management District and the Pajaro Valley Water Management Agency. An urban allocation formula is necessary to preserve agricultural access to an adequate water supply and to preserve agriculture as a mainstay of the Salinas Valley economy. The task force shall make the recommendation to the agency on or before January 1, 1992.

Board of Supervisors Resolution 91-476 adopted September 24, 1991, directed MCWRA staff to prepare information for a water allocation formula for Zone 2 and 2A and bring it back to the Board on or before January 1, 1992, and further directed MCWRA staff to prepare an emergency

[1] MCWRA cites to sections of the Agency Act as § 52.___. This is apparently an editorial carryover from when the District Act was referred to as "Chapter 52." Deering's California Codes cites to the Agency Act as Water – Uncodified Act 600.

allocation ordinance for Zones 2 and 2A for consideration by the Board no later than April 1, 1992. [Comment: Please insert MCWRA colored map of Zones 2 and 2A.]

On page 9 of the January 1992 draft, entitled "Revised Draft Allocation Formula Information," the report states:

> The Pressure Area is recharged primarily from the unconfined aquifer beneath the Forebay Area. Therefore, streambed percolation and deep percolation of excess irrigation water account for relatively minimal groundwater recharge to the main water supplying aquifers in the Pressure Area.

As stated in Section 3.1, MCWRA's Pressure Subarea consists of three DWR subbasins: the 180/400-Foot Aquifer Subbasin, the Monterey Subbasin, and the Seaside Subbasin.

Construction of the Interlake Tunnel Project connecting Nacimiento Reservoir to San Antonio Reservoir is mentioned in the 1992 Revised Draft Allocation Formula Information report.

Annexations to Zones 2 and 2A: The MCWRA Board of Directors adopted an Annexation Policy dated March 29, 1993, which provided for the process for lands not then included within Zones 2 and 2A to be annexed into both zones subject to the annexation process in Agency Act § 43, the preparation of final environmental documents, and the setting of annexation fees.

Certain public entities, such as the City of Salinas and the Castroville Community Services District, did not need to need to seek annexation since they were originally included in Zones 2 and 2A. Since the adoption of the Annexation Policy, there have been _____ annexations to Zones 2 and 2A [Comment: Please check the number of annexations with MCWRA]. Prominent among them was the 1993 Fort Ord Annexation and the 1996 Marina Area Lands Annexation, which include some lands within the 180/400-Foot Aquifer Subbasin.

1993 Fort Ord Annexation to Zones 2 and 2A: Under the "Agreement between the United States of America and the Monterey County Water Resources Agency concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency, Agreement No. A-06404", dated September 21, 1993, the MCWRA annexed the Fort Ord lands into Zones 2 and 2A and allocated to the Army 6,600 acre-feet per year of potable groundwater from the Salinas Valley Groundwater Basin. In 1993, the Seaside Groundwater Basin was considered to be hydraulically separate from the Salinas Valley Groundwater Basin even though Zone 2A included the Seaside Groundwater Basin within the Pressure Subarea. The Army paid an annexation fee of $7.4 million to be used by MCWRA to complete the design of the Castroville Seawater Intrusion Project (CSIP). In addition, the Army received a $400,000 credit for money spent on planning and information for the EIR/EIS for CSIP, the Salinas Valley Reclamation Project, and the Fort Ord Annexation. The September 10, 1993 "Annexation Assembly and Evaluation Report for the

Annexation of Fort Ord by the Monterey County Water Resources Agency," which was incorporated as Appendix D to the 1993 Annexation Agreement, provides the background and justification for the annexation. The Executive Summary to that report states in part the following:

> The purpose of this annexation by [MCWRA] is to provide the basis for a long term, reliable, potable water supply to supply the Army's residual mission at Fort Ord after it is realigned per the Base Closure and Realignment Act of 1990. Annexation will also facilitate the disposal and reuse of the portions of Fort Ord not needed to support the Army's residual mission.

In 2001, the Army through FORA deeded to MCWD the 6,600 AFY allocation except for reserving 1,577 AFY to meet Federal water demands within the former Fort Ord. Under an exclusive potable water contract, the Army provides its reserved water right to MCWD to meet Army and other Federal Agency potable water demands within the former Fort Ord.

<u>1996 Marina Area Lands Annexation to Zones 2 and 2A</u>: Under the "Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands" dated March 1996 (1996 Annexation Agreement), among the MCWRA, the Marina Coast Water District, J.G. Armstrong Family Members, RMC Lonestar (now CEMEX), and the City of Marina, the MCWRA annexed MCWD's Central Marina service area into Zones 2 and 2A and allocated to MCWD 3,020 AFY from the Salinas Valley Groundwater Basin for use in the Central Marina service area. MCWD paid a net annexation fee of $2,449,410 after receiving a $400,000 credit against the annexation fee. Section 1.1, Purpose, of the 1996 Annexation Agreement stated:

> The purpose of this Agreement and Framework is to help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin through voluntary commitments by the Parties to limit, conserve and manage the use of groundwater from the Salinas River groundwater basin, and to provide the terms and conditions for the annexation of certain territory in the Marina area to the [MCWRA's] benefit assessment Zones 2 and 2A as a financing mechanism providing additional revenues to the [MCWRA] to manage and protect the groundwater resource in the Salinas River Groundwater Basin and to reduce seawater intrusion.

Under the 1996 Annexation Agreement, additional groundwater supply would be made available to MCWD for use within the Armstrong Ranch and the RMC Lonestar (now CEMEX) properties north of Marina when those properties exercised their respective rights to annex into Zones 2 and 2A. For example, in the early 1990s, RMC Lonestar pumped 500 AFY of non-potable water for its overlying sand mining operation. In the 1996 Annexation Agreement, RMC Lonestar agreed to limit its overlying groundwater right to 500 AFY in exchanged for the right to receive 500 AFY of potable water from MCWD upon annexation to MCWD and the payment of Zone 2

and 2A annexation fees to MCWRA. MCWD would then have the right to withdraw an additional 500 AFY from the Salinas Valley Groundwater Basin to serve that property.

The 1996 Annexation Agreement, like the 1993 Annexation Agreement, provided for MCWRA to develop a replacement potable water supply, such that most groundwater pumping within Fort Ord and Marina Area Lands could be curtailed. However, by Resolution 00-172 adopted on April 25, 2000, the Board of Supervisors decreed that the MCWRA has no contractual obligation to fund a potable water system for Fort Ord and the Marina Area Lands. MCWD will endeavor to develop its own new water supplies to supplement its groundwater rights.

MCWRA Recycled Water Projects. Please see the discussion in Section 3.9.1 on the Monterey County Water Recycling Projects, a combination of the Salinas Valley Reclamation Project (recycled water) and the Castroville Seawater Intrusion Project (CSIP) (distribution and supplemental well system), funded through the establishment of Zone 2B to fight seawater intrusion in the 180/400-Foot Aquifer Subbasin. Construction began in 1995 and delivery of recycled water to fields near Castroville started in 1998.

In summary, as stated in the 1993 Annexation Agreement, the Salinas Valley Groundwater Basin has had a problem with seawater intrusion since the 1940s. The prevention of seawater intrusion was a principal reason for the enactment of the District Act in 1947. Since then, the MCWRA has developed projects and program to reduce the adverse impacts from pumping and seawater intrusion within the 180/400-Foot Aquifer Subbasin. Unfortunately, the results of those efforts did not prevent DWR in January 2016 from classifying the subbasin as being Critically Overdrafted. The District Act and then the Agency Act have been the foundation of groundwater management within Monterey County. Now in the SGMA era, that foundation needs to be recognized and integrated into and coordinated with this GSP for the 180/400-Foot Aquifer Subbasin.

[Substitute the following for the entire Section 3.9]

3.9 CONJUNCTIVE USE PROGRAMS

3.9.1. Monterey county Water Recycling Projects

The Monterey County Water Recycling Projects are a combination of the Salinas Valley Reclamation Project (recycled water) and the Castroville Seawater Intrusion Project (CSIP) (distribution and supplemental well system). They are funded through the establishment of Zone 2B to fight seawater intrusion in the 180/400-Foot Aquifer Subbasin. Construction began in 1995 and delivery of recycled water to fields near Castroville started in 1998.

CSIP is the only existing conjunctive use project that operates in the 180/400-Foot Aquifer Subbasin serving some 12,000 acres of farmland within the subbasin. The extend of the current CSIP distribution area is shown in Figure 3-6. Even with CSIP providing two-thirds of the growers' water needs, there continued to be a heavy reliance on pumping groundwater for irrigation. The Salinas River Diversion Facility (SRDF) was constructed to provide filtered and chlorinated river water and began operations in April 2010. During non-drought periods, the operation of the SRDF can significantly reduce the needed by growers to pump groundwater except in periods of extremely high irrigation demand. When river water is available and the SRDF is operating, grower groundwater pumping has been reduced by about 80% during peak irrigation demand periods. However, additional direct and in-lieu groundwater recharge projects are needed, and potential projects will be identified and discussed in the GSP for the subbasin.

3.9.2 Pure Water Monterey Groundwater Replenishment Project

The Pure Water Monterey (PWM) Groundwater Replenishment Project is an advance water recycling project jointly developed by Monterey Peninsula Water Management District (MPWMD), Monterey One Water (M1W), and MCWD. Advance treated recycled water (ATW) will be produced at M1W Wastewater Treatment Plant's (WWTP) Advanced Water Treatment Facility and The project will provide (1) 600 AFY of ATW to MCWD for non-potable irrigation uses and in-lieu groundwater recharge within MCWD's service areas (including portions of the 180/400-Foot Aquifer Subbasin, and (2) up to 3,700 AFY of ATW to MPWMD for injection to the Seaside Subbasin for later recovery for direct use within CalAm's Monterey District service area. This latter process is known as Indirect Potable Reuse (IPR). The project also allows for conjunctive use among project beneficiaries. The project is currently under construction with a planned commercial operations date in mid-2019. MCWD is entitled to a total of 1,427 AFY of ATW and the 600 AFY is the first phase. The second phase of 827 AFY will be developed depending upon future demand and funding.

The PWM Project supplements existing wastewater inflows to the M1W WWTP from the following new sources: (1) wastewater from the City of Salinas industrial wastewater system which is mostly referred to as the agricultural wash water system, (2) storm water flows from the southern part of Salinas, (3) surface water and agricultural tile drain water that is captured in the Reclamation Ditch, and (4) surface water and agricultural tile drain water that flows in the Blanco Drain. These new sources should also produce additional tertiary treated recycled water (not ATW) for use in CSIP.

The PWM project includes a conjunctive use component between CSIP users and CalAm. During wet and normal years, the project provides an additional 200 AFY of ATW for injection in the Seaside Subbasin, creating a banked groundwater reserve. During dry years, the project may deliver less than 3,500 AFY to the Seaside Subbasin, while CalAm will draw from its bank reserved to make up the difference to its supplies up to 3,500 AFY. This allows additional recycled water to be provided to CSIP agricultural users during dry years.

3.9.3 Armstrong Ranch Water Supply Augmentation Study and Additional Studies

The MCWD is conducting an assessment of water supply augmentation and groundwater recharge projects for MCWD's Central Marina and Ord Community service areas. This effort also includes working jointly with FORA and M1W to identify additional water supply options needed to meet an additional 973 AFY of demand identified in the Fort Ord Base Reuse Plan (BRP). Efforts to date assessed technical feasibility, permitting requirements, and costs of augmenting water supplies through Indirect Potable Reuse and the diversion of surplus surface water from the Salinas River available during winter months.

MCWD already owns lands within the Armstrong Ranch located within the 180/400-Foot Aquifer Subbasin and next to M1W's WWTP and ATW Facility. Excess Salinas River water could be diverted to the Armstrong Ranch site (1) for possible treatment in a water treatment plant and (2) for onsite groundwater recharge through either percolation or injection and for later recovery for direct potable use. A Southern Component would serve potable water to MCWD's service areas. A potential North Component could serve potable and non-potable water to areas north of the Salinas River within the subbasin. The Armstrong Ranch study began in 2016 and is anticipated to continue as part of the MCWD/FORA/M1W BRP study.

3.9.4 Options to Meet the Additional 2,400 AFY of Demand in the Fort Ord Base Reuse Plan

The Fort Ord Reuse Authority (FORA) is responsible for the oversight of the closure and economic redevelopment of the former Fort Ord. Redevelopment is performed pursuant to the Fort Ord Base Reuse Plan (BRP), adopted by FORA 1997 and reassessed in 2012. As described in 3.7.3.2 above, within the former Fort Ord, MCWD has been designated as the exclusive (1) water and sewer collection service provider and (2) developer and implementer of all new water supplies

for all non-Federal lands. Under an exclusive contract with the Army, MCWD is responsible for providing water and sewer collection services for the Army and other Federal agencies within the former Fort Ord.

The Final Environmental Impact Report (EIR) for the Fort Ord BRP projected a total water demand of 9,000 AFY at buildout, in excess of the 6,600 AFY groundwater supply allocated under the 1993 Annexation Agreement (see Section 3.8.1). Development of the 2,400 AFY of additional water supply was identified as one of the mitigation measures for redevelopment of Fort Ord. FORA and MCWD have conducted extensive studies and environmental reviews of options to supply that additional 2,400 AFY. FORA agreed that the 2,400 AFY would be met through 1,200 AFY of recycled water and 1,200 AFY of desalinated water. Subsequently, MCWD with FORA's approval secured an entitlement to 1,427 AFY of advanced treated water (ATW) from the Pure Water Monterey Project. FORA, MCWD, and M1W agreed to participate and fund a joint three-party planning process to identify water supply options to meet the 973 AFY shortfall. The three-party study began in 2018 and is anticipated to be completed in 2019. Water supply options to be studied include brackish water and seawater desalination, increased water conservation measures, the Armstrong Ranch Project, ASR, and additional ATW.

PRELIMINARY COMMENTS TO DRAFT VALLEY-WIDE INTEGRATED GSP, CHAPTERS 1 – 3

Note that some of the comments below are repeats of the draft 180/400 GSP comments.

Page/Section	Comment
4	The Section 2 introduction needs to identify (1) what areas the SVBGA and MCWD are designated by DWR as the exclusive GSA and (2) what areas where there are overlaps. It is good that the draft at least recognizes that there are overlap areas.
6, §3.1	The City of Marina needs to be added to the sentence: "The Subbasin contains the municipalities of …."
9, §3.3.4	In the first sentence, the City of Marina needs to be added. Words along the following lines need to be substituted for the third sentence: "The Marina Coast Water District provides water and sewer collection services within its jurisdictional boundaries and within its Ord Community service area, which consists of the former Fort Ord. As a county water district, MCWD has water management authority over those areas. MCWD has filed an application with LAFCO to include all of the Ord Community service parcels that currently receive potable water or that have received final land use development approvals by the applicable land use jurisdiction."
20, §3.6.1.4	MPWMD is also a CASGEM monitoring entity within the Monterey Subbasin and is responsible for areas within the former Seaside Subbasin prior to the2016 basin boundary modification.
22, §3.6.3.2	Add the following fourth bullet: "Required CalAm and MCWRA monitoring wells for CalAm's proposed source wells for the Monterey Peninsula Water Supply Project (MPWSP)."
22, §3.6.3.2	Please state how many of the USGS GAMA wells are environmental monitoring wells, irrigation wells, and public water supply wells.
20-26, §3.6	The GSP needs to provide references for existing monitoring programs, such as monitoring plans and monitoring program websites.
22, §3.6.3	MCWD and the Army monitors groundwater levels and quality at the former Fort Ord for control of groundwater contamination.
32, §3.7.3.3	See language above in 180/400 comments.

Page/Section	Comment
33, §3.8	Substitute then entire existing Section 3.8, Conjunctive Use Programs with the new Section 3.9, Conjunctive Use Programs, for the 180/400 GSP.
33-48, §3.9	Please provide references and document dates for the land use plans discussed.
33-48, §3.9	Please provide a discussion of FORA's Base Reuse Plan as a land use plan in the GSP plan area, per § 354.8 (f) of GSP Regulations.
42, §3.9.4	Please ask the City of Marina to review this discussion of its General Plan. The City should also include a discussion about any Local Coastal Plan restrictions on new groundwater wells.
46, § 3.9.8	A description of the existing prohibitions and restrictions on well drilling within the 180/400 Foot Aquifer Subbasin needs to be added, including the County's 2018 Interim Ordinance, the County's Well Prohibition in Fort Ord (Ordinance No. 04011), MCWD's Well Ordinance (Municipal Code Chapter 3.32), and ordinances by other municipalities in the 180/400 Foot Aquifer Subbasin, if any. Check the Monterey County General Plan on additional restrictions on drilling new wells within the Coastal Zone. Possible placeholder description of the County's Moratorium: County Moratorium on Accepting and Processing New Well Permits. On May 22, 2018, the Monterey County Board of Supervisors adopted Ordinance No. 5302 pursuant to Government Code Section 65858. The ordinance imposed a moratorium on the County Health Department accepting and processing new well permits; it was not a moratorium on additional groundwater pumping from existing wells. The ordinance was an Interim Urgency Ordinance, which took effect immediately upon adoption. The ordinance prohibits the acceptance or processing of any applications for new wells in the defined "Area of Impact" with stated exceptions, including municipal wells and replacement wells. Pursuant to Section 65858, the ordinance was originally only effective for 45 days to July 5, 2018, but at the June 26 Board meeting, the Board of Supervisors on a 4-1 vote extended the ordinance to May 21, 2020, by adoption of Ordinance No. 5303. During the moratorium, the County has stated that it will conduct further studies. [The "Area of Impact" map should be inserted.]

26 March 2019

MEMORANDUM

To: Gary Peterson, Salinas Valley Basin Groundwater Sustainability Agency
Derrik Williams, P.G., C.Hg., Montgomery & Associates

From: Keith Van Der Maaten, P.E., Marina Coast Water District
Patrick Breen, Marina Coast Water District
Vera Nelson, P.E., EKI Environment and Water, Inc.
Tina Wang, P.E., EKI Environment and Water, Inc.

Subject: Preliminary Comments Regarding Salinas Valley Basin Groundwater Sustainability Agency Draft Groundwater Sustainability Plan Chapter 4 (EKI B60094.03)

On behalf of the Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA), EKI has reviewed and prepared preliminary comments on the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) draft 180/400 Foot Aquifer Subbasin and Salinas Valley Integrated Groundwater Sustainability Plans (GSPs) Chapter 4, dated 30 November 2018 and updated 3 January 2019.

EKI has provided a majority of these comments during SVBGSA's December 6 Planning Committee Meeting and received concurrence from SVBGSA as identified below.

Comments for 180/400 Foot Aquifer Subbasin GSP, Chapter 4

1. <u>Section 4.4.1 – Principal Aquifers and Aquitards</u>

   The GSP Regulations specifically define the term "Principal Aquifer" (California Code of Regulations (CCR) §351 (aa)) and have plan development as well as monitoring network requirements for identified Principal Aquifers. Currently, GSP Section 4.4.1 appears to have included all alluvial deposits/valley fill deposits from ground surface to the bottom of the subbasin in a single Principal Aquifer.

   As agreed upon during the December 6 Planning Committee Meeting, the 180/400 Foot Aquifer Subbasin GSP should define multiple Principal Aquifers given the definable layers of aquifer and aquitard units in the subbasin. At least one Principal Aquifer should be defined for the Deep Aquifers (i.e. the 900-Foot and 1,500-Foot Aquifers). Per GSP Regulations, groundwater elevation contours, hydrographs, minimum thresholds for

seawater intrusion, sufficient monitoring network coverage, etc. should be developed for each Principal Aquifer identified in this GSP.

2. Section 4.4.1 – Principal Aquifers and Aquitards

   In addition to the comment above, this section discusses extensive continuous clay layers within the 180/400 Foot Aquifer Subbasin. However, there are existing wells and abandoned wells that are potentially acting as "conduits" for saline water to flow to the lower aquifers[1]. Airborne electromagnetic analysis conducted in the northern Salinas Valley Basin also showed that there are gaps in the 180/400-Foot Aquitard in the 180/400-Foot Aquifer Subbasin near the coast.

   Please add a discussion of potential conduits of vertical flow in the Subbasin. This comment was not provided during the December 6 Planning Committee Meeting.

3. Section 4.4.2 – Aquifer Properties

   In addition to defining multiple Principal Aquifers, the 180/400 Foot Aquifer Subbasin GSP should provide aquifer properties for each of the defined Principal Aquifers. The GSP should provide storativity, conductivity (per CCR §354.14 (b)(4)(B)), and transmissivity for each Principal Aquifer. We understand that Section 4.7 of the January 2019 update discussed aquifer parameters as a data gap. As agreed upon during the Planning Committee meeting, SVBGSA will obtain these aquifer property parameters from the Water Resources Agency to include in this section.

   This section could benefit from either a table or description on an aquifer and aquitard basis compiling all the relevant data (e.g. from field tests or models) and tabulating ranges for each aquifer or aquitard.

4. Figures 4-6, 4-7, and 4-8 – Cross-Sections

   The Deep Aquifers are unrepresented in cross-sections. Please provide a discussion if this is a data gap.

   This comment has been noted by and concurred to by SVBGSA during the Planning Committee Meeting. Section 4.7 of the January 2019 update has included information on the deep aquifer as a data gap.

5. Section 4.6.2 – Seawater Intrusion

[1] Monterey County Water Resources Agency. Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, October 2017.

Please add the following text after the second paragraph on Page 33. This comment was not provided during the December 6 Planning Committee Meeting.

"Groundwater with a total dissolved solid of 3,000 mg/L or less, is groundwater that is considered to be suitable, or potentially suitable, for beneficial uses in accordance with SWRCB Resolution No. 88-63 as adopted in its entirety in the Central Coast Regional Water Quality Control Board's Basin Plan. California Code of Regulations, Title 23, Section 659 – 669 lists the beneficial uses of surface water, which is also applicable to groundwater. Those beneficial uses include (1) domestic use, (2) irrigation use, (3) power use, (4) frost protection use, (5) municipal use, (6) mining use, (7) industrial use, (8) fish and wildlife preservation and enhancement use, (9) aquaculture use, (10) fish and wildlife protection and enhancement, (11) recreational use, (12) water quality use, and (13) stock watering use. In addition, Water Code Section 1242 states that the storing of water underground constitutes a beneficial use."

Comments for Salinas Valley Integrated Subbasin GSP, Chapter 4

1. <u>Section 4.4 – Groundwater Hydrology</u>

   On Page 17, the GSP states

   "The presence of laterally continuous clay layers distinguishes the 180/400-Foot Aquifer Subbasin from the other subbasins in the Valley. As described in the following two subsections, the presence of continuous clay layers affects the following aspects of the basin hydrogeology:
   - *A near-surface clay layer creates relatively shallow confined conditions in the 180/400-Foot Aquifer Subbasin, in contrast to the unconfined conditions over most of the basin*
   - *Deeper clay layers create definable aquifers in the 180/400-Foot Aquifer Subbasin, whereas most of the basin includes only a single undifferentiated aquifer."*

   This section implies that the 180/400 Foot Aquifer Subbasin contains definable aquifer layers, whereas other subbasins in Salinas Valley do not have definable aquifer layers. However, definable aquifers also exist throughout the Monterey Subbasin and throughout most of the Forebay Aquifer Subbasin to just north of King City.

   Additionally, this section should provide a discussion of the sediments across the basin that are stratigraphically equivalent. For example, the shallow zone and deep zones in the Eastside Subbasin "are generally time-stratigraphically equivalent to the Pressure 180-Foot and Pressure 400-Foot Aquifers".[2]

[2] Brown and Caldwell, 2015. State of the Salinas River Groundwater Basin, dated 16 January 2015.

2. Section 4.7.2 – Seawater Intrusion

   Please add the following text on Page 35. This comment was not provided during the December 6 Planning Committee Meeting.

   "Groundwater with total dissolved solids of 3,000 mg/L or less, is groundwater that is considered to be suitable, or potentially suitable, for beneficial uses in accordance with SWRCB Resolution No. 88-63 as adopted in its entirety in the Central Coast Regional Water Quality Control Board's Basin Plan. California Code of Regulations, Title 23, section 659 – 669 lists the beneficial uses of surface water, which is also applicable to groundwater. Those beneficial uses include (1) domestic use, (2) irrigation use, (3) power use, (4) frost protection use, (5) municipal use, (6) mining use, (7) industrial use, (8) fish and wildlife preservation and enhancement use, (9) aquaculture use, (10) fish and wildlife protection and enhancement, (11) recreational use, (12) water quality use, and (13) stock watering use. In addition, Water Code Section 1242 states that the storing of water underground constitutes a beneficial use."

18 April 2019

MEMORANDUM

To: Gary Peterson, Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA)
Derrik Williams, P.G., C.Hg., Montgomery & Associates

From: Keith Van Der Maaten, P.E., Marina Coast Water District (MCWD)
Patrick Breen, MCWD
Vera Nelson, P.E., EKI Environment and Water, Inc. (EKI)
Tina Wang, P.E., EKI

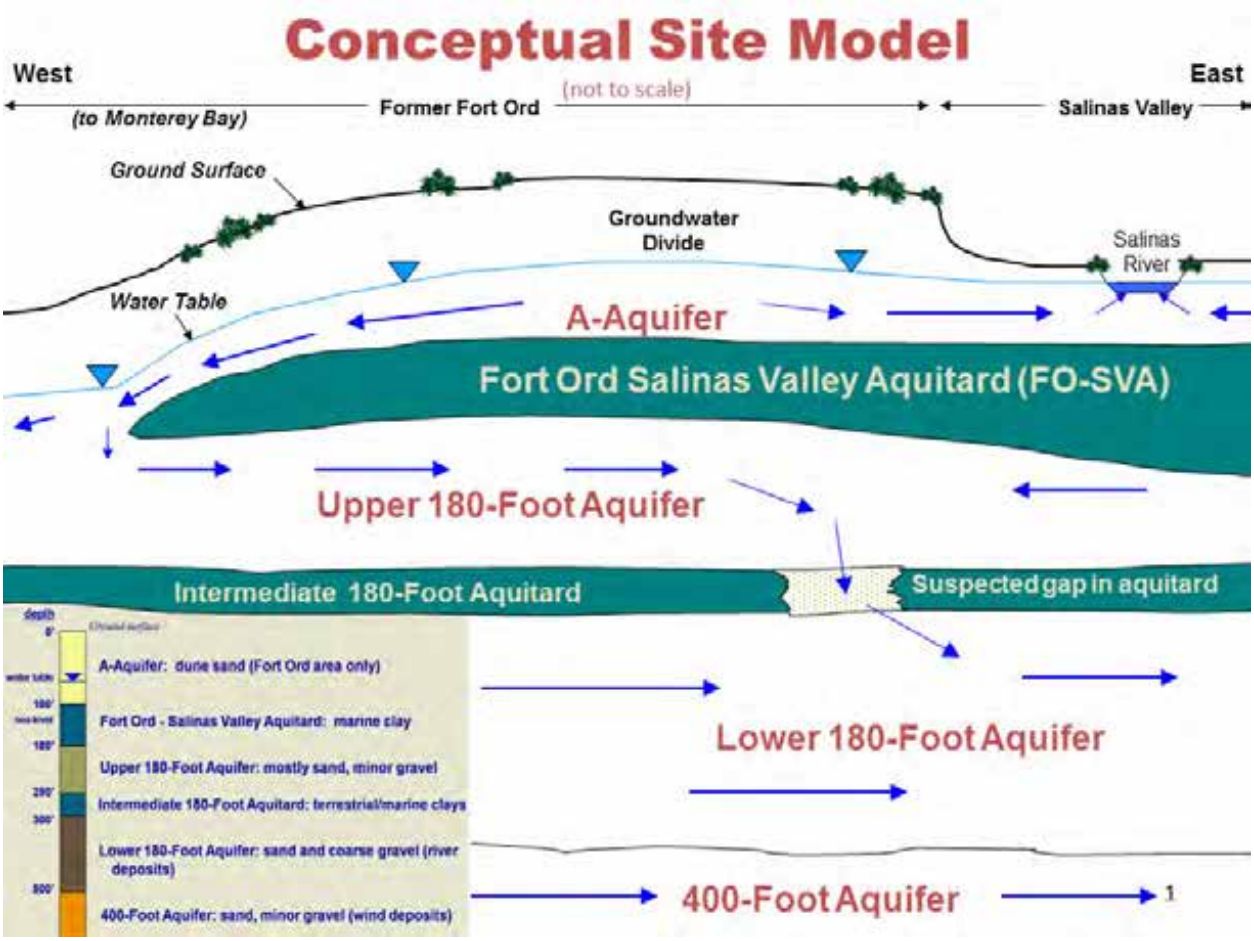
Subject: Preliminary Comments Regarding Salinas Valley Basin Groundwater Sustainability Agency Draft Groundwater Sustainability Plan Chapter 5 (EKI B60094.03)

On behalf of the Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA), EKI has reviewed and prepared preliminary comments on the SVBGSA draft 180/400 Foot Aquifer Subbasin and Salinas Valley Integrated Groundwater Sustainability Plans (GSPs) Chapter 5, released January 2019 and updated February 2019.

1. General Comment

We understand that SVBGSA has solicitated input during its February 7 Planning Committee regarding the inclusion of the Dune Sand Aquifer in its GSPs. Although the Dune Sand Aquifer exists only south of the river and thus encompasses a small portion of the 180/400 Foot Aquifer Subbasin, we request that the 180/400 Foot Aquifer Subbasin GSP characterize the Dune Sand Aquifer for the following reasons.

(1) The Dune Sand Aquifer is an important source of freshwater and recharge to deeper aquifers south of the Salinas River.
   - Groundwater level data and groundwater quality data obtained from Fort Ord indicate that groundwater with low TDS concentrations from the Dune Sand Aquifer seeps down into the upper portion of the 180-Foot Aquifer, upgradient of the coast and then "U-turns" and flows back into the basin. This process is illustrated in figures presented on Fort Ord's website:



Source: http://fortordcleanup.com/programs/groundwater

- Recent airborne electromagnetic (AEM) data collected in the northern Salinas Valley (see Attachment A) has confirmed that freshwater exists in the Dune Sand Aquifer and underlying portions of the Upper 180-Foot Aquifer in 180/400-Foot Aquifer Subbasin.

(2) The Dune Sand Aquifer is likely a water source for shallow wells in the Corral de Tierra area in the adjacent Monterey Subbasin, which should be further confirmed by SVBGSA in its preparation of GSP components of the Corral de Tierra area.

(3) Chemical impacts exist within the Dune Sand Aquifer, which could impact other underlying aquifers.
   - Volatile organic compounds (VOCs) and other constituents have been detected in groundwater within the Dune Sand Aquifer at the Monterey Peninsula Landfill (Geotracker ID L10005501051).

- Groundwater quality data obtained from Monterey Peninsula Water Supply Project (MPWSP) shallow monitoring wells suggest that nitrate impacts may exist in the Dune Sand Aquifer.

(4) Multiple Projects have been proposed within the Dune Sand Aquifer in the 180/400-Foot Aquifer Subbasin.
- Several studies have been completed by MCWD and Fort Ord Reuse Authority (FORA) to evaluate the potential infiltration and storage of Advanced Treated wastewater or excess surface water from the Salinas River within the Dune Sand Aquifer at Armstrong Ranch.
- MPWSP slant wells are screened across and will draw water from the Dune Sand Aquifer.

Therefore, the 180/400 Foot Aquifer Subbasin GSP should characterize the Dune Sand Aquifer and develop a plan to manage current as well as planned groundwater activities in the Dune Sand Aquifer. Moreover, MCWD will coordinate with SVBGSA to develop Sustainable Management Criteria (SMCs) for Dune Sand Aquifer in the Monterey Subbasin GSP, given the Dune Sand Aquifer's importance in water source and groundwater recharge. It is important that the Dune Sand Aquifer is properly characterized in both the 180/400 Foot Aquifer Subbasin GSP and the Monterey Subbasin GSP, so that a coordinated set of SMCs are developed for the Dune Sand Aquifer in both GSPs.

2. <u>Section 5.1 – Groundwater Elevations</u>

Draft chapter 5 of the 180/400 Foot Aquifer Subbasin GSP states that "Insufficient data currently exist to map flow directions and groundwater elevations in the deep aquifer" (Page 17) and "Hydrographs are not available for wells completed in the Deep Aquifer" (Page 18). However, MCWRA's 2017 *Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin* states that there are 32 active productions wells and eight monitoring wells screened in the deep aquifers, and that MCWRA monitors groundwater levels at thirteen locations in the Deep Aquifers "with varying frequency", a majority of which are located in the 180/400 Foot Aquifer Subbasin. Figure 21 of the document showed average groundwater level changes in the deep aquifers from 1986 to 2016. We suggest that the SVBGSA obtain this information from MCWRA and provide groundwater elevation and/or elevation trend information in the Deep Aquifer.

3. <u>Section 5.2 – Seawater Intrusion</u>

Per GSP Regulations Section 354.16 (c), a GSP should provide "seawater intrusion conditions in the basin, including maps and cross sections of the seawater intrusion front for each

principal aquifer". The GSPs should address this requirement and provide cross-sections. AEM data collected by MCWD should be incorporated into these cross-sections[1].

Attachments

Attachment A. Selected Figures from Gottschalk et al. Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA, dated 15 March 2018.

[1] Gottschalk et al. Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA, dated 15 March 2018.

Attachment A

Selected Figures from Gottschalk et al. Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA, dated 15 March 2018.

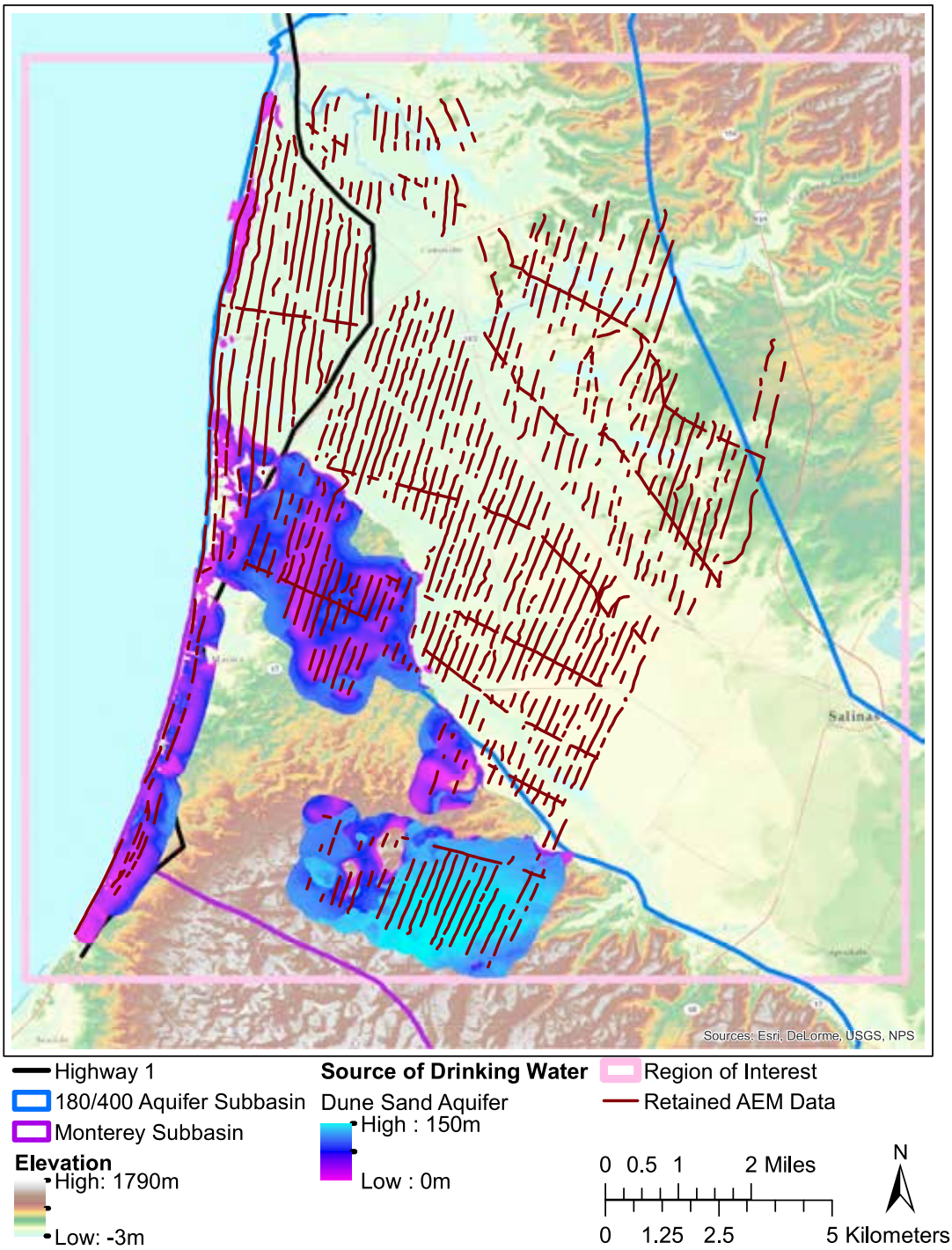


Figure 22: Interpreted thickness of the subsurface containing sources of drinking water within the Dune Sand Aquifer in the region of interest, shown in a color scale ranging from purple to light blue, representing 0 m to 150 integrated meters of the source drinking water, respectively. Overlaying the thickness of sources of drinking water are the locations where AEM data were collected and retained for processing, shown as red lines. The Dune Sand Aquifer lies south of the Salinas River, aside from the dune sand deposits along the coast within the Salinas Valley basin, which are also treated as part of the Dune Sand Aquifer here. The boundaries used in calculating the regions containing sources of drinking water, Highway 1, the 180/400 Aquifer Subbasin, and the Monterey Subbasin, are shown as black, blue, and purple lines, respectively.

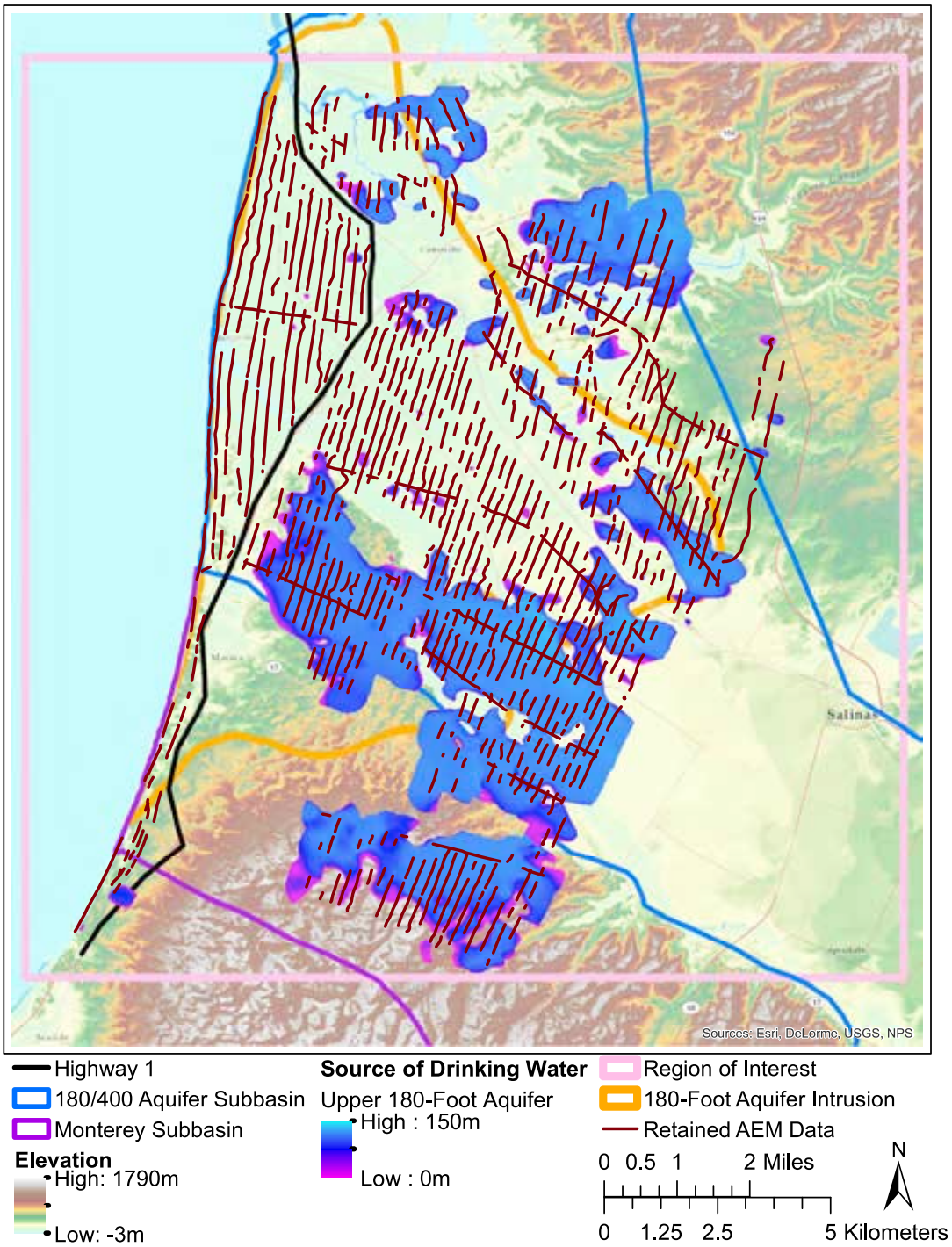


Figure 23: Interpreted thickness of the subsurface containing sources of drinking water within the Upper 180-Foot Aquifer in the region of interest, shown in a color scale ranging from purple to light blue, representing 0 m to 150 integrated meters of the source of drinking water, respectively. Overlaying the thickness of sources of drinking water are the locations where AEM data were collected and retained for processing, shown as red lines. The extent of saltwater intrusion in the 400-Foot Aquifer, as measured by the Monterey County Water Resources Agency, is shown as an orange line. The boundaries used in calculating the regions containing sources of drinking water, Highway 1, the 180/400 Aquifer Subbasin, and the Monterey Subbasin, are shown as black, blue, and purple lines, respectively.

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Dear Mr. Peterson and Mr. Williams,

Thank you for taking the time to meet with us and our SGMA consultant EKI Environment & Water Inc. regarding Draft Chapter 6 (Water Budgets) of the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (180/400 Subbasin GSP) on June 19, 2019. This letter provides a written summary of our comments on Draft Chapter 6. These comments incorporate information discussed during our meeting and provide suggested draft language for inclusion in Chapter 6, based upon our discussions.

MAJOR COMMENTS

1. **Estimated Sustainable Yield Inconsistent with Sustainable Groundwater Management Act ('SGMA")**

The term "sustainable yield" is defined under Sustainable Groundwater Management Act (SGMA) as "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply <u>without causing an undesirable result.</u>"

Additionally, on Page 24 of Department of Water Resources' Best Management Practices for the Sustainable Management of Groundwater states the following:

> "[w]ater budget accounting information should directly support the estimate of sustainable yield for the basin and include an explanation of how the estimate of sustainable yield will allow the basin to be operated to avoid locally defined undesirable results. The explanation should include a discussion of the relationship or linkage between the estimated sustainable yield for the basin and local determination of the sustainable management criteria (sustainability goal, undesirable results, minimum thresholds, and measurable objectives)."

However, as discussed during our meeting, we understand that due to modeling limitations, data gaps, and uncertainties regarding future projects and management actions, the GSP will not attempt to estimate the "sustainable yield" of the 180/400 Subbasin, as defined under SGMA. Rather, the GSP will provide a gross estimate of the total current and future fresh groundwater inflows[1], in the absence of any additional groundwater augmentation project (defined herein as the "GSP Sustainable Yield"). The GSP Sustainable Yield effectively provides an "upper bound" on the sustainable yield of the basin (i.e., assuming no water is added to the basin), but it does not represent the actual amount of groundwater that can be extracted without creating undesirable results within the 180/400 Subbasin. The GSP Sustainable Yield will also not meet all of the sustainable management criteria identified in Chapter 8, and does not address inland gradients that will limit the Monterey Subbasins to achieve sustainability. For example, the information presented in Chapter 6 indicates that seawater intrusion will continue to occur under the identified sustainable yield, the management objective for seawater intrusion identified in Chapter 8 is the 500 milligrams per liter (mg/L) chloride contour at Highway 1.

We understand that SVBGSA intends to propose projects to halt seawater intrusion (e.g., groundwater extraction/injection barriers) and that such projects will affect the Sustainable Yield of the basin. Given that such projects will affect the sustainable yield, we understand that these values cannot be finalized before completing the project and management actions analyses, and selecting which projects will ultimately be implemented. As such we recommend that, the draft water budget chapter include additional language that stresses the difference between the estimated GSP Sustainable Yield and the quantity of groundwater that can be withdrawn without causing undesirable results and meeting sustainable management criteria.

We recommend that the following language be included:

The "sustainable yield estimate" presented in the draft Water Budget chapter does not consider all of the sustainability indicators or sustainable management criteria. As such, it is not equivalent to the quantity of groundwater that can be extracted without causing undesirable results. The plan for achieving sustainability in the basin will be addressed through projects and management actions, where SVBGSA will compare the projected and actual outcomes of project and management actions against sustainable management criteria and ultimately evaluate how much groundwater can be extracted, based upon the projects and management actions that are selected and implemented.

2. The 180/400 Subbasin GSP must not preclude the Monterey Subbasin from Achieving Sustainability

A summary of the historical, current, and future water budget calculations presented in Chapter 6 is included in Attachment A. As shown in Attachment A, net groundwater inflows from the Monterey Subbasin to the 180/400 Subbasin were assumed to be 3,000 acre-feet per year (AFY) in the historical and current water budgets, and estimated to be 5,500 to 6,200 AFY in the projected water budgets. The historical net groundwater inflow estimates appear to be based upon data collected from 1970 to 1994. Review of current data indicates that these values likely underestimate cross-boundary flows from the Monterey Subbasin, and likely do not include flows in the Deep Aquifer where inland gradients exist.

[1] These inflows represent the amount of groundwater that can be withdrawn without decreasing the overall groundwater storage in the basin.

As stated in our comments to draft Chapter 8, the 180/400 Subbasin GSP must address inland gradients and cross-boundary groundwater flows from the Monterey Subbasin into the 180/400 Subbasin. The GSP fails to mention that current and projected increases in groundwater extraction in the 180/400 Subbasin are being sustained, in part, by cross-boundary groundwater flows from the Monterey Subbasin, where seawater intrusion is already occurring. The GSP for the 180/400 Subbasin may not create conditions that preclude the Monterey Subbasin from reaching sustainability.

As stated in our comments to draft Chapter 8, unless alternative water supplies are provided by SVBGSA to the Monterey Subbasin, groundwater inflows to the Monterey Subbasin must be adequate to sustain groundwater extraction by Marina Coast Water District (MCWD) from its water production wells.

We recommend that the following language be added to the GSP*:*

Pursuant to GSP Regulation 350.4 (f), the 180/400 Subbasin GSP will consider the effects of its implementation on the adjacent Monterey Subbasin, and its ability to achieve and maintain sustainability.

> *"A Plan will be evaluated, and its implementation assessed, consistent with the objective that a basin be sustainably managed within 20 years of Plan implementation without adversely affecting the ability of an adjacent basin to implement its Plan or achieve and maintain its sustainability goal over the planning and implementation horizon."*

The Monterey and 180/400 Subbasins are hydraulically connected. Therefore, the sustainable yield and sustainable management criteria for the 180/400 Subbasin and the Monterey Subbasin must consider the effects of cross-boundary groundwater flows between subbasins and/or the provision of alternative water supplies. The Monterey Subbasin GSP will also include projects and management actions that could benefit both subbasins.

In addition, we recommend that the following information/language be added to the GSP regarding:

(a) the 1993 Fort Ord Annexation Agreement[2] and the 1996 Marina Lands Annexation Agreement[3]

(b) groundwater use by MCWD and others within the Monterey Subbasin.

1993 Fort Ord Annexation Agreement

Under the 1993 Fort Ord Annexation Agreement the MCWRA annexed the Fort Ord lands into Zones 2 and 2A and allocated to the Army 6,600 acre-feet per year of potable groundwater from the Salinas Valley Groundwater Basin. The Army paid an annexation fee of $7.4 million to be used by MCWRA to complete the design of the Castroville Seawater Intrusion Project (CSIP). In addition, the Army received a $400,000 credit for money spent on planning and information for the EIR/EIS for CSIP, the Salinas Valley Reclamation Project, and the Fort Ord Annexation. The September 10, 1993 "Annexation Assembly and Evaluation Report for the Annexation of Fort Ord by the Monterey County Water Resources Agency,"

[2] "Agreement between the United States of America and the Monterey County Water Resources Agency concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency, Agreement No. A-06404", dated September 21, 1993,

[3] "Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands" dated March 1996 (1996 Annexation Agreement), among the MCWRA, the Marina Coast Water District, J.G. Armstrong Family Members, RMC Lonestar (now CEMEX), and the City of Marina,

which was incorporated as Appendix D to the 1993 Annexation Agreement, provides the background and justification for the annexation. The Executive Summary to that report states in part the following:

> The purpose of this annexation by [MCWRA] is to provide the basis for a long term, reliable, potable water supply to supply the Army's residual mission at Fort Ord after it is realigned per the Base Closure and Realignment Act of 1990. Annexation will also facilitate the disposal and reuse of the portions of Fort Ord not needed to support the Army's residual mission.

Section 4, Terms and Conditions of the 1993 Annexation Agreement state the following:

> 4.c. After execution of this agreement and until Project Implementation[4], Fort Ord/POM Annex/RC may withdraw a maximum of 6,600 acre-feet of water per year from the Salinas Basin, provided no more than 5,200 acre-feet per year are withdrawn from the 180-foot aquifer and 400-foot aquifer. The 6,600 and 5,200 acre-feet thresholds correspond to the annual peak (1984) and recent average (1988-1992) amounts of potable water Fort Ord has withdrawn from the Salinas Basin (does not-include pumpage-from the-non-potable golf course well in the Seaside Basin). …The MCWRA agrees not to object to any Fort Ord/POM Annex/RC withdrawal under 6,600 acre-feet per year, except in compliance with California Water Code Appendix, Chapter 52, Section 22.
>
> 4.g. Should future litigation, regulation or other unforeseen action diminish the total water supply available to the MCWRA, the MCWRA agrees that it will consult with the Fort Ord/POM Annex Commander. Also, in such an event, the MCWRA agrees to exercise its powers in a manner such that Fort Ord/POM Annex/RC shall be no more severely affected in a proportional sense than the other members of the Zones.
>
> 4.h. If prior to Project Implementation, any Fort Ord/POM Annex well (including any located in the Seaside Basin) becomes contaminated with seawater, or is adversely affected by regulatory or legal action, the MCWRA: shall cooperate with the Government in finding an interim water supply; shall assist the Government in any permit processes necessary to obtain such an interim water supply; and shall provide the same services to the Government as it would to any other municipal water supplier in the Zones under similar circumstances. The Government will bear the costs of obtaining such an interim water supply. Such costs will not include the cost of MCWRA staff time in providing services to the Government hereunder. The MCWRA will continue to monitor the rate of seawater intrusion, and will keep the Fort Ord/POM Annex Commander informed as to: the rate of seawater intrusion; the progress of plans for its Project; and the estimated remaining life of the Fort Ord/POM Annex wells. The MCWRA shall pass to the Fort Ord/POM Annex Commander

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[4] As defined in paragraphs 2.j. and 2.k. of the Agreement:

> 2.j. Project: A future, long term, reliable, potable water system for the POM Annex/RC and other areas; the Project will provide at least 6,600 acre-feet per year which will permit all Salinas Basin wells on Fort Ord Lands to be shut down except during emergencies; stopping all pumping from the Salinas Basin on Fort Ord Lands is necessary to mitigate seawater intrusion; the MCWRA is currently developing such a Project to supply water to the Fort Ord Lands, Marina, Salinas, Toro Park, and perhaps other areas in north Monterey County; it is also possible that another water agency, district, utility, or purveyor could develop a smaller scale Project to supply water for just the Fort Ord Lands;
>
> 2.k. Project Implementation: The potable water system cited in paragraph 2.j. shall be considered "implemented" upon both the completion of construction and the deli very of potable water to POM Annex/RC from the completed water system;

> any information they may obtain related to the continuing yield of Fort Ord/POM Annex wells located in the Seaside Basin.

1996 Marina Lands Annexation Agreement

Under the 1996 Marina Lands Annexation agreement the MCWRA annexed MCWD's Central Marina service area into Zones 2 and 2A and allocated to MCWD 3,020 AFY from the Salinas Valley Groundwater Basin for use in the Central Marina service area. MCWD paid a net annexation fee of $2,449,410 after receiving a $400,000 credit against the annexation fee. Section 1.1, Purpose, of the 1996 Annexation Agreement states:

> The purpose of this Agreement and Framework is to help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin through voluntary commitments by the Parties to limit, conserve and manage the use of groundwater from the Salinas River groundwater basin, and to provide the terms and conditions for the annexation of certain territory in the Marina area to the [MCWRA's] benefit assessment Zones 2 and 2A as a financing mechanism providing additional revenues to the [MCWRA] to manage and protect the groundwater resource in the Salinas River Groundwater Basin and to reduce seawater intrusion.

Terms and conditions in Sections 5 and 8 of the Agreement states:

> 5.1.1 Commencing on the effective date of this Agreement and Framework and continuing until Mitigation Plan Implementation, MCWD will limit its withdrawal of potable groundwater from the Basin for land in the Marina area and outside the former Fort Ord Military Reservation to 3,020 afy of potable groundwater, and only such additional quantities as are permitted by this paragraph 5.1. MCWRA's groundwater resource planning for the existing MCWD service area will be based on the latest information and projections contained in the MCWD Water Plans, using 3,020 afy as a planning guideline for potable water use.
>
> 5.1.1.1 After Compliance with all applicable requirements of law, including but not limited to CEQA, MCWD may improve the interconnection between the MCWD water system and the water system serving Fort Ord, to provide for join, conjunctive and concurrent use of all system facilities to serve Fort Ord and other areas served by MCWD, and the other Parties will cooperate on MCWD's increased withdrawal of potable groundwater by up to 1,400 afy from the 900-foot aquifer to enable the increased withdrawals from 5200 afy to 6600 afy for use on Fort Ord, as provided in paragraph 4.c. of the September 1993 Agreement between the The United States of America and the MCWRA.
>
> 5.2. No objection by MCWRA to MCWD withdrawals except pursuant to section 22 of Agency Act. The MCWRA shall not object to any withdrawal by MCWD which is mentioned in section 5.1 above, except in compliance with section 22 of the Agency Act. All groundwater withdrawn from the Basin by MCWD may be used only within the Basin.
>
> 8.1. Equal treatment by MCWRA and MCWD. If future litigation, regulation or other unforeseen action diminishes the total water supply available to MCWRA, MCWRA agrees that it will exercise its powers so that MCWD, Armstrong and Lonestar shall be no more severely affected in a proportional sense than other lawful users of water from the Zones, based on the right before the imposition of any uniform and generally applicable restrictions as described in paragraph 8.2 to use

at least the quantities of water from the Basin described in paragraphs 5.1., 6.9., and 7.2. MCWRA shall not at any time seek to impose greater restrictions on water use from the Basin by MCWD, Armstrong or Lonestar than are imposed on users either supplying water for use or using water within the city limits of the City of Salinas. MCWD, Armstrong and Lonestar will comply with any basin-wide or area-wide water allocation plans established by the MCWRA which include MCWD, Armstrong and Lonestar, and which do not impose on use of water on the lands described in Exhibits "B", "C", and "D" restrictions greater than are imposed on users either supplying water for use or using water within the City of Salinas, and which satisfy the requirement of paragraph 5.2 of this Agreement and Framework.

G***roundwater Use by MCWD within the Monterey Subbasin for Fort Ord Lands and Marina Lands***

On October 23, 2001, the U.S. Government through the Secretary of the Army made an economic development conveyance by quitclaiming the following assets to FORA and the next day on October 24, 2001, FORA deeded those very same assets to MCWD: (1) all of Fort Ord's water and sewer infrastructure; (2) under the 1993 Fort Ord Annexation Agreement, 4,871 AFY of the Army's 6,600 AFY of MCWRA groundwater allocation with the Army reserving 1,729 AFY; and (3) 2.22 MGD of the Army's prepaid wastewater treatment capacity under the Army-MRWPCA Agreement. The Army and MCWD have a long-term water supply contract whereby MCWD is authorized to use the Army's reserved groundwater allocation to serve Federal activities within the former Fort Ord. Consequently, MCWD either owns or manages the 9,620 AFY of the MCWRA groundwater allocations for the benefit of both Fort Ord Lands and Marina Lands.

MCWD has produced 4,300 AFY of groundwater, on average, over the 15 years prior to the historic drought of 2014-2017. Approximately, 1,300 AFY has been produced from the lower 180-foot and 400-foot aquifers, and 2,000 AFY has been extracted from the deep aquifers. Total groundwater extraction from the Monterey Subbasin over the 5 years prior to the historical drought is estimated to be approximately 4,500 AFY on average[5]. Annual production by MCWD for the period between 2000 and 2018 are provided in Attachment B.

3. Uncertainty in Water Budget Estimate of Groundwater Inflow Components

As part of the groundwater inflow components of the water budget, three components entail percolation of water from the land surface down to groundwater, including Streamflow Percolation (Section 6.5.1), Deep Percolation of Precipitation (Section 6.5.2), and Deep Percolation of Excess Applied Irrigation (Section 6.5.3). The fourth source of groundwater inflows included in the groundwater budget is Subsurface Inflows from Adjacent Subbasins (Section 6.5.4), which come from the Forebay Subbasin and the Monterey Subbasin.

There appears to be significant uncertainty in the quantity of each of these inflows as evidenced by the variability in the estimate of deep percolation between the Historical (97,300 AFY) and Future Projected (148,000 to 153,000 AFY) water budgets (see Attachment A). Further, the conceptualization of sources of inflow to the groundwater system is at odds with the description of recharge sources in the Draft Chapter 4. Specifically, Chapter 4 (Section 4.4.3) describes recharge in the 180/400 Subbasin as follows:

[5] Estimated based on Public Water Systems Statistic Survey (i.e. Form 38) data obtained from the Department of Water Resources.

> "Although Figure 4-9 shows some areas of good potential recharge in the 180/400-Foot Aquifer Subbasin, recharge to the productive zones of the Subbasin is very limited because of the low permeability Salinas Valley Aquitard. It is unlikely that any significant surficial recharge in the 180/400-Foot Aquifer Subbasin reaches the productive 180-Foot Aquifer or the 400-Foot Aquifer."

The amount of recharge stated to occur from the deep percolation sources (97,300 AFY) far outweighs the amount coming from subsurface inflow (20,000 AFY total), which is inconsistent with the description of the recharge sources in Chapter 4.

We understand that there is insufficient information currently available to accurately assess these inflow components. As such, we recommend that the GSP acknowledge this uncertainty and identify it as a data gap. The GSP should provide a plan to further assess both deep percolation and other basin inflow components. Doing so may reveal significantly different recharge sources for the shallow unconfined aquifer system versus the deeper aquifer system which could have important management implications and be critical for evaluating the effectiveness of potential recharge projects.

4. Water budget Information Should be Developed for each Principal aquifer

Water budget information for each principal aquifer is necessary to verify that proposed future operations of the basin, including implementation of projects and management actions, will not lead to undesirable results in each principal aquifer. Seawater intrusion is occurring in both the 180 Foot Aquifer and the 400 Foot Aquifer, and inland gradients exist within the Deep Aquifer. In order to reach sustainability, hydraulic gradients in each of these aquifers will need to be reversed either through decreasing groundwater extraction and/or future supply augmentation projects. As such, water budgets for each aquifer must be established to verify that undesirable effects do not occur.

We understand that information related to groundwater extraction within individual aquifer zones is currently limited and that water budgets cannot be developed for each principal aquifer zone. As such, we recommend that the GSP acknowledge this uncertainty and identify it as a data gap. The GSP should provide a plan to further assess rates of extraction and inflows within principal aquifer zones so undesirable results, such as seawater intrusion can be mitigated. This information is critical, as achieving sustainability in the basin requires implementation of projects and management actions, which will need to be evaluated against sustainable management criteria in each principal aquifer.

5. Inclusion of "Baseline Condition" Projected Water Budget

Historic and projected water budgets presented in the GSP are summarized in attached Attachment A. As shown on this attachment, there is significant variability between groundwater inflow components estimated on the basis of historical versus projected future conditions. It is our understanding based upon our discussion, that this discrepancy is related to the method of analysis versus actual projected change in climate[6]. As such, we recommend that the GSP include a future water budget assuming historical "baseline hydrologic conditions" in addition to the 2030 and 2070 climate change scenarios. This information is critical to understanding how much climate change uncertainties affect the basin's projected sustainable

[6] Historical conditions are estimated on the basis of an analytical model and projected future water budgets are estimated utilizing the SVIHM Operational Model.

yield, given the significant differences in the methods of analysis and the dramatic increase in estimated deep percolation in future water budget, as discussed above.

Inclusion of this scenario is consistent with GSP Regulations 354.18, (c) (3), which state:

> "Projected water budgets shall be used to estimate future baseline conditions of supply, demand, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components. The projected water budget shall utilize the following methodologies and assumptions to estimate future baseline conditions concerning hydrology, water demand and surface water supply availability or reliability over the planning and implementation horizon:
>
> (A) Projected hydrology shall utilize 50 years of historical precipitation, evapotranspiration, and streamflow information as the baseline condition for estimating future hydrology. The projected hydrology information shall also be applied as the baseline condition used to evaluate future scenarios of hydrologic uncertainty associated with projections of climate change and sea level rise."

6. Qualification of Data Gaps and Uncertainty

It is understandable that a GSP due January 31, 2020, will have data gaps and will be subject to modeling limitations, which create uncertainty. The District understands that SVBGSA intends to prepare this GSP based on the current best available science and information, per the State policy of sustainable, local groundwater management (Water Code § 113). It is important that each data gap, the scope of the resulting uncertainty caused by the data gap specific to the decisions being made in this GSP, and the steps to close the data gap be identified in the GSP. MCWD will work with the SVBGSA to help close the data gaps for adaptive, sustainable management of the 180/400 and Monterey Subbasins.

OTHER COMMENTS AND QUESTIONS

Section 6.2

It appears that in the historical water budget, the surface water budget is limited to just the river channels (i.e., Salinas River, other tributaries, and agricultural drains). It seems that there should be a land surface balance, like there is in the SVIHM-based Projected Water Budget, that estimates precipitation and irrigation percolation based on evapotranspiration (ET) and land use.

Section 6.6.2

Riparian ET rates were described to be 20 AFY/acre per personal communications with Rhode, whose detailed information was not provided in the Chapter's references. The rates were then assumed to be 16 AFY/acre in the water budget calculation without further justification. Riparian ET rates should be better substantiated, especially since the resulting riparian ET values are significant compared to the average change in storage over the historical period.

In addition, it is unclear why riparian ET is considered as an outflow from groundwater, rather than from surface water.

Sections 6.8.4, 6.9, 6.10.5, 6.10.6 and associated tables

Estimated annual seawater water intrusion inflows and annual changes in storage are subtracted from total groundwater pumping to estimate the sustainable yield. This methodology is somewhat confusing to the reader, as it presumes that the change in storage is negative. To avoid confusion, we recommend that changes in storage and seawater intrusion be identified as negative in throughout the chapter, or further clarifying language be included. For example:

- Tables 6-20 and 6-31: We recommend that these tables show the change in storage and seawater intrusion as negative values.
- Table 6-22: A note should be added to Table 6-22 indicating that although seawater intrusion is identified as an inflow to quantify the overall basin water budget, it is not considered part of the sustainable yield.
- Tables 6-27 and 6-28: It is unclear why seawater intrusion is not shown as an inflow component on these tables, given that it is shown as an inflow component in Table 6-25. These tables should be made consistent and clarify that although seawater intrusion is an inflow, it is not considered part of the usable groundwater or sustainable yield.
- Section 6.10.5 and Table 6-30: We suggest clarifying that change in groundwater storage discussed here are decreases in groundwater storage.

Table 6-22

Table 6-22 shows a decrease of only 600 AFY, on average, of groundwater in storage based on water level declines during the "current period" (2015-2017). This implies no real decline in water levels – is that what is seen?

Sincerely,

Keith Van Der Maaten

General Manager, Marina Coast Water District

Attachment A: Summary of SVBGSA 180/400 Foot Aquifer Subbasin Draft Groundwater Budget Calculations

Attachment B: MCWD Groundwater Production by Aquifer, 2000 - 2018

Attachment A. Summary of SVBGSA 180/400 Foot Aquifer Subbasin Draft Groundwater Budget Calculations

Groundwater Budget in Average Years		Historical	Current (a) (Table 6-19)	Current (a) (Table 6-22)	Future	Future
	Budget Period	***1995-2014***	***2015-2017***	***2015-2017***	***2030***	***2070***
Streamflow Deep Percolation	I-1	73,300	31,100	NR	71,541	71,706
Precipitation Deep Percolation	I-2	12,300	11,600	NR	76,333	81,777
Irrigation Deep Percolation	I-3	11,700	4,500	NR	-	-
Subsurface Inflows	I-4	20,000	20,000	NR	30,411	31,706
Total Freshwater Inflow	**I = sum I-1 to I-4**	**117,200**	**67,200**	**67,100**	**178,285**	**185,189**
Pumping	O-1	108,300	109,300	NR	115,349 (b)	120,644 (b)
Riparian Evapotranspiration	O-2	12,000	12,000	NR	-	-
Drain Flows	O-3	-	-	-	7,100	8,024
Flow to Streams	O-4	-	-	-	1,833	1,921
Groundwater ET	O-5	-	-	-	35,127	36,652
Subsurface Outflows	O-6	9,500	3,200	NR	25,440	24,887
Total Freshwater Outflow	**O = sum O-1 to O-5**	**129,800**	**124,400**	**130,800**	**184,849**	**192,128**
Seawater Intrusion	SI	-10,500	-10,500	-10,500	-3,465	-3,852
Change in Storage	DS = DFS - SI	-2,100	-46,800	-53,200	-4,584	-4,653
Change in Freshwater Storage	**DFS = I - O**	**-12,600**	**-57,300**	**-63,700**	**-8,049**	**-8,505**
Sustainable Yield	SY = O-1 + SC	95,700	52,000	NR	107,300	112,139
Error (c)		*1%*	*NR*	*40%*	*1%*	*1%*
Net flow from Monterey (d)		*3,000*	*3,000*	*NR*	*5,502*	*6,208*

Notes:
- = Items not applicable to the specific calculation method
NR = not reported
(a) Values are reported differently on Tables 6-19 and 6-22.
(b) This summary shows values from Table 6-27 and after. Values are reported differently on Table 6-26 .
(c) Calculated as the water budget imbalance as a percentage of outflow. For the current water budget, change in storage estimated from water levels were -600 AFY compared to -53,200 AFY as estimated by balancing the water budget.
(d) Net subsurface flow from the Monterey Subbasin as assumed or estimated in the analyses.

Attachment B. MCWD Groundwater Production by Aquifer, 2000 - 2018

Year	Groundwater Production (AFY)		
	180-Foot and 400-Foot Aquifers	Deep Aquifer	Total
1999	2,396	2,021	4,417
2000	2,371	2,194	4,565
2001	2,228	2,150	4,378
2002	2,137	2,239	4,376
2003	2,144	2,162	4,306
2004	2,423	2,261	4,684
2005	1,994	2,194	4,188
2006	2,509	1,786	4,295
2007	2,941	1,622	4,563
2008	2,269	1,833	4,102
2009	2,076	1,962	4,038
2010	2,389	1,744	4,133
2011	2,348	1,698	4,047
2012	2,345	1,829	4,174
2013	2,420	2,011	4,431
2014	1,658	2,368	4,026
2015	1,258	1,970	3,228
2016	1,195	1,830	3,025
2017	1,159	2,079	3,239
2018	1,129	2,276	3,405
Pre-drought Average, 2000-2014	*2,283*	*2,004*	*4,287*

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24 May 2019

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Dear Mr. Peterson and Mr. Williams,

Thank you for taking the time to meet with us and our SGMA consultant EKI Environment & Water, Inc. The purpose of this letter is to:

(1) Summarize agreements reached regarding coordination with Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA) representatives during development of the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (180/400 Subbasin GSP); and
(2) Provide a written summary of MCWD GSA General comments on Draft Chapter 8 of the 180/400 Subbasin GSP.

COORDINATION WITH MCWD GSA

It was agreed that MCWD GSA and SVBGSA staff members and technical consultants would meet monthly to aid coordination efforts between these entities during the preparation of the SVBGSA 180/400 Subbasin GSP. The following schedule has been established for these meetings:

- Day: 2nd Thursday of every month
- Time: 10:30 a.m.
- Location: MCWD offices located at 11 Reservation Road, Marina, California

If GSA representatives and/or their consultants are unavailable, alternative arrangements may be made.

The purpose of these meetings will be to:

- Discuss 180/400 Subbasin GSP draft chapters that have been released, and
- discuss comments provided by MCWD GSA, and how and/or if they will be incorporated into the GSP.

This schedule has been established to allow MCWD representatives to review and provide draft comments to SVBGSA on draft chapters released to the Planning Committee at the beginning of each month, and allow for incorporation of such comments, to the extent they are agreed upon, prior to presentation of the Draft Chapter to the SVBGSA Board the following month.

GENERAL COMMENTS REGARDING 180/400 SUBBASIN GSP DRAFT CHAPTER 8: SUSTAINABLE MANAGEMENT CRITERIA

MCWD GSA concurs with draft saltwater intrusion sustainable management criteria (SMC) identified for the 180/400 Subbasin. These SMC are summarized in Table 1 below:

TABLE 1
180/400 Subbasin Sustainable Management Criteria for Seawater Intrusion

	180 Foot Aquifer	400 Foot Aquifer	Deep Aquifer
Minimum Threshold	500 mg/L chloride concentration isocontour as mapped by MCWRA[1] for 2017	500 mg/L chloride concentration isocontour as mapped by MCWRA for 2017	500 mg/L chloride concentration isocontour as defined by Highway 1.
Measurable Objective	Move 500 mg/L chloride concentration isocontour to Highway 1	Move 500 mg/L chloride concentration isocontour to Highway 1	500 mg/L chloride concentration isocontour as defined by Highway 1.
Undesirable Result	"On average in any one year there shall be no exceedances of any minimum threshold."	"On average in any one year there shall be no exceedances of any minimum threshold."	"On average in any one year there shall be no exceedances of any minimum threshold."

However, as discussed during our meeting, draft groundwater elevation SMC are not consistent with draft salt water intrusion SMC. Draft groundwater elevation SMC are below mean sea level and will maintain landward gradients that will exacerbate salt water intrusion in the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin. Based upon our discussion, it is our understanding that SVBGSA intends to propose projects that will address saltwater intrusion (e.g., extraction barrier and/or injection barriers). In order for such projects to achieve draft salt water intrusion SMC, seaward gradients within the 180 Foot Aquifer and 400 Foot Aquifer will need to be established. Although, there are several methods by which seaward gradients can be established, all of these methods will require modifications to the proposed water level SMC. For example, even if an extraction barrier is proposed, water level elevation SMC will need to be reduced near the ocean. Although SMC at individual monitoring wells may not yet be available, Chapter 8 should clearly articulate that currently identified SMC will not achieve the saltwater intrusion SMC and stop undesirable results, and will need to be updated on the basis of identified projects.

[1] Monterey County Water Resource Agency (MCWRA)

As currently presented, the groundwater elevation SMC will draw saltwater further inland. These groundwater elevation SMC will also eliminate any potential sustainable groundwater extraction within the Monterey Subbasin. Pursuant to GSP Regulation 350.4 (f), cited below, the 180/400 Subbasin GSP is required to consider the effects of its implementation on the adjacent Monterey Subbasin, and its ability to achieve and maintain sustainability.

> *"A Plan will be evaluated, and its implementation assessed, consistent with the objective that a basin be sustainably managed within 20 years of Plan implementation without adversely affecting the ability of an adjacent basin to implement its Plan or achieve and maintain its sustainability goal over the planning and implementation horizon."*

The Monterey and 180/400 Subbasins are hydraulically connected, therefore the SVBGSA SMC for the 180/400 Subbasin must address inland gradients and cross-boundary groundwater flows from the Monterey Subbasin into the 180/400 Foot Subbasin. Unless alternative water supplies are provided by SVBGSA, groundwater inflows to the Monterey Subbasin must be adequate to sustain groundwater extraction by MCWD from its water production wells at levels established under the 1996 Marina Area Lands Annexation Agreement (Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands dated March 1996), and the 1993 Fort Ord Annexation Agreement (Agreement concerning the Annexation of Fort Ord into Zones 2 and 2A of the MCWRA dated September 21, 1993)[2].

As such, cumulative freshwater cross-boundary flows into the Monterey Subbasin must be adequate to support production of 9,620 AFY from MCWD Wells without inducting inland gradients.

Groundwater modeling should be utilized to establish minimum thresholds for groundwater levels and hydraulic gradients within each aquifer zone to yield adequate cross-boundary flows between the 180/400 Subbasin and the Monterey Subbasin. Such modeling should incorporate the effects of projects proposed as part of the 180/400 Subbasin GSP. Modeling should be utilized to verify that these cross-boundary flows will allow MCWD to extract potable groundwater from its existing wells consistent with the 1996 and 1993 Annexation Agreements or that alternative water supplies will be provided to MCWD. The model should also consider groundwater use in the Corral de Tiera area, which is being managed by SVBGSA. Finally, an adequate groundwater monitoring network will need to be established along the 180/400 Subbasin and Monterey Subbasin boundary, to assess water levels and hydraulic gradients and verify that minimum thresholds and sustainability goals are being achieved and maintained.

MCWD GSA is willing to collaborate and discuss modeling results, potential distribution of groundwater extractions by aquifer, and anticipated projects in the Monterey Subbasin to assist with SVBGSA in developing a GSP that allows Sustainable Groundwater Management Act compliance in both basins.

---

[2] Under the 1996 Marina Area Lands Annexation Agreement, Monterey County Water Resources Agency (MCWRA) allocated 3,020 AFY of potable groundwater to MCWD. Under the 1993 Fort Ord Annexation, MCWRA allocated 6,600 AFY of potable groundwater to the Army. In 2000, the Army entered into an exclusive contract with MCWD to meet all potable water demands by the Army and the BLM within the former Fort Ord and authorized MCWD to use the Army's reserved groundwater allocation to meet those demands. In October 2001, the U.S. Army transferred to the Fort Ord Reuse Authority (FORA) and FORA in turn transferred to MCWD title to all of the Army's then existing water and sewer infrastructure and the 6,600 AFY of potable groundwater, except for 1,577 AFY reserved by the Army to meet Federal water demands within the former Fort Ord. In 2007, the California Department of Public Health granted MCWD's request to combine the Central Marina and Ord Community services areas into one combined water system permit. Consequently, MCWD owns or manages 9,620 AFY of potable groundwater allocations to serve its combined Central Marina and Ord Community service areas.

DEEP AQUIFER

No SMC are currently identified for the Deep Aquifer. We recognize that limited information is available for the Deep Aquifer and that much of it is proprietary. However, as noted in our comments on Chapter 5 of the GSP, cumulative hydrographs from existing monitoring wells should be presented and total rates of extraction from the deep zone identified. MCWRA's report entitled "2017 Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin" (2017 MCWRA Report")[3] states that there are 32 active productions wells and eight monitoring wells screened in the deep aquifers, and that MCWRA monitors groundwater levels at thirteen locations in the Deep Aquifers "with varying frequency", a majority of which are located in the 180/400 Foot Aquifer Subbasin. Figure 18 of the 2017 MCWRA Report identifies the general location of these wells and Figure 21 depicts average groundwater level changes in the Deep Aquifer from 1986 to 2016 (Attachment A).

Figure 21 shows that average groundwater levels in the Deep Aquifer gradually decreased between 1986 and 1997, rebounded after CSIP start-up in 1998, and have gradually decreased again over the past two decades. Hydrographs from the United States Geologic Survey ("USGS") Deep Aquifer nested Monitoring well (14501E24L02,03,04,05) in Marina[4], located along the coast of the Monterey Subbasin (Attachment B), also show that water level declines in the Deep Aquifer (Attachment B), particularly since 2015. This decline is consistent with increased production from the Deep Zone in the 180/400 foot Aquifer Subbasin. Deep Zone production rates are presented on Figure 23 of the 2017 MCWRA Report (Attachment A). Based upon this information, SMC should be established for the Deep Aquifer to stop further water level declines. Water levels in this aquifer are below sea level and declining; therefore, the potential for salt-water intrusion into this aquifer is increasing. Given that the Deep Aquifer provides the only source of potable water in salt-water intruded areas other than the Castroville Seawater Intrusion Project (CSIP), projects should be prioritized to provide alternative water supplies to these areas or management actions should be implemented to reduce withdrawals from the Deep Aquifer.

Sincerely,

Keith Van Der Maaten

General Manager, Marina Coast Water District

Attachment A: Selected Figures from 2017 MCWRA Report
Figure 18 – Wells in the Deep Aquifers
Figure 21 - Average Groundwater Level Changes in the Deep aquifers from 1986 to 2016
Figure 23 – Total Annual Groundwater Extractions from the Deep Aquifers in Zone 2A (1995 – 2016)

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[3] MCWRA, 2017. Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin" Special Reports Series 17-01, Dated October 2017.

[4] USGS, 2002. Geohydrology of a Deep-Aquifer System Monitoring Well Site at Marina, Monterey County, CA, Water Resources Investigations Report 02-4003 prepared by RT Hanson, Rhett R. Everett, Mark W. Newhouse, Steven M. Crawford, M. Isabel Pimentel, and Gregory A. Smith in cooperation with the MCWRA, dated 2002.

Attachment B: USGS, 2002. Geohydrology of a Deep-Aquifer System Monitoring Well Site at Marina, Monterey County, CA, Water Resources Investigations Report 02-4003
Figure 1 - Location of Deep Aquifer system Monitoring Well
Figure 2 – Well Construction and Lithology for the Deep Aquifer Monitoring Well

Attachment C: Water level data from USGS Monitoring Well (14501E24L02,03,04,05)

Attachment A

Selected Figures from 2017 MCWRA Report (Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin" Special Reports Series 17-01, Dated October 2017).

Figure 18 – Wells in the Deep Aquifers

Figure 21 - Average Groundwater Level Changes in the Deep aquifers from 1986 to 2016

Figure 23 – Total Annual Groundwater Extractions from the Deep Aquifers in Zone 2A (1995 – 2016)

5.2.4 Wells in the Deep Aquifers

The use of the Deep Aquifers for groundwater production has been driven by the need to drill deeper in order to avoid seawater intrusion, with wells being installed to subsequently deeper elevations with fresh-water-bearing materials (Feeney and Rosenberg, 2003). Most available hydrogeologic data on the Deep Aquifers have been obtained through well drilling activities and related well or aquifer testing rather than through an intentional aquifer-wide study. Wells of all types have been installed in the Deep Aquifers, including production wells for agricultural purposes; domestic, industrial, and municipal water supply wells; and monitoring wells.

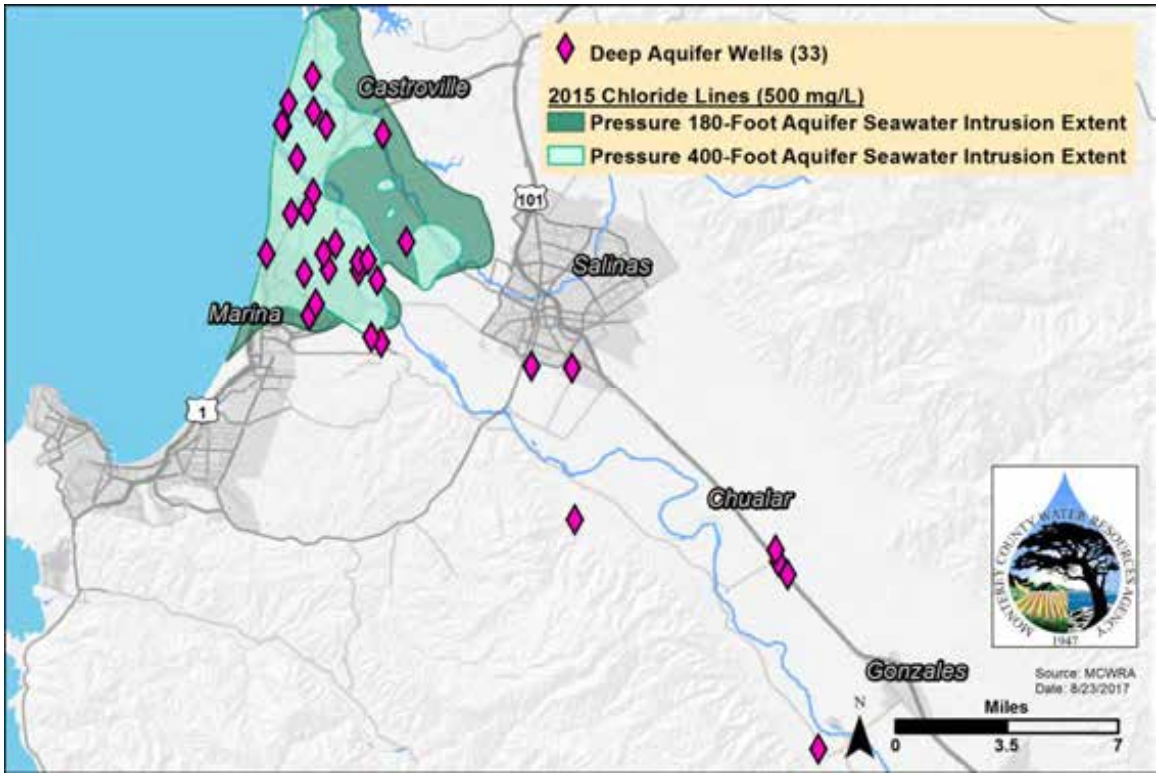


Figure 18- Wells in the Deep Aquifers

5.2.5 Well Installation History in the Deep Aquifers

The first production well in the Deep Aquifers was installed in 1974. As of August 1, 2017, a total of 41 wells have been installed in the Deep Aquifers: 33 production wells and 8 monitoring wells (Figure 19). One of the production wells was destroyed in 2004, so 40 wells remain in the Deep Aquifers at present. Of the 32 existing production wells, 18 are agricultural wells, 7 are municipal wells, 3 are residential wells, 3 are industrial wells, and one has an unknown usage.

Well Completion Reports for wells in the Deep Aquifers are provided in Appendix E and a table detailing installation dates, depths, and well types for the Deep Aquifers can be found in Appendix F.

the Deep Aquifers rapidly increased and then leveled off until approximately 2006, when groundwater levels began to decline once again (Figure 21).

To date, seawater intrusion has not been documented in the Deep Aquifers, even though groundwater levels in the Deep Aquifers are consistently below sea level. This lack of seawater intrusion in the Deep Aquifers may be due, at least in part, to the geologic setting (Feeney and Rosenberg, 2003).

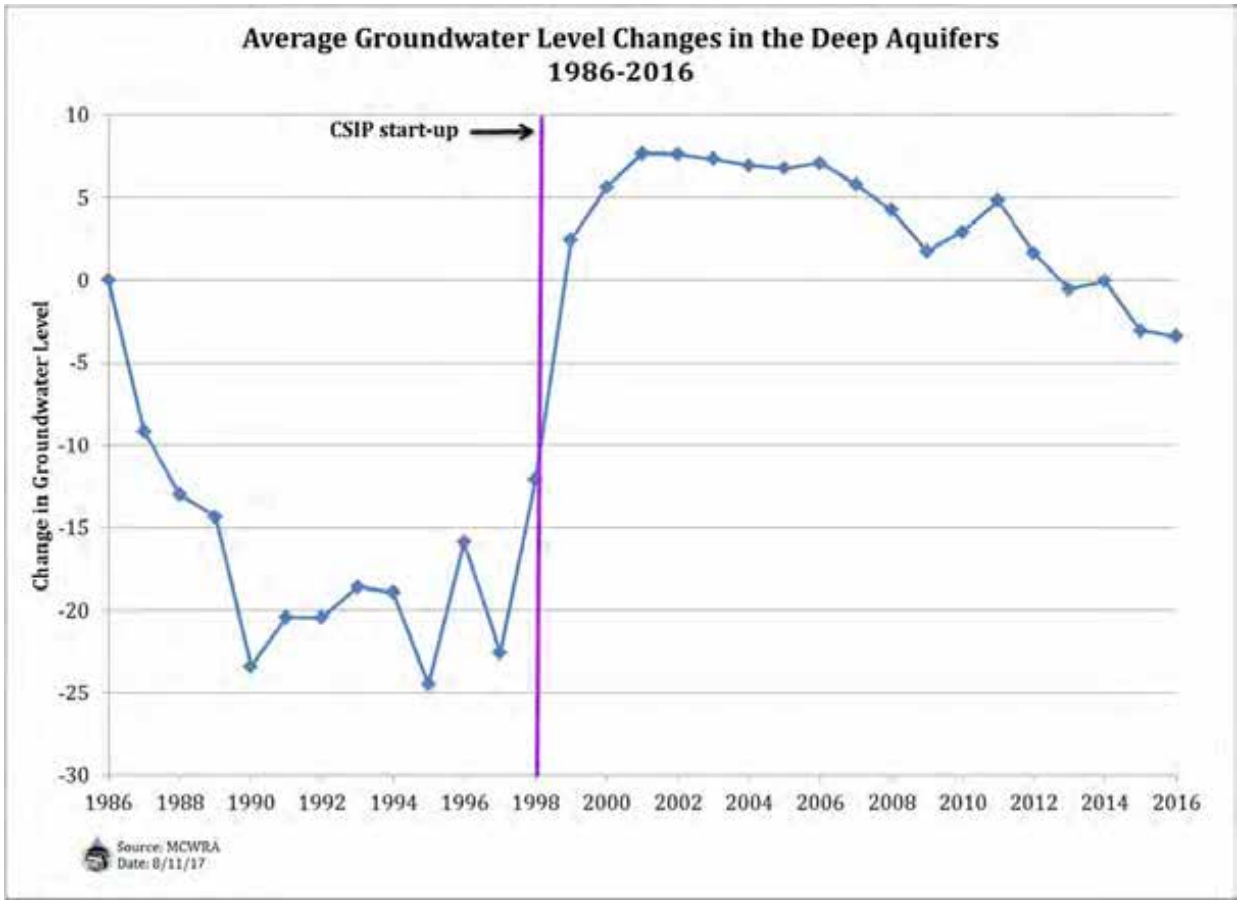


Figure 21 - Average Groundwater Level Changes in the Deep Aquifers (1986-2016)

5.2.8 Groundwater Quality in the Deep Aquifers

Water quality in the Deep Aquifers has been monitored by the Agency since 1976. Data are collected during two sampling events that occur annually in the summer. Samples are collected from seventeen wells in the Deep Aquifers and analyzed for major cations and anions.

Native groundwater in the Deep Aquifers has a distinct character, with a higher pH than groundwater in the overlying aquifers, relatively low calcium and high sodium concentrations, and an elevated temperature. The Piper diagram in Figure 22 illustrates the similarities in the chemical compositions of native groundwater in the Pressure 180-Foot and Pressure 400-Foot Aquifers

5.2.9 Extraction from Wells in the Deep Aquifers

The Agency receives data on groundwater extractions from wells in the Deep Aquifers as part of its Groundwater Extraction Management System (GEMS) program. These data, which exist from 1993 to present, indicate that groundwater pumping in the Deep Aquifers decreased for a short period following startup of CSIP in 1998 (Figure 23). However, since 2002, total annual pumping from the Deep Aquifers has been generally increasing as more wells are installed. Total annual extractions from the Deep Aquifers, for the period 1995 through 2016, range from 2,151 acre-feet (in 1999) to 8,901 acre-feet (in 2016).

Groundwater pumping from wells in the Deep Aquifers is thought to be supported primarily by leakage from the overlying aquifer system, i.e. the Pressure 180-Foot Aquifer and Pressure 400-Foot Aquifer (Feeney and Rosenberg, 2003). Some groundwater pumping is derived from depletion of groundwater storage, but hydraulic properties of the Deep Aquifers (specifically storage coefficients) suggest that while some groundwater may come from storage immediately following the onset of pumping a well, very little groundwater can be removed from storage over time. Therefore, increases in groundwater pumping in the Deep Aquifers will likely be supported by increased leakage from the overlying aquifers (Feeney and Rosenberg, 2003).

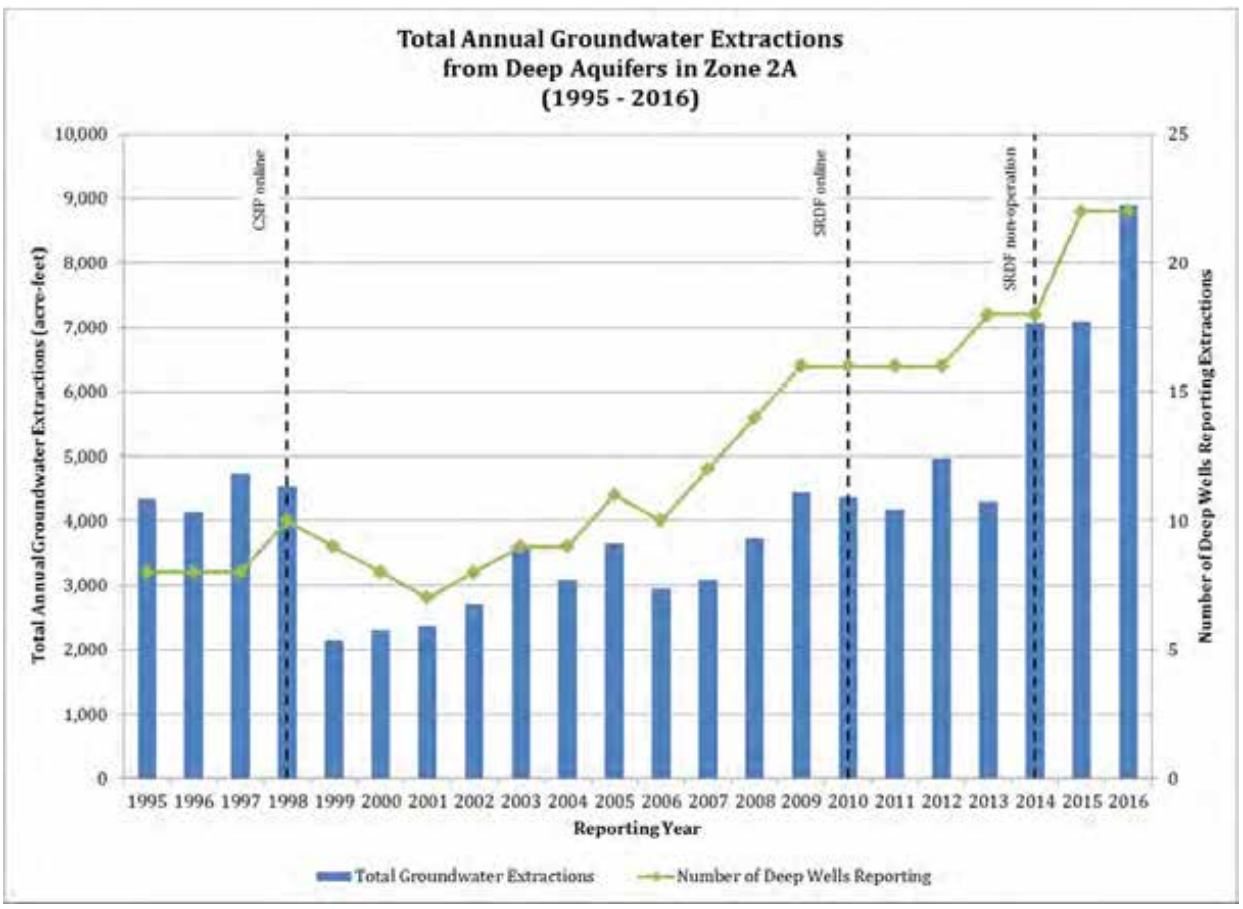


Figure 23 - Total Annual Groundwater Extractions from Deep Aquifers in Zone 2A (1995-2016)

Attachment B

USGS, 2002. Geohydrology of a Deep-Aquifer System Monitoring Well Site at Marina, Monterey County, CA, Water Resources Investigations Report 02-4003

Figure 1 - Location of Deep Aquifer system Monitoring Well
Figure 3 – Well Construction and Lithology for the Deep Aquifer Monitoring Well

Figure 1. Location of deep-aquifer system monitoring-well site in the Salinas Valley at Marina, California.

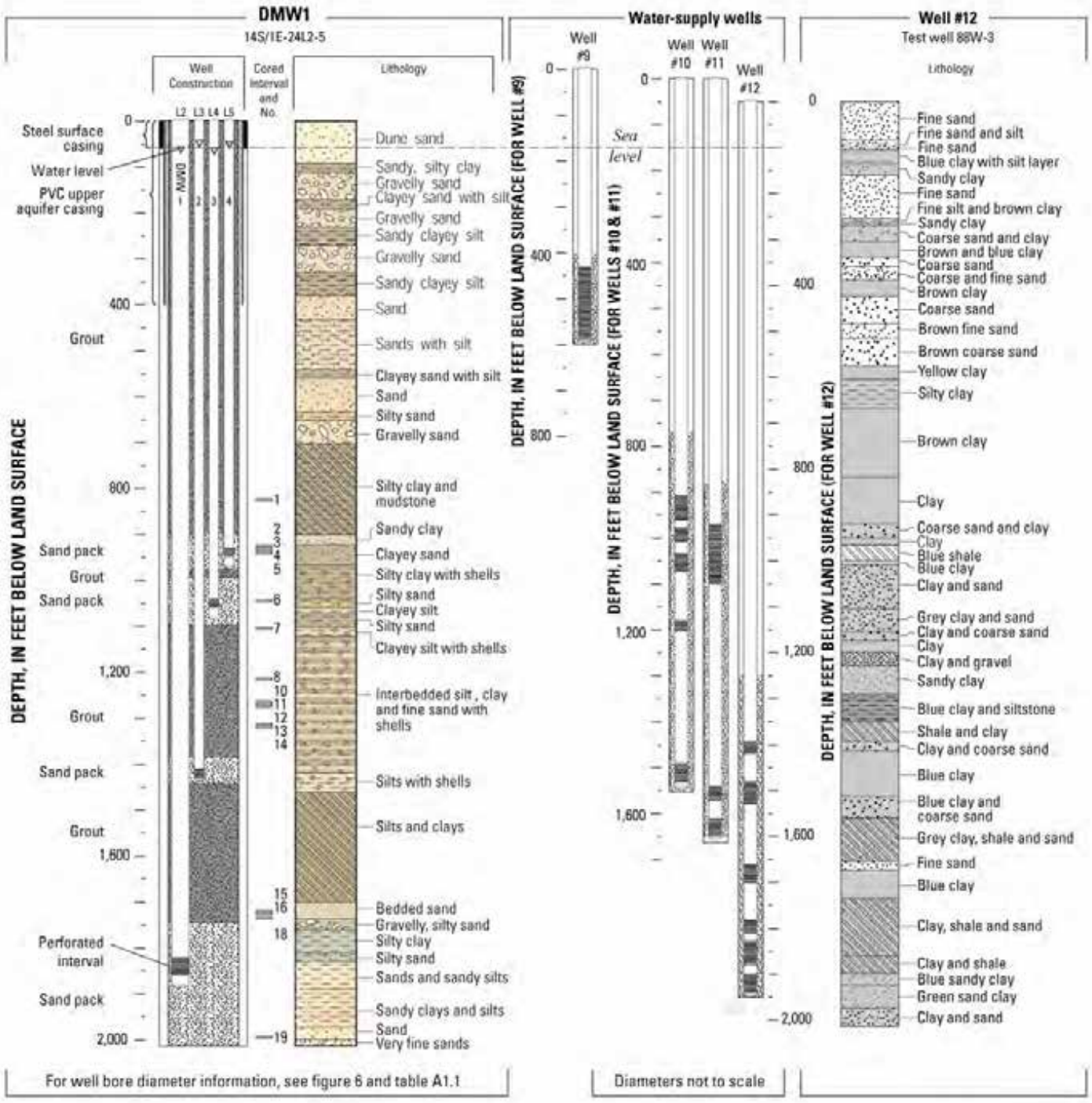
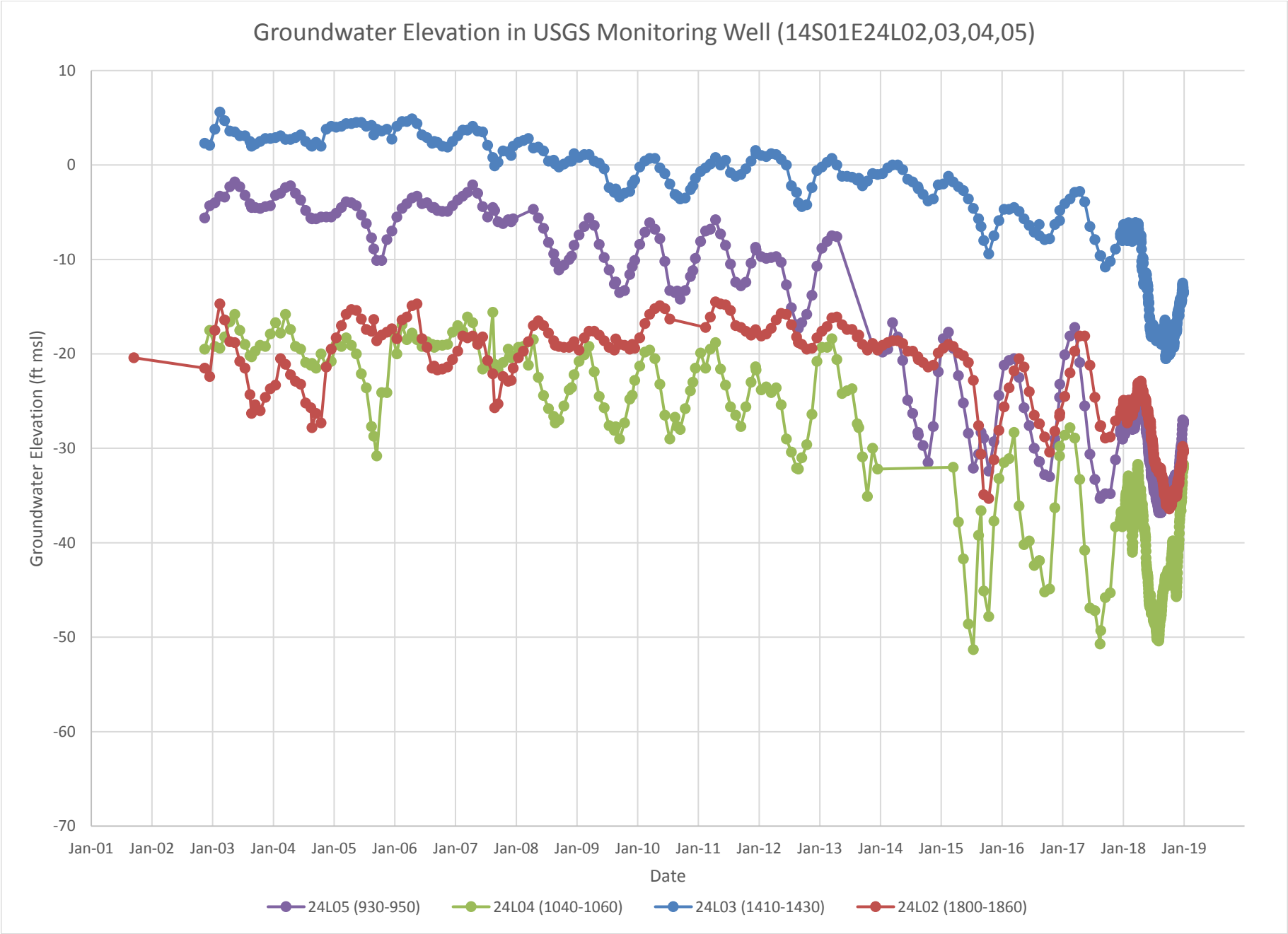


Figure 3. Well construction and lithology for the deep-aquifer monitoring well and selected nearby water-supply wells, Marina, California.

Attachment C

Water Level Data from USGS Monitoring Well (14501E24L02,03,04,05)


Groundwater Elevation in USGS Monitoring Well (14S01E24L02,03,04,05)
Groundwater Elevation (ft msl)
10
0
-10
-20
-30
-40
-50
-60
-70
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Date
24L05 (930-950)
24L04 (1040-1060)
24L03 (1410-1430)
24L02 (1800-1860)

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Dear Mr. Peterson and Mr. Williams,

Thank you for taking the time to meet with us and our SGMA consultant EKI Environment & Water, Inc. regarding Draft Chapter 9 (Projects and Management Actions) of the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (180/400 Subbasin GSP) on 10 July 2019. Based upon further review of Draft Chapter 9, we have expanded our comments beyond those discussed during the meeting. This letter provides MCWD GSA's initial comments on Draft Chapter 9. We realize that the actions and projects described in Chapter 9 will be refined and new actions and projects added through an iterative process involving all of the stakeholders.

1. Pumping Allowance (Section 9.2.2)

As written, the document implies that municipalities may not receive a sustainable pumping allowance and will need to pay more than agricultural users to pump their base amount. Municipal water purveyors, such as MCWD, have acquired appropriative rights through pumping, which pumping has prescripted against overlying rights. The GSP needs to provide that MCWD's MCWRA groundwater allocations are the sustainable pumping allowances for Fort Ord Lands and Marina Area Lands pursuant to the annexation agreements described below.

<u>1993 Fort Ord Lands Annexation Agreement</u>: On September 21, 1993, the U.S Government, as represented by the U.S. Army, entered into the Agreement between the United States of America and the Monterey County Water Resources Agency concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency (1993 Annexation Agreement). The annexed Fort Ord Lands consisted of all lands within the then existing boundaries of Fort Ord, which included all of the lands that were later transferred to the Fort Ord Reuse Authority. MCWRA allocated 6,600 AFY of groundwater within the then defined Salinas Basin for use within the Fort Ord Lands and recognized withdrawals from the Seaside Basin by Fort Ord of 424 AFY. In consideration for the annexation, the U.S. Government paid MCWRA an annexation fee of $7,400,000. Federal lands were exempt from Zone 2 and 2A assessments, but lands transferred for non-Federal uses, such as for Base Reuse, were required to pay those assessments.

The MCWRA Backstop: Section 4g stated, "Should future litigation, regulation or other unforeseen action diminish the total water supply available to the MCWRA, the MCWRA agrees that it will consult with the Fort Ord/POM Annex Commander. Also, in such an event, the MCWRA agrees to exercise its powers in a manner such that Fort Ord/POM Annex/RC shall be no more severely affected in a proportional sense than the other members of the Zone."

Section 4i recognized that the Federal Government was "considering transferring the ownership and operation of the Fort Ord wells and water distribution system to a successor water purveyor, utility, or agency. Under such a transfer, the MCWRA agrees that the ***Government, in its sole discretion, may transfer its applicable water rights under this agreement to the successor water purveyor, utility, or agency***." [Emphasis added.] By quitclaim deed dated October 23, 2001, the Federal Government transferred all of the Government's ownership in the Fort Ord water system infrastructure and 4,871 AFY of 6,600 AFY of groundwater under the 1993 Annexation Agreement to the Fort Ord Reuse Authority (FORA). On October 24, 2001, FORA in turn quitclaimed all of that infrastructure and the 4,871 AFY of groundwater to MCWD.

MCWD intends to use the 4,871 AFY of groundwater to provide water service to those jurisdictions within MCWD's Ord Community Service Area, which are entitled to water service under those rights pursuant to the Fort Ord Base Reuse Plan.

1996 Marina Area Lands Annexation Agreement: In March 1996, the Monterey County Water Resources Agency, MCWD, the J.G. Armstrong Family Members, RMC Lonestar (now CEMEX), and the City of Marina entered into the Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands. Section 1.1 states,

> "The purpose of this Agreement and Framework is to help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin through voluntary commitments by the Parties to limit, conserve and manage the use of groundwater from the Salinas River groundwater basin, and to provide the terms and conditions for the annexation of certain territory in the Marina area to the Monterey County Water Resources Agency's benefit assessment Zones 2 and 2A as a financing mechanism providing additional revenues to the Monterey County Water Resources Agency to manage and protect the groundwater resources in the Salinas River Groundwater Basin and to reduce seawater intrusion."

The agreement provided for a potable groundwater allocation of 3,020 AFY for use by MCWD for its Central Marina service area. The agreement also provided for 920 AFY for non-agricultural use on the Armstrong Ranch upon annexation to Zones 2 and 2A. Under the 1996 Annexation Agreement, Lonestar agreed to limit its overlying groundwater right to not more than its historic use of 500 AFY of non-potable water on the overlying CEMEX property in exchange for MCWRA agreement on specified annexation fees when Lonestar requested annexation to the Zones.

The 1996 Annexation Agreement established "a contractual process for the exercise of regulatory authority by the MCWRA under Water Code App. Section 52-22, and the MCWD under Water Code section 31048." (MCWRA Negative Declaration re: Annexation of Marina Area Lands to Zones 2/2A, dated February 21, 1996, at p. 4.)

The 1996 Annexation Agreement (Sec. 5.9) required MCWD to pay a $2,849,410 annexation fee to MCWRA less a credit of $400,000. Standby charges and assessments were then levied and collected by the MCWRA on an annual basis on all Marina Area Lands. Section 8.4, Use of Annexation Fees, states,

"Annexation fees from the MCWD service area, the Armstrong Ranch and the Lonestar Property shall be used by MCWRA to pay the costs of a BMP [Salinas River Basin Management Plan] process that includes mitigation plans for the Marina Area based on the planning guidelines contained in this Agreement and Framework. Such annexation fees shall also be used for management and protection of the '900-foot aquifer.'"

In 2003, Zones 2 and 2A were replaced by a new Zone 2C to collect assessments for the operation and maintenance of Nacimiento and San Antonio Dams to reduce flooding impacts on the Salinas River and provide water conservation with consideration given to recreation, and for dam administration, Salinas River Channel maintenance, construction of the Salinas River Diversion Facility (rubber dam), and cloud seeding.

The Fort Ord Lands and the Marina Area Lands have yet to receive any direct benefits from the Nacimiento and San Antonio Reservoirs.

<u>MCWRA's Obligation to Protect the Deep Aquifer for MCWD's Use</u>: Section 5.3, Management of 900-foot aquifer, provides, "The Parties agree that the '900-foot' aquifer should be managed to provide safe, sustained use of the water resource, and to preserve to MCWD the continued availability of water from the '900-foot' aquifer." Section 5.9 further stated that the annexation fees paid by MCWD "shall also be used for management protection of the '900-foot aquifer.'"

Section 8.1, Equal treatment by MCWRA and MCWD, provides in part, "MCWRA shall not at any time seek to impose greater restrictions on water use from the Basin by MCWD, Armstrong or Lonestar than are imposed on users either supplying water for the use or using water within the city limits of the City of Salinas."

For the above reasons, the SVBGSA needs to assign as the sustainable pumping allowances for Fort Ord Lands and Marina Area Lands the groundwater allowances provided in the 1993 and 1996 Annexation Agreements.

As agreed upon during our meeting, the GSP should state that the appropriative and prescriptive groundwater rights of municipal water purveyors, previous water management agreements with the MCWRA, as well as previous payments to zones of benefit will be considered in the development of sustainable allowances for municipalities.

2. Water Charges Framework (Section 9.2)

The water charges framework outlined in Section 9.2 states that:

> *A similarly structured water charges framework will be implemented in all Salinas Valley subbasins in Monterey County. However, details such as pumping allowance quantities, pumping fees, and tier structures will be different for each subbasin. These differences will reflect the fact that each subbasin's water charges framework is based on the specific hydrogeology and conditions of that subbasin.*

> *Sustainable Pumping Allowances are a base amount of groundwater pumping assigned to each non-exempt groundwater pumper. The sum of all sustainable pumping allowances is the sustainable yield of the subbasin after all projects have been implemented.*

The sustainable pumping allowances cannot be tied to "sustainable yield of the subbasin after all projects have been implemented", because some projects will have more localized benefits and/or losses to certain subbasins versus others. For example, if water is recharged or extracted from a given subbasin as part of a large-scale basin-wide project, that project will significantly impact the sustainable yield of that subbasin. Therefore, SVBGSA could effectively determine the sustainable yield of a subbasin depending upon which projects are implemented. Further, given existing inland cross boundary flows, subbasins such as the Monterey Subbasin, could be allocated no sustainable yield. We recommend that SVBGSA consider using some estimate of the "natural safe yield" within each subbasin (i.e. pre-groundwater extraction) to determine the sustainable pumping allowance for each basin. This methodology has been used in multiple adjudications throughout California and is being utilized as part of SGMA within the Kern Subbasin.

3. Management Actions, Projects, and Alternative Projects (collectively, Actions/Projects); Replenishment Water

It is universally agreed that a major key to achieving groundwater sustainability within an overdrafted subbasin is Replenishment Water to the extent Replenishment Water can be made available.

It is recommended that the primary objectives of the Actions/Projects should be:

(1) Provide Replenishment Water to North County in substitution for groundwater. For example, a 10% substitution by 2030 and a 25% substitution by 2040.

(2) Repeal seawater intrusion – a mission that the MCWRA has had since the 1940's.

The Chapter 9 list of Actions/Projects are a good start. However, there are combinations of Actions/Projects that appear to produce greater synergy, i.e., Actions/Project when implemented in combination appear to be more water-efficient and cost-effective in reducing undesirable results and producing Replenishment Water for use within the 180/400 Foot Aquifer Subbasin with benefits for the Monterey, Eastside, and potentially Seaside Subbasins. In other words, synergistic combinations of Actions/Projects, consisting of Chapter 9 and other projects, could produce "more bang for the buck." The "bang" is producing and delivering Replenishment Water and reducing undesirable results.

Draft Chapter 9 mentions implementing combinations of Actions/Projects. The following are first cut, suggested combinations of Actions/Projects for consideration for inclusion in Chapter 9:

3.1. Direct Replenishment Water - Actions/Projects #1: The following are suggested combinations of Actions/Projects to reduce groundwater pumping in the 180/400 Foot Aquifer Subbasin by the direct use of recycled water and surplus Salinas River water during the irrigation season (Direct Replenishment Water):

- MA2: Reservoir Reoperation
- PP1: Invasive Species Eradication
- PP2: Optimize CSIP Operations

- PP3: Improve SRDF Diversion (including installing Radial Collectors to increase ability to divert more water when water is available)
- PP5: Expand Area Served by CSIP
- PP6: 11043 Diversion Facilities
- PP5: Expand Area Served by CSIP

The Salinas Valley has evolved over time to become dependent upon groundwater for approximately 95% of the water use within the Salinas Valley and upon the Salinas River and the Nacimiento and San Antonio Reservoirs to provide river flows to seep into the groundwater aquifers for recharge and not for direct irrigation and municipal and industrial uses. As stated in MA2, that type of operation mostly benefits the Upper Valley and Forebay Subbasins, which are closest to the reservoirs, and with little benefits to either the East Side (subbasin with the highest CASEGEM score) or the Critically Overdrafted 180/400 Foot Aquifer Subbasins, yet all non-Federal landowners within the Pressure Zone pay benefit assessments to the MCWRA for Nacimiento and San Antonio Reservoirs.

Salinas River water operations to provide seepage flows for groundwater recharge is diametrically different from water operations in the Sacramento Valley and the North San Joaquin Valley where direct delivery of surface water for irrigation is the core agricultural water source for farms within agricultural water districts. For example, within the Modesto Subbasin and Turlock Subbasin, the Modesto, Turlock, and Oakdale Irrigation Districts in average water years will divert approximately 1,000,000 AF of Tuolumne and Stanislaus River water for delivery to their farmers. MCWD's general counsel Griffith & Masuda is also general counsel to the Turlock Irrigation District.

The synergy of Reservoir Reoperation, Invasive Species Eradication, Improve SRDF Diversion, and 11043 Diversion Facilities could efficiently and effectively provide additional river Replenishment Water for the 180/400 Foot Aquifer Subbasin thereby reducing pumping and assisting in halting seawater intrusion without reducing benefits to the Upper Valley and Forebay Subbasins.

Section 9.4.4.7, Preferred Project 6: 11043 Diversion Facilities, incorrectly states that diversions under this permit can only occur at the two diversion locations (near Soledad (within Forebay Aquifer) and Chualar) identified in the original July 11, 1949 Water Rights Application 13225. Points of diversions under a permit can be changed or a new point of diversion added with the filing of a change petition pursuant to Water Code Sections 1701.2, et seq. MCWRA's Amended Water Rights License 7543, Amended License 12624, and Amended Permit 21089 already designate the SRDF Diversion as an authorized point of rediversion. Those licenses and permits were amended to comply with the NMFS' Biological Opinion. Therefore, water stored under those water rights is already authorized to be diverted at the SRDF. The Reservoir Reoperation Management Action already has the stated goal of operating the two reservoirs so as to "Allow both natural and surplus flows to better reach the SRDF diversion." Adding the SRDF as an additional point of diversion under Permit 11043 would conform that permit with the authorized points of redivision in MCWRA's other water rights licenses and permit and comply with the Biological Opinion. As the result of the SWRCB's action to revoke Permit 11043, under new permit terms granted by the SWRCB on September 18, 2013, the MCWRA has submitted a petition for an extension of time to put the water under the permit to beneficial use. A petition to add a new point of diversion could be added to that petition.

3.2. Indirect Replenishment Water - Actions/Projects #2: The following are the Actions/Projects that would use winter treated sewer flows and winter Salinas River flows for groundwater recharge to be later extracted for agricultural and municipal uses:

- PP3: Improve SRDF Diversion
- PP6: 11043 Diversion Facilities
- PP5: Expand Area Served by CSIP
- AP2: Winter Potable Reuse Water Injection
- AP3: Extract Winter Flows Using Radial Collector(s) and Inject into 180- and 400-Foot Aquifers
- AP5: Use the Upper Portion of the 180/400 Foot Aquifer Subbasin for Seasonal Storage

These are complementary projects to Actions/Projects #1. This synergy of these Actions/Projects is to use winter water, e.g., treated sewer flows and winter Salinas River flows, for groundwater recharge during the winter and to later extract that water for delivery in the summer. Any water to be injected must be treated. MCWD has performed a feasibility study on constructing a water treatment plant and spreading basins at its Armstrong Ranch property near the SRDF. That study will be made available to the SVBGSA. Treated water could also be conveyed north across the river to the Castroville area.

3.3. Seawater Intrusion/Replenishment Water - Actions/Projects #3: The following are suggested combinations of Actions/Projects to stop and reverse seawater intrusion and to produce Replenishment Water:

- PP8: Seawater Intrusion Pumping Barrier
- AP1: Desalinate water from the Seawater Barrier Extraction Wells

Combined Projects PP8 and AP1 are discussed in detail in Section 4 below.

3.4. Regulatory - Actions/Projects #4: The following are the regulatory Actions/Projects listed in Chapter 9:

- MA1: Agricultural Land and Pumping Allowance Retirement
- MA3: Restrict Pumping in CSIP Area
- MA4: Support and Strengthen MCWRA Restrictions on Additional Wells in the Deep Aquifer

MA1 is a "willing seller, willing buyer" program, which MCWD GSA can support. Proposed MA3 as described is to prevent all agricultural pumping in the CSIP Area. We would observe that during the 25% driest water years, some agricultural pumping may very well be necessary. Formation of pump improvement districts or private community pumps for designated areas within CSIP could be considered for use during the driest water years. MCWD GSA comments on MA4 is in Section 5 below.

4. **Combined Seawater Intrusion Pumping Barrier (PP8) with Desalinate Water from the Seawater Barrier Extraction Wells (with or without reinjection) (AP1) Project**.

a. **Combined Project Description from draft Chapter 9**:

Chapter 9 describes the combined project as follows:

[PP8] Seawater intrusion will be arrested using a pumping barrier along the coast. The barrier will be approximately 8.5 miles in length between Castroville and Marina. The intrusion barrier comprises 22 extraction wells; although this number may change as the project is refined. Supplemental water to replace the extracted water would come from one or a number of other sources such as those identified in Preferred Project 3 or Alternative Projects 1, 2, 4, and 5.

* * * Alternatively, the extracted water or a portion thereof could be conveyed to a new or existing desalination facility where it can be treated for potable and/or agricultural use. The water extracted from these wells will be brackish due to historical seawater intrusion, therefore, the extraction will serve to remove the brackish water and allow replacement for fresh water from other sources, most likely a combination of desalinated water, excess surface water from the Salinas River, and/or purified recycled water.

* * * The project will stop and reverse seawater intrusion, helping to remediate and restore the 180/400-foot aquifer subbasin.

* * * [AP1] This project would treat water extracted from the seawater intrusion barrier and allow for its reinjection in the 180-Foot Aquifer and 400-Foot Aquifer.

Injection barriers are the most common method employed to halt seawater intrusion. Injection barriers have been used in Southern California basins to control saltwater intrusion for over 30 years. They are the most common, technically demonstrated method employed to stop seawater intrusion around the world. But they add another layer of costs and infrastructure.

A pure extraction barrier project with no reinjection of treated water, with similar groundwater hydrology to North County, may not exist. Alameda County Water District's Newark Desalination Facility could be studied to determine if it can possibly be used as a model for the Pumping Barrier. ACWD's Desalination Facility is part of ACWD's Aquifer Reclamation Program which began in 1974 with the goal of reclaiming those portions of the Niles Cone Groundwater Basin affected by saltwater intrusion from San Francisco Bay in the early 20th century. The District pumps brackish water from the groundwater basin so that freshwater from other parts of the basin can move in to take its place. A key component of this project has been the addition of replenishment water to the basin, which brought mean water levels above sea level prior to the initiation of extraction. Since 2003, brackish water which was once allowed to flow back into San Francisco Bay is now diverted to the Desalination Facility so that it can be put to beneficial use in the Tri-City area.

b. **Project Phasing**:

There is a lot of uncertainty relating to costs, who pays, where are the optimum locations for the extraction wells, and whether an injection barrier would also be needed as envisioned in AP1. It is suggested that the combined project be broken up into possibly 4 phases with each phase consisting of 4 to 6 extraction wells and a modular brackish water desalination plant with the 1st Phase starting at the northern end of the 180/400-Foot Aquifer Subbasin.

A study would be performed during 2020 and 2021 to determine the specific depths, locations, spacing and rates of extraction of the brackish water extraction wells to make the project most effective, and to assess, among other things, (1) the effectiveness of these wells to halt salt-water intrusion, (2) evaluate other potential subbasin impacts, and (3) the best location for the brackish water desalination plant.

A majority of the project area has been the subject of intense hydrogeological study within the last decade and most recently the focus of a high-quality Airborne Electromagnetic (AEM) survey (data-collection effort) that has generated valuable information about subsurface conditions over a significant section of the coastline and inland areas and is available for use in project design and implementation. MCWD conducted its first AEM overflight in May 2017 (AEM 1.0) and its second in April 2019 (AEM 2.0). Both AEM studies covered the North County area and should be used to focus well locations and well design that would target the main pathways of seawater intrusion into and within the multi-aquifer system of the 180/400 Foot Aquifer Subbasin. The use of this technology has grown to be an effective tool in California as shown by other AEM studies that have been conducted in Tulare County, Eastern Kern County, and Butte and Glenn Counties.

The MCWD GSA plans to request Proposition 68 funding to facilitate the development of a numerical model that can account for variable density of seawater and fresh water to further evaluate the Pumping Barrier project. The modeling will be utilized to evaluate the potential effects of the barrier on groundwater flow within the Monterey Subbasin. The model will be used to evaluate alternative well spacing and design within the Monterey Subbasin to allow independent removal of groundwater containing lower concentrations of total dissolved solids (TDS) from the Dune Sand Aquifer and Upper 180-Foot Aquifer for potential treatment and potable use. Prioritizing treatment of groundwater with lower concentrations of TDS is likely to be more cost effective and reduce brine discharge quantities. Salinity information obtained from the AEM Study and Fort Ord well sampling will be utilized in the development of the numerical model and aid in the design of the barrier wells within the Monterey Subbasin. The results of these numerical analyses will be shared with SVBGSA to aid in the evaluation and potential design of the Pumping Barrier.

c. **Potential Project Benefits**: The potential project benefits could be considerable, including: (1) stop and reverse seawater intrusion within the 180/400 Foot Aquifer Subbasin and Monterey Subbasin; (2) provide supplemental drinking water to Castroville; (3) provide supplemental drinking water to the City of Salinas to decrease the known pumping depressions within the Eastside Subbasin and to help restore seaward gradients and groundwater flow within the 180 Foot Aquifer and 400 Foot Aquifer; (4) provide supplemental drinking water to Marina, Fort Ord and the Monterey Peninsula, and potentially groundwater recharge within the Seaside Subbasin; (5) provide desalinated water for an injection barrier located landward of the extraction barrier and inland of the seawater intrusion front to increase the benefit of the extraction barrier and halt the further inland movement of seawater; and (6) avoid pumping and building new infrastructure within Environmentally Sensitive Habitat Areas (ESHA).

d. **Project Elements**:

<u>Location of Brackish Water Extraction Wells</u>:

PP8 proposes a Pumping Barrier of approximately 8.5 miles in length between Castroville and Marina. Assuming that the project will be phased, it is recommended that the Phase 1 extraction wells be located west of Castroville for the protection of the area that suffers both seawater intrusion and the counter flow of groundwater east to the East Side pumping depressions.

Location of Brackish Water Desalination Plant: The location of the desalination plant will need to be determined by an optimization study using various factors, including identified Project Benefits and their prioritization. For example, a plant located north of the Salinas River would be located (1) nearer to Castroville, (2) nearer to the City of Salinas and the East Side pumping depressions, and (3) within the North County agricultural area. However, it would be further away from the Monterey Peninsula. In contrast, a plant located south of the Salinas River would be located nearer to the Monterey Peninsula but further away from, Castroville, City of Salinas, and the North County agricultural area. AP1 lists the following possible desalination plants: Monterey Peninsula Water Supply Project (MPWSP) (6.4 mgd/ 7,100 AFY); Deep Water Desalination Plant (22 mgd/ 25,000 AFY); and People Water Supply Project (12 mgd/ 13,400 AFY).

Desalination Capacity of Brackish Water Plant: The desalination capacity of the brackish water plant will initially depend upon the pumping capacity of the extraction wells and how the plant's product water will be allocated among Project Benefits c(2) through (5) or any other uses. It is common for these types of facilities to be constructed for future expansion in a modular design that will allow for incremental growth as additional feedwater is made available. The design capacities of the pipelines bringing brackish water in and of the pipelines carrying product water out will need to take into consideration future expansion for the ultimate project buildout.

e. **Groundwater Rights Issues**: Because the 180/400-Foot Aquifer Subbasin has been designated as a Critically Overdrafted Subbasin, the necessary groundwater rights that would support the project will need to be assessed. Returning water to the Salinas Valley Groundwater Basin to comply with the Monterey County Water Resources Agency Act's export prohibition does not confer a groundwater right, only compliance with the Agency Act.

5. Restriction on Additional Wells in the Deep Aquifer (Priority Management Action 4)

MCWD supports implementation of Priority Management Action 4: Support and Strengthen MCWRA Restrictions on Additional Wells in the Deep Aquifer. As presented in our comments for Chapter 8, groundwater elevations in the Deep Aquifer are below sea level and declining, suggesting that extraction from this aquifer exceeds the sustainable yield of this aquifer zone.

This issue is very important to MCWD because in the 1996 Annexation Agreement, MCWRA agreed to protect the Deep Aquifer for MCWD's use, but MCWRA did not take any protective action until the recent adoption of Ordinance 5302. Section 5.3, Management of 900-foot aquifer, of the 1996 Annexation Agreement provides, "The Parties agree that the '900-foot' aquifer should be managed to provide safe, sustained use of the water resource, and to preserve to MCWD the continued availability of water from the '900-foot' aquifer." Section 5.9 further stated that the annexation fees paid by MCWD "shall also be used for management protection of the '900-foot aquifer.'"

MCWD will work with MCWRA pursuant to the 1996 Annexation Agreement on MCWRA's Deep Aquifer study.

6. Winter Potable Reuse Water Injection (Alternative Project 2)

For Alternative Project 2: Winter Potable Reuse Water Injection, the document should include an option (or separate alternative) for year-round potable reuse water injection by MCWD, as described in its Grant Application, provided to SVBGSA on 20 June 2019. MCWD has rights to recycled water on a year-round basis. Per discussions during the meeting on 11 July 2019, MCWD provided the following language for inclusion in the GSP:

> *"MCWD is currently conducting a feasibility study on injection of purified recycled water into the Monterey Subbasin. The project proposes to use purified recycled water available to MCWD from the AWPF, some of which is available year-round per the district's agreement with M1W, for indirect potable reuse and prevention of further seawater intrusion. This project is consistent with and can readily be implemented in conjunction with the winter potable reuse project identified herein."*

7. Extract Winter Flows using Radial Collectors and Inject into 180- and 400-Foot Aquifers (Alternative Project 3)

Alternative Project 3 is the winter extension of Preferred Project 3, Improve SRDF Diversion. While under Alternative Project 3, the new radial collector system would only operate from November through March, the system would be operated from April through October under Preferred Project 3. There may be even steelhead benefits to also operating the system during April through October in conjunction with the SRDF.

Section 9.4.5.3 correctly observes that a significant volume of water may be available for diversion or extraction from the Salinas River during the winter. However, securing and clarifying water rights is not a constraint on this proposed project. As discussed above, MCWRA's Amended Water Rights License 7543, Amended License 12624, and Amended Permit 21089 already designate the SRDF Diversion as an authorized point of rediversion. Those licenses and permits were amended to comply with the NMFS' Biological Opinion. Therefore, water stored and released under those water rights is already authorized to be diverted at the SRDF. The Reservoir Reoperation Management Action already has the stated goal of operating the two reservoirs so as to "Allow both natural and surplus flows to better reach the SRDF diversion." Adding the SRDF as an additional point of diversion under Permit 11043 pursuant to a change petition under Water Code Sections 1701.2, et seq., would conform that permit with the authorized points of redivision in MCWRA's other water rights licenses and permits and comply with the Biological Opinion.

Salinas River provided to CSIP is not required to be treated, but river water to be injected must first be treated and those costs must be included where applicable.

Additionally, an alternative should include direct piping of SRDF radial collector water to MCWD during winter months. This alternative may be less expensive than injection. We suggest that benefits discussion of this project to be slightly modified to:

> *"This project could benefit other subbasins, such as the Monterey and East Side subbasins by providing treated potable water to these subbasins for direct recharge and/or municipal potable use."*

Thank you for this opportunity to provide these comments. We look forward to working with you to discuss, evaluate, and refine the proposed Chapter 9 actions and projects.

Sincerely,

Keith Van Der Maaten
General Manager, Marina Coast Water District

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Dear Mr. Peterson and Mr. Williams,

Thank you for taking the time to meet with our SGMA consultant EKI Environment & Water, Inc. on 15 August 2019. This letter

(1) Provides MCWD GSA's comments on draft 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (GSP) Public Review Draft Chapter 9 (dated 2 August 2019) and Draft Chapter 10 (dated 28 July 2019); and
(2) Summarize agreements reached regarding coordination with MCWD GSA representatives Proposition 68 grant application for the 180/400 Foot Aquifer Subbasin and Monterey Subbasin.

COMMENTS TO CHAPTER 9 PROJECTS AND MANAGEMENT ACTIONS

1. Water Charges Framework (Section 9.2)

The sentence below was added to Public Review Draft Chapter 9, Section 9.2 Water Charges Framework:

> *"The fee structures in each subbasin will be developed in accordance with all existing laws, judgements, and established water rights."*

We understand that SVBGSA will further revise this sentence to include existing water management agreements as part of the basis for developing fee structure and pumping allowances, pursuant to our discussion during the 10 July 2019 meeting and MCWD's comment letter for Chapter 9 dated 1 August 2019. We understand that SVBGSA has received the comment letter but have yet to incorporate those comments into Chapter 9.

Additionally, it appears that this sentence and the associated paragraph discuss the fee structure as well as the sustainable pumping allowance. Therefore, the sentence should be revised to begin with "The fee structures and pumping allowance in each subbasin…"

2. Pumping Barrier Extraction Rate Calculation (Appendix 9-C)

Appendix 9-C mentions that the estimated pumping rates of the barrier project is calculated based on an analytical solution published by Javandel and Tsang (1987). This analytical solution assumes a constant background gradient. However, it is highly unlikely that a constant background gradient will be maintained over the project lifetime, because once sea water intrusion is stopped water levels inland of the barrier will begin to decline as seawater stops recharging the basin. As recognized in the GSP, numerical modeling is needed to assess rates of groundwater extraction that will be required to halt saltwater intrusion.

As discussed in Comment #5 to Chapter 10 below, the SVIHM will likely not have the resolution or adequate calibration in proposed project area and cannot be used to model density driven flow. Therefore, the GSP should acknowledge that alternative models will likely be required to evaluate the proposed pumping barrier project.

3. Estimated Pumping Barrier Extraction from Monterey Subbasin (Appendix 9-C)

Appendix 9-C estimates that the pumping barrier will have a total extraction volume of 30,000 AFY; 22,500 AFY of which would be extracted from the 180/400 Foot Aquifer Subbasin. Per discussion, it is understood that the remaining 7,500 AFY would be extracted from the Monterey Subbasin.

4. Mitigation of Overdraft (Section 9.6 and Table 9-5)

Section 9.6 discusses the overdraft estimated in Chapter 6 and stated that "[t]he priority projects include more than ample supplies to mitigate existing overdraft, as presented in Table 9-5." As agreed during the meeting, SVBGSA should add a discussion that Section 9.6 is included per requirements of GSP Regulations (and cite relevant sections) and that mitigating the overdraft as estimated does not meet all of the basin's sustainable management criteria. Specifically, without a hydraulic barrier, seawater intrusion will continue to occur if groundwater extraction within the basin occurs at the identified sustainable yield. As SVBGSA stated in Chapter 6, "simply reducing pumping to within the sustainable yield is not proof of sustainably, which must be demonstrated via Sustainable Management Criteria (SMC)."

Additionally, given the technical uncertainties of the proposed seawater intrusion pumping barrier project and the potential project cost that may not be approved by groundwater basin users, the GSP should provide an estimate of the sustainable yield of the 180/400 Foot Aquifer Subbasin (or the larger Salinas Valley Basin) without the pumping barrier project. This estimate is required under SGMA, which defines "Sustainable Yield" as "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result."

We understand that due to modeling limitations and data gaps, SVBGSA is reluctant to provide an estimate the "sustainable yield" of the basin when sustainable management criteria for seawater intrusion are considered. However, analytical methods, similar to those used to estimate extraction rate of the pumping barrier project, could be utilized to provide a preliminary estimate of the Sustainable Yield of the basin if the extraction barrier is not installed. For example, previous studies conducted on this topic by Geoscience (2013), *Protective Elevations to Control Sea Water Intrusion in the Salinas Valley,* estimated that approximately 60,000 AFY would be needed for the Salinas Valley Water Project to recharge the Salinas Valley Basin sufficiently to stop seawater intrusion. Alternatively, the GSP could compare and discuss the volume of water needed for an injection barrier, as presented in Appendix 9-C.

COMMENTS TO CHAPTER 10 GSP IMPLEMENTATION

5. Additional Data Gaps and Analyses to be Addressed (Section 10.3)

As discussed in our comments to the previous chapters, the following additional data gaps and analyses should be identified Chapter 10:

- Seawater intrusion cross-sections (Chapter 5 comments dated 18 April 2019)
  Per GSP Regulations Section 354.16 (c), a GSP should provide "seawater intrusion conditions in the basin, including maps and cross sections of the seawater intrusion front for each principal aquifer". The GSP should commit to development of such cross-sections, once data gaps have been filled. These data are needed to inform placement of seawater intrusion barrier wells.

- Groundwater extraction within individual aquifers (Chapter 6 comments dated 2 July 2019)
  We suggest that SVBGSA collect information needed to identify groundwater extraction from each principal aquifer, to allow the development of a water budget for each aquifer. As discussed in MCWD's Chapter 6 comments dated 2 July 2019:

  "Water budget information for each principal aquifer is necessary to verify that proposed future operations of the basin, including implementation of projects and management actions, will not lead to undesirable results in each principal aquifer. Seawater intrusion is occurring in both the 180 Foot Aquifer and the 400 Foot Aquifer, and inland gradients exist within the Deep Aquifer. In order to reach sustainability, hydraulic gradients in each of these aquifers will need to be reversed either through decreasing groundwater extraction and/or future supply augmentation projects. As such, water budgets for each aquifer must be established to verify that undesirable effects do not occur.

  We understand that information related to groundwater extraction within individual aquifer zones is currently limited and that water budgets cannot be developed for each principal aquifer zone. As such, we recommend that the GSP acknowledge this uncertainty and identify it as a data gap. The GSP should provide a plan to further assess rates of extraction and inflows within principal aquifer zones so undesirable results, such as seawater intrusion can be mitigated. This information is critical, as achieving sustainability in the basin requires implementation of projects and management actions, which will need to be evaluated against sustainable management criteria in each principal aquifer."

  However, as discussed and agreed upon during the meeting, this data gap may be extremely difficult to fill and water level data/gradients in each aquifer may serve as a proxy for evaluating the effectiveness of projects and management actions to address saltwater intrusion within each of these zones. However, given the uncertainties associated with groundwater recharge and groundwater levels within the Deep Aquifer (consistent with data gaps identified in Section 10.3), quantification of all groundwater extraction from the Deep Aquifer, should be clearly identified as a Data Gap that will be filled as under the GSP.

We further recommend that the GSP identify actions that will be implemented to allow:

- Development of Sustainable Management Criteria for the deep aquifer; and

- Development of Sustainable Management Criteria that consider project implementation. For example, alternative groundwater elevation Sustainable Management Criteria will be required near the coast if a pumping barrier is constructed.

6. Plans to Refine and Evaluate the Seawater Intrusion Barrier Project (Sections 10.6 and 10.7)

The GSP should acknowledge that alternative models will likely be required to evaluate certain projects, such as the pumping barrier or injection wells, because the SVIHM does not have the resolution or adequate calibration in proposed project areas and cannot model density driven flow.

Further, The GSP states that SVIHM model will be available for use within one year. Per discussion during the meeting, we understand that within one year, the SVIHM model will be released for public use by USGS. Additionally, we understand that the model will be made publicly available consistent with GSP Regulations Section 352.4 (f)(3), "[g]roundwater and surface water models developed in support of a Plan after the effective date of these regulations shall consist of public domain open-source software."

PROPOSITION 68 GRANT COORDINATION

MCWD is considering applying for Proposition 68 Grant (SGM Grant Round 3) for Monterey Subbasin. We understand that SVBGSA is also planning to apply for this grant for other basins under its jurisdiction. As agreed, both parties will coordinate and support each other in grant funding processes.

Thank you for this opportunity to provide these comments. We look forward to working with you to discuss, evaluate, and refine the proposed Chapter 9 actions and projects.

Sincerely,

Keith Van Der Maaten
General Manager, Marina Coast Water District

MARINA COAST WATER DISTRICT

11 RESERVATION ROAD, MARINA, CA 93933-2099
Home Page: www.mcwd.org
TEL: (831) 384-6131 FAX: (831) 883-5995

November 25, 2019

Mr. Gary Petersen
General Manager
Salinas Valley Basin Groundwater Sustainability Agency
1441 Shilling Place
Salinas, CA 93901

Mr. Derrik Williams
Montgomery & Associates
1232 Park Street, Suite 201B
Paso Robles, CA 93446

Dear Mr. Peterson and Mr. Williams,

The MCWD GSA has reviewed the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (GSP) Public Review Draft, 21 October 2019. Our comments are provided herein. Comments 4 and 5 reiterate issues discussed in our previous comment letter regarding GSP draft Chapter 8. Comments 1 through 5 identified herein are critical to MCWD's acceptance of the 180/400 Foot Aquifer Subbasin GSP. We would like the opportunity to discuss these comments with you to resolve any remaining issues and come to an agreement on how they can be addressed. We are available to meet on, or before, 2 or 3 December 2019.

1. Table 9-5 Total Potential Water Available for Mitigating Overdraft

The total in Table 9-5 is incorrect and should sum up to positive 40,800 AFY.

2. Section 3.3.1 Federal Jurisdiction

Section 3.3.1 states:

> *"A portion of the Fort Ord former Army base lies in the Subbasin. Although this land is currently operated by the City of Marina as an airport, the DWR land use dataset depicts this as Federal land."*

Most of the former Fort Ord property has been transferred for civilian use and no long under federal jurisdiction as of 2019, including the airport. This area should be removed from Figure 3-3 and the above statement should be revised to state:

> *"A portion of the Fort Ord former Army base lies in the Subbasin and encompasses the Marina Municipal Airport. Although the DWR land use dataset depicts this area as federal land, this land has been transferred to civilian use and is no longer under federal jurisdiction."*

3. Section 6.10.5

The first paragraph of Section 6.10.5 states:

> *"The net pumping shown on this table is the total pumping in Table 6-27 less the well interflow shown on Table 6-26."*

Please provide a definition of "well interflow" and clarify why it was subtracted from total pumping.

4. Section 8.6.2.3 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

Section 8.6.2.3 states

> *"The groundwater elevation minimum thresholds are set at or above existing groundwater elevations. Therefore, the groundwater elevation minimum thresholds will not exacerbate, and may help control, seawater intrusion."*

It is not accurate to state that groundwater elevation minimum thresholds, which are set below mean sea level and will maintain landward gradients "will not exacerbate and may help control seawater intrusion". The seawater intrusion front will continue to migrate inland if water levels remain below mean sea level and inland gradients persist. At a minimum, Section 8.6.2.3 should be modified to state:

> *"The groundwater elevation minimum thresholds are set at or above existing groundwater elevations. Therefore, the groundwater elevation minimum thresholds are intended to not exacerbate, and may help control, the rate of seawater intrusion."*

5. Various Locations: Effect of Minimum Thresholds on Neighboring Basins and Subbasins

Section 8.6.2.4, and similarly Sections 8.7.2.3, 8.8.2.3, 8.9.2.6, 8.10.2.3 states:

> *"The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the 180/400-Foot Aquifer Subbasin. These minimum thresholds are designed to ensure that all the subbasins can be managed sustainably in a coordinated fashion. Therefore, the minimum thresholds for the 180/400-Foot Aquifer Subbasin will not prevent the neighboring subbasins from achieving sustainability, by design."*

We understand that the SVBGSA intends to coordinate sustainable management criteria development as the managing GSA for each of the adjacent subbasin. However, it is premature to state that the minimum threshold of the 180/400-Foot Aquifer Subbasin has taken sustainable management of adjacent basins into full consideration, as those subbasins are still in their early phases of GSP development.

Therefore, the following caveat should be included, and the following would replace the entire paragraph:

> *"The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the 180/400-Foot Aquifer Subbasin. These neighboring subbasins are in the process of GSP*

development for submittal in January 2022. Minimum thresholds for the 180/400 Foot Aquifer Subbasin will be reviewed relative to information developed during the preparation of neighboring subbasins GSPs and will be updated, as appropriate, to ensure that these minimum thresholds will not prevent the neighboring subbasins from achieving sustainability."

We appreciate SVBGSA's consideration of these comments. These comments are consistent with comments letters submitted previously to SVBGSA which are listed below and attached to the end of this letter.

- Preliminary Comments Regarding Salinas Valley Basin Groundwater Sustainability Agency Draft Groundwater Sustainability Plan Chapters 1 through 3, submitted by EKI Environment & Water, Inc. (EKI) on behalf of MCWD, dated November 21, 2018;
- Preliminary Comments Regarding Salinas Valley Basin Groundwater Sustainability Agency Draft Groundwater Sustainability Plan Chapter 4, submitted by EKI on behalf of MCWD, dated March 26, 2018;
- Preliminary Comments Regarding Salinas Valley Basin Groundwater Sustainability Agency Draft Groundwater Sustainability Plan Chapter 5, submitted by EKI on behalf of MCWD, dated April 18, 2018;
- Letter to SVBGSA regarding 180/400 Foot Aquifer Subbasin GSP Chapter 6, dated July 2, 2019;
- Letter to SVBGSA regarding 180/400 Foot Aquifer Subbasin GSP Chapter 8, dated May 24, 2019;
- Letter to SVBGSA regarding 180/400 Foot Aquifer Subbasin GSP Chapter 9, dated August 1, 2019; and
- Letter to SVBGSA regarding 180/400 Foot Aquifer Subbasin GSP Chapter 9 and Chapter 10, dated September 16, 2019.

We look forward to hearing from you and appreciate the opportunity to discuss these comments further.

Sincerely,

Keith Van Der Maaten
General Manager, Marina Coast Water District

City of Marina

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November 25, 2019

Via E-mail (peterseng@svbgsa.org)

Gary Petersen
General Manager
Salinas Valley Basin Groundwater Sustainability Agency
1411 Schilling Place
Salinas, CA 93901

Re: Comments on SVBGSA Draft Groundwater Sustainability Plan

Dear Mr. Petersen:

The City of Marina (City or Marina) and the Marina Groundwater Sustainability Agency (MGSA) hereby jointly submit the following comments regarding the Draft Groundwater Sustainability Plan (Draft GSP) prepared by the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) for the 180/400 Foot Aquifer Subbasin (Subbasin). These comments consist of this letter and the individual comments and attachments prepared by Formation Environmental, LLC on the Draft GSP attached hereto as Exhibit A.

I. Introduction

The City formed MGSA to prepare a groundwater sustainability plan (GSP) for an approximately 400-acre portion of the Subbasin at the CEMEX property (MGSA Area). MGSA has developed a locally-focused GSP to ensure sustainable groundwater management in the MGSA Area, to support regional efforts to address seawater intrusion and other undesirable results, and to return the Subbasin to sustainable groundwater management. The City of Marina considers these objectives a top priority because the City depends entirely on groundwater resources in this Subbasin and the adjacent Monterey Subbasin. Over the last 18 months, the City has met with SVBGSA staff and held public hearings on a number of occasions to discuss its concerns and objectives for sustainable groundwater management in the coastal region of the Subbasin.

Together MGSA, SVBGSA, and the Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA) are the three major groundwater sustainability agencies (GSAs) with jurisdiction in the Subbasin. MGSA remains committed to entering into a Coordination Agreement with SVBGSA to ensure that the two GSPs developed for the Subbasin by SVBGSA and MGSA will result in coordinated basin-wide sustainable groundwater management. To this end, MGSA has met with SVBGSA staff on several occasions to discuss GSP coordination; prepared, approved, and transmitted to SVBGSA in August 2019 a proposed Coordination Agreement using the template recommended by SVBGSA Staff; and attempted in good faith to finalize this Agreement with SVBGSA.

This letter summarizes some of the key modifications in the Draft GSP that the City and MGSA believe must be made to ensure that it is a comprehensive document that will harmonize and work together with the MGSA GSP to ensure sustainable groundwater management for the Subbasin. At present, the Draft GSP does not properly characterize, monitor, or manage the groundwater resources south of the Salinas River in the coastal region or recognize the important municipal, domestic, groundwater dependent ecosystems (GDEs), and other beneficial uses or users in this area.

To meet the requirements of the Sustainable Groundwater Management Act (SGMA), the Draft GSP must address the following issues, among others: (1) it must utilize the newest and best available science regarding the seaward portion of this Subbasin; (2) it must designate, protect, and manage the Dune Sand Aquifer as a principal aquifer; (3) it needs to provide further protections against ongoing or worsening seawater intrusion; (4) it must recognize, address, monitor, and manage GDEs as a beneficial groundwater use in a more meaningful way; (5) it must consider state and federal protections for habitats and species in and near the MGSA Area; and (6) it must expand SVBGSA's proposed monitoring network in the coastal portion of the Subbasin. We will address each of these subject areas below.

II. Particular Comment Areas

A. SVBGSA Must Evaluate And Incorporate The Best Available Science Regarding The Coastal Portion Of the Subbasin Into The Draft GSP.

GSAs must base GSPs on "the best available information." Cal. Code Regs. tit. 23, §§ 354.14(b)(4)(B), 354.16, 354.18(c). As outlined in further detail below and in the attached comments, the Draft GSP fails to acknowledge and utilize critical scientific studies regarding the coastal portion of the Subbasin.

In particular, the Draft GSP fails to discuss the state-of-the-art airborne electromagnetic (AEM) investigations performed by Stanford University researchers and others that have generated three-dimensional groundwater maps and cross-sections identifying large zones of high-quality groundwater in and beneath the Dune Sand Aquifer, much of which contains less than 3,000 milligrams per liter (mg/L) of total dissolved solids (TDS). These studies identify local complexities in the aquifer system that are essential to understanding the ongoing vertical migration of seawater intrusion. They also include water quality cross-sections and visualization tools that depict the nature and extent of seawater intrusion in the nearshore area of the Subbasin. This information reveals the relationship of the shallow low-TDS groundwater, the deeper dense

saline water wedge, and the freshwater-saline water interface described by the Ghyben-Herzberg Principle.

To base its GSP on the best available information and science, SVBGSA must utilize these site-specific studies, which contain a wealth of directly relevant data, to protect against seawater intrusion and ensure sustainable management of the entire Subbasin.

B. The Draft GSP Must Designate, Evaluate, And Manage The Dune Sand Aquifer As A Principal Aquifer.

SGMA regulations define principal aquifers as "aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems." Cal. Code Regs. tit. 23, § 351(aa). GSPs must identify minimum thresholds and design monitoring networks for principal aquifers. *See* Cal. Code Regs. tit. 23, §§ 354.28(c)(3), 354.34(c). The Dune Sand Aquifer stores substantial amounts of high-quality groundwater available for beneficial uses, yields significant quantities of groundwater to sustain protected GDEs, and plays an important role in retarding seawater intrusion by supplying a fresh groundwater recharge that exerts a stabilizing force on the saline water wedge entering the upper aquifer system from the Pacific Ocean. However, the Draft GSP fails to identify the Dune Sand Aquifer as a principal aquifer. It also inaccurately describes the Dune Sand Aquifer as having a low yield and a poor connection to the underlying productive aquifers.

The Dune Sand Aquifer is the uppermost aquifer in the MGSA Area and occurs in highly permeable dune sand deposits southwest of the Salinas River. The Draft GSP should identify the Dune Sand Aquifer as a principal aquifer because it qualifies for beneficial use as a municipal and domestic water supply. In particular, Stanford University's AEM investigations have mapped large zones of low-TDS groundwater in and beneath the Dune Sand Aquifer. This groundwater contains less than 3,000 mg/L of TDS, as also confirmed by monitoring data, which qualifies it as suitable or potentially suitable for municipal and domestic water supply under State Water Resources Control Board Resolution No. 88-63 (SWRCB Resolution No. 88-63). This high-quality groundwater zone is recharged through the Dune Sand Aquifer and extends downward into the 180-Foot and 400-Foot Aquifers. The Dune Sand Aquifer alone is estimated to contain approximately 200,000 acre-feet of groundwater suitable or potentially suitable for municipal and domestic water supply. The anti-degradation policy outlined in State Water Resources Control Board Resolution No. 68-16 (SWRCB Resolution No. 68-16) protects the quality of existing high-quality surface water and groundwater like this from further degradation.

Furthermore, the Dune Sand Aquifer yields significant quantities of water to GDEs, which consist of unique vernal pool and wetland habitats that are protected under the California Coastal Act and host threatened and endangered species. These factors, along with the Dune Sand Aquifer's high rate of recharge and importance for maintaining nearshore seawater intrusion dynamics, require that the Draft GSP recognize the Dune Sand Aquifer as a principal aquifer and that SVBGSA monitor and manage this aquifer under the sustainable management criteria in SGMA. The MGSA GSP addresses and manages the aquifer in this manner, and the City and MGSA encourage SVBGSA to adopt MGSA's GSP's minimum thresholds for the Dune Sand Aquifer.

C. The Draft GSP Fails To Protect Groundwater With Beneficial Uses From Saltwater Intrusion.

The California Department of Water Resources (DWR) has designated the Subbasin as one of only 21 critically over-drafted groundwater basins in California. Chronic over-pumping in the inland part of the Subbasin has led to seawater intrusion, which has moved inland up to seven miles in some areas. Investigations by the Monterey County Water Resources Agency (MCWRA), the United States Geological Survey (USGS), a team of researchers from Stanford University, and several expert hydrogeological consultants have revealed that groundwater conditions in the nearshore area of the Subbasin are more complex and dynamic than previously thought. Indeed, local resources, water supplies, and inland aquifers could all be at risk of damage from drawdown or further seawater intrusion without appropriate local management actions under SGMA.

SGMA's regulations require GSPs to include seawater intrusion controls "where appropriate." Cal. Water Code § 10727.4(a); Cal. Code Regs. tit. 23, § 354.8. Further, each GSP must describe "current and historical groundwater conditions in the basin," including seawater intrusion conditions "based on the best available information." Cal. Code Regs. tit. 23, § 354.16(c). In its current form, the Draft GSP fails to discuss all of the best available information regarding seawater intrusion or prescribe adequate controls or management actions to address seawater intrusion in the seaward portion of the Subbasin.

In the nearshore area, the Draft GSP proposes to establish the minimum threshold for seawater intrusion at Highway 1— inside the currently unintruded Deep Aquifer. Further, the Draft GSP only includes a single well to monitor water levels in the Deep Aquifer, and that well lies in the shoreward area of the Subbasin far north of the City of Marina. No seawater intrusion or water quality monitoring wells are identified for the Deep Aquifer. This is identified as a data gap, but suitable wells included are available and are being monitored by the MCWRA. The Deep Aquifer is in important local water supply and the only water supply for the MCWD's Central Marina Service Area. SVBGSA must revise its proposed sustainable management criteria and monitoring network for seawater intrusion into the Deep Aquifer to meet the sustainability goals for the Subbasin.

1. Best Available Information

The Draft GSP fails to base its seawater intrusion analysis "on the best available information." Cal. Code Regs. tit. 23, § 354.16(c) (requiring a GSP to "include[c] maps and cross-sections of the seawater intrusion front for each principal aquifer"). Seawater intrusion occurs by density-driven flow in the nearshore portion of a coastal aquifer and by advection of a solute front in inland areas. Although SGMA's regulations require minimum thresholds for seawater intrusion to be defined based on the location of the inland solute intrusion front (the chloride isocontour), the dynamic controlling density-driven flow closer to the coast must also be understood for adequate sustainable management. Both the water quality data gathered for the Monterey Peninsula Water Supply Project monitoring well investigation and Stanford University's AEM studies provide vital scientific insight into the seawater intrusion conditions and dynamics in the nearshore area of the Subbasin. These two data sources identify a zone of low-TDS groundwater that recharges through the Dune Sand Aquifer as well as a dense saline

water intrusion wedge that intrudes into the Subbasin. These features represent important components of the nearshore dynamics of seawater intrusion, and SVBGSA's GSP must discuss them.

2. Seawater Intrusion Controls

Two elements of the Draft GSP fail to protect the nearshore aquifers from degradation. First, MGSA strenuously objects to the Draft GSP's minimum threshold for seawater intrusion into the Deep Aquifer. As noted above, the GSP defines the seawater intrusion minimum threshold for the Deep Aquifer based on the arrival of a 500 mg/L chloride isoconcentration contour at Highway 1. However, the Deep Aquifer is currently unintruded, and allowing intrusion into this aquifer at all puts the City of Marina's primary water supply at risk, violates the State Water Code and violates the Regional Water Quality Control Board's Water Quality Control Plan. Placing the minimum threshold this far inland thus also fails to represent the chloride concentration isocontour minimum threshold "where seawater intrusion may lead to undesirable results." Cal. Code Regs. tit. 23, § 354.28(C)(3). Furthermore, because the Deep Aquifer currently yields high-quality groundwater and is unintruded, any significant groundwater quality degradation would violate SWRCB's anti-degradation policy. Accordingly, as MGSA's GSP provides, any detectable seawater intrusion into the currently unintruded Deep Aquifer represents a significant and unreasonable impact that would exceed the minimum threshold for seawater intrusion into this important local aquifer.

Second, the Draft GSP's proposed seawater intrusion pumping barrier project could also jeopardize the City of Marina's drinking water supply in the Deep Aquifer and violate SWRCB's anti-degradation policy. SVBGSA proposes constructing this seawater intrusion barrier parallel to Highway 1 and near the current dynamic interface between a dense saline water wedge and inland low-TDS water that retards seawater intrusion. Locating the barrier here could induce migration of this interface and would likely adversely affect the deeper and inland groundwater supplies.

Evaluating and designing this project requires modeling tools capable of simulating density-driven flow and groundwater flow in the complex and heterogeneous nearshore aquifer system. However, these tools do not currently exist, and there are no concrete plans to develop them. SVBGSA must also address the data gap regarding the potential for vertical seawater intrusion from the 400-Foot Aquifer into the Deep Aquifer, which has been identified as a regional data gap. Therefore, similar to the Draft GSP's minimum threshold, the seawater intrusion pumping barrier project unnecessarily risks seawater intrusion into the currently unintruded Deep Aquifer, which would represent a significant and unreasonable impact. Inclusion of this project in the Draft GSP is premature and risks undesirable results. We therefore urge SVBGSA to remove it.

D. The Draft GSP Must Recognize, Monitor, And Take Management Actions For Groundwater Dependent Ecosystems As A Beneficial Water Use.

GSPs must include "[i]mpacts on groundwater dependent ecosystems." Cal. Water Code § 10727.4(l); Cal. Code Regs. tit. 23, § 354.8. However, the Draft GSP fails to identify and describe the "groundwater dependent ecosystems within the basin, utilizing data available from

[DWR] . . . or the best available information." Cal. Code Regs. tit. 23, § 354.16(g). Specifically, the Draft GSP does not adequately incorporate The Nature Conservancy (TNC) and DWR's cooperative evaluation of GDEs based on the Natural Communities Commonly Associated with Groundwater dataset (NC Dataset). The NC Dataset identifies over 3,000 acres of actual and potential groundwater-dependent wetland and vegetation habitat within the Subbasin, including GDEs that are likely dependent on shallow groundwater in the Dune Sand Aquifer. Until and unless further investigation verifies that some of these GDEs are not actually groundwater dependent, the best available information requires that they be recognized and managed as GDEs.

MGSA has applied TNC's best practices for assessing the NC Dataset to determine whether potential GDEs included in that database near the MGSA Area are likely to be groundwater dependent and confirmed that significant GDEs exist near the MGSA Area. These GDEs include vernal ponds located near the City of Marina, which are unique coastal wetland communities protected under the California Coastal Act and management plans developed by the City of Marina and environmental stakeholders. As a result, the Draft GSP should recognize, monitor, and take management actions for GDEs as a beneficial use of groundwater.

E. The Draft GSP Should Recognize And Consider State and Federal Protections For Habitats And Species In And Near The MGSA Area.

The Draft GSP fails to recognize state and federal protected lands and habitats or associated jurisdictional areas, monitoring requirements, and land use management plans. The MGSA Area falls within the California Coastal Zone and contains a unique Flandrian dune habitat and other habitat protected under the California Coastal Act. This habitat supports special-status plant and animal species and is considered Environmentally Sensitive Habitat Areas (ESHA) under both the Coastal Act and the City's Local Coastal Program. Among other factors, critical habitat for western snowy plover exists along the western shoreline of the MGSA Area. And the Salinas River Wildlife Refuge and mouth of the Salinas River also host critical habitat for tidewater goby. The Draft GSP must fully describe and consider these legal protections.

F. SVBGSA Must Expand The GSP's Proposed Monitoring Network.

The Draft GSP contains significant gaps in its nearshore monitoring network. Specifically, the monitoring networks' description: (1) includes only a single well completed in the 400-Foot Aquifer south of the Salinas River in the nearshore area within four miles of the coast; (2) does not include any wells within or near the MGSA Area; (3) does not include any monitoring of the shallow Dune Sand Aquifer; (4) includes only one groundwater level well (and no seawater intrusion or water quality wells) in the Deep Aquifer in the northwest portion of the Subbasin, away from the primary area of municipal groundwater use by the City of Marina, and (5) does not include any interconnected surface water monitoring network. The MGSA Area plays a critically important role for groundwater resources and GDEs in the Subbasin, partially because of the Dune Sand Aquifer recharges and discharges in that area. Indeed, shallow groundwater in the Dune Sand Aquifer is in communication with surface water in the vernal ponds within and near the City of Marina. Thus, the existing monitoring system includes significant data gaps, especially near the MGSA Area.

The MGSA GSP's proposed monitoring program addresses the data gaps in the nearshore area by adopting key wells from MCWRA's coastal monitoring program. This program includes nested monitoring wells in the 400-Foot, 180-Foot, and Dune Sand Aquifers at 13 locations, as well as an additional 14 Deep Aquifer wells. MGSA's GSP also adopts inductance logging planned by MCWRA at the 13 nearshore well clusters to assess changes and trends in the nearshore seawater intrusion dynamics. These wells will serve as an early warning to detect seawater intrusion into the unintruded Deep Aquifer and to assess surface-groundwater interaction and shallow water table drawdown in the vicinity of the identified GDEs in the area.

In light of the gaps in the Draft GSP's monitoring network, SVBGSA should either adopt wells from MCWRA's coastal monitoring program or acknowledge that the MGSA GSP's monitoring program will address existing monitoring data gaps in the nearshore area.

III. Conclusion

The City of Marina and MGSA urge SVBGSA to incorporate each of the attached comments and proposed revisions into its Final GSP to meet the requirements of SGMA. Additionally, it is important for our respective GSPs to be closely congruent to achieve sustainable management of groundwater in the Subbasin. MGSA remains committed to coordinating with SVBGSA and MCWD GSA to ensure that the two GSPs developed for the Subbasin protect the groundwater supplies for the entire Subbasin. We are prepared to meet with you to review our mutual comments on each other's GSPs and develop a coordinated approach that addresses these issues. Fortunately, many of the gaps identified in our comments are addressed by MGSA's GSP, which was prepared and intended to complement the SVBGSA's regional plan contained in the Draft GSP.

Sincerely,

Brian McMinn, P.E., P.L.S.

Public Works Director/City Engineer
on behalf of the City of Marina and the
Marina Groundwater Sustainability Agency

cc: Marina City Council
Layne Long, City Manager and MGSA Representative
Robert Wellington, City Attorney
Deborah Mall, Assistant City Attorney
Robert Rathie, Assistant City Attorney
Paul P. (Skip) Spaulding, III

Exhibit A

Comments Prepared By Formation Environmental , LLC (the MGSA Hydrogeologic Consultant) On SVBGSA's Draft Groundwater Sustainability Plan

MEMORANDUM

FORMATION ENVIRONMENTAL

COMMENTS ON THE SVBGSA PUBLIC REVIEW DRAFT GROUNDWATER SUSTAINABILITY PLAN FOR THE 180/400-FOOT AQUIFER SUBBASIN

PREPARED FOR: Brian McMinn, PE, PLS
Public Works Director/City Engineer
City of Marina

PREPARED BY: Mike Tietze, PG, CEG, CHG, Formation Environmental, LLC
Stephen Carlton, PG, CHG, Formation Environmental, LLC
Myra Lugsch, PG, Formation Environmental, LLC

DATE: November 25, 2019

OVERVIEW

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) provided Update No. 1 to the Draft Salinas Valley: 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan (Draft GSP) for public review and comment on October 1, 2019. Formation Environmental has reviewed the Draft GSP and has prepared a number of technical comments. Attached please find the following:

- Comments on the SVBGSA Public Review Draft Groundwater Sustainability Plan for the 180/400 Foot Aquifer Subbasin
- Supporting Attachments
    1. Relevant Land Use Plans for the Coastal Areas of the 180/400 Foot Aquifer Subbasin;
    2. Protected Lands Under Federal, State, Local, or Other Agency Jurisdiction;
    3. Groundwater Dependent Ecosystems; and
    4. Hydrogeologic Conceptual Model Data Regarding Aquifer Systems Near the Coast in the 180/400 Foot Aquifer Subbasin

SVBGSA and the City of Marina Groundwater Sustainability Agency (MGSA) must execute and implement a Coordination Agreement to ensure sustainable groundwater management for the 180/400 Foot Aquifer Subbasin, and our comments focus on supporting coordination between the two agencies and their respective GSPs. We believe that the SVBGSA's Draft GSP needs to recognize, monitor, and manage the groundwater resources south of the Salinas River in the shoreward portion of the Subbasin for the municipal domestic, groundwater dependent ecosystems, and other beneficial uses in this area. To meet the requirements of the Sustainable Groundwater Management Act (SGMA), the Draft GSP should use all of the best information and science available, recognize the Dune Sand Aquifer as a

principal aquifer, and expand the monitoring network to include the coastal area near the City of Marina. The Draft GSP also needs to provide further protections against seawater intrusion. Finally, the Draft GSP must recognize, monitor, and manage GDEs as a beneficial water use and consider federal and state protections for sensitive environmental habitats and threatened and endangered species.

PROFESSIONAL CERTIFICATION

The following certified professional has reviewed the comments on the Salinas Valley: 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan prepared by the Salinas Valley Basin Groundwater Sustainability Agency. His signature and stamp appear below.

Mike Tietze, PG, CEG, CHG
Senior Engineering Geologist/Hydrogeologist
Formation Environmental LLC
November 25, 2019

Comments on the SVBGSA Draft Groundwater Sustainability Plan for the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment
1	Section 2; p. 2-4	Subbasin Governance: This section states that Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) developed this Groundwater Sustainability Plan (GSP) for the 180/400 Foot Aquifer Subbasin of the Salinas Valley Groundwater Basin (Subbasin) with input and assistance from Marina Coast Water District (MCWD) GSA; however, the GSP should also recognize the City of Marina Groundwater Sustainability Agency (MGSA) and document its efforts to coordinate with SVBGSA. MGSA has met with SVBGSA representatives on several occasions over the last eighteen months to discuss concerns about groundwater management issues in and near the Marina area. Most recently, MGSA worked with SVBGSA staff to draft and approve an intra-basin coordination agreement, which it provided to SVBGSA in early August 2019, and met with SVBGSA staff on several occasions to discuss preparation and coordination of the two agencies' GSPs. These coordination efforts should be memorialized in the GSP.
2	Section 2.3.2, p. 2-8	Coordination Agreements: This section describes coordination agreements and is confusing and incomplete as currently worded. We recommend the following edits to clarify the status and need for coordination agreements in the Subbasin (recommended additions in ***bold italics***). "In accordance with California Water Code § 10727.6 et seq., a coordination agreement between ***SVBGSA and MGSA is required to describe how preparation and implementation of*** the two GSPs prepared for the Subbasin ***will be coordinated***. Since the SVBGSA is developing one GSP for the 180/400-Foot Aquifer Subbasin with the input of MCWD, a coordination agreement ***between these two GSAs*** is not required; however, as noted above, the agencies developed agreements to cooperatively develop this GSP."
3	Section 3.1, p. 3-10	Subbasin Governance: The SVBGSA GSP states that "*This GSP covers the entire 180/400-Foot Aquifer Subbasin*" and "*When this report refers to the 180/400-Foot Aquifer Subbasin, it refers to the area under the jurisdiction of the SVBGSA, including the area under the jurisdiction of the MGSA.*" This section fails to recognize that SVBGSA and MGSA have filed overlapping jurisdictional claims for a 400-acre portion of the Subbasin at the CEMEX property (MGSA Area), which requires SVBGSA and MGSA to engage in good faith discussions to reach a mutually acceptable coordination agreement by the January 31, 2020 deadline for submittal of their respective GSPs. Assuming the overlapping claims over the MGSA portion of the 180/400 Foot Aquifer Subbasin are resolved, this section should be revised to state that the SVBGSA GSP covers the entire 180/400 Foot Aquifer Subbasin except for the MGSA Area, and Figure 3-1 should be revised to show that the MGSA Area is covered by a separate GSP.
4	Section 3.3, pp. 3-13 to 3-15	Jurisdictional Areas: The SVBGSA GSP only covers governmental agencies with water management responsibilities and fails to mention local parks, preserves, and other protected areas with environmentally sensitive habitat that may be groundwater-dependent, particularly along the coast and in the Salinas River Valley. All wetlands, open space, and local parks and preserves with potentially groundwater-connected aquatic resources and habitat should be identified. SGMA regulations require the following additional jurisdictions to be mapped and described (23 CCR § 354.8), and they should be included in this section of the GSP:

Comments on the SVBGSA Draft Groundwater Sustainability Plan for the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment
		• Cities and areas with relevant general plans. Section 3.3.4 incorrectly implies that the regulations do not require identification and description of city and local jurisdictions with land management responsibility in a GSP unless they have water management jurisdiction. The GSP regulations make no such distinction and require a "summary of general plans and other land use plans governing the basin" (CCR §354.8(f)(1). The DWR's *"Groundwater Sustainability Plan (GSP) Emergency Regulations Guide,"* dated July 2016, states "Land use agencies provide land and water use projection data, and may speak on behalf of unrepresented land use sectors, de minimis pumpers, and disadvantaged communities." These entities are important constituents with planning authorities that overlap the GSP and are therefore required to be identified and discussed. This additional information should be provided in Section 3.3.4 or in an additional section if SVBGSA elects to focus this section only on the portion of the regulation that requires description of water management agencies. This would include the City of Marina and other jurisdictions with land use plans listed in Attachment 1. • Existing land use designations and the identification of water use sector and water source type. This category should include federal, state and local protected lands that could contain aquatic, riparian, and other potentially groundwater-dependent habitat; however, only federal protected lands and a partial list of state-managed lands is provided. Protected lands, preserves, designated critical habitat, protected wetlands and other sensitive habitats, and lands under local or other regulatory agency jurisdiction should be described. Among other areas, this includes several vernal ponds identified as being groundwater dependent that are located near the City of Marina and are subject to protection under California Coastal Act the Local Coastal Plan and a management plan required to be implemented by the City of Marina. Please refer to Attachment 2 for a list of protected lands within the 180/400 Foot Aquifer Subbasin near the MGSA Area and a brief description of each.
5	Section 3.3.2, p. 3-13	Jurisdictions and Land Use: The "State Jurisdiction" section should include the California Coastal Commission, which has authority under the California Coastal Act to protect coastal resources, shoreline public access, and recreation. In addition, the following areas are located near the City of Marina and managed by the California Department of Parks and Recreation should be discussed and shown on Figure 3-3: Marina State Beach, Marina Dunes Natural Preserve, and Fort Ord Dunes State Park.
6	Section 3.4, p. 3-16	Land Use: Table 3-1 of the SVBGSA GSP lists the number of acres of land designated by DWR for each land use category within the 180/400 Foot Aquifer Subbasin but does not describe the categories other than to say that *"The majority of land in the Subbasin is used for agriculture."* It is important to recognize that while agricultural land use represents the main beneficial use of groundwater in the Subbasin on a volume basis, by not describing the other types of land uses, the section appears oriented only to deal in a meaningful manner with agricultural uses. Other significant beneficial uses include environmental and municipal uses. Further description of land use categories within

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		the 180/400 Foot Aquifer Subbasin related to these additional beneficial uses is required to provide objective background and a balanced perspective for the GSP. • The Natural Communities Commonly Dependent on Groundwater dataset (NC Dataset) was prepared by The Nature Conservancy (TNC) and DWR specifically to support analysis of land uses that represent potential environmental beneficial users of groundwater. It can be accessed on DWR's NC Dataset Viewer site (https://gis.water.ca.gov/app/NCDatasetViewer/) and indicates there are over 3,000 acres of actual and potential groundwater-dependent wetland and vegetation habitat within the 180/400-Foot Aquifer Subbasin. This land use category is a significant potential beneficial user of groundwater and must be specifically mentioned. • The "Conservation" land use category is particularly important in terms of Environmentally Sensitive Habitat Areas (ESHAs) within the Coastal Zone of California that are protected under the California Coastal Act and the City of Marina Local Coastal Program (LCP), as well as other protected lands that are potential beneficial users of groundwater. With respect to the area near the MGSA, several important protected wetlands and vernal ponds have been identified near the City and represent beneficial groundwater users that would likely be adversely affected by significant groundwater withdrawals if they are not adequately characterized, monitored and managed under a GSP. Additional information regarding these groundwater dependent ecosystems (GDEs) is included in Attachment 3.
7	Section 3.4.1, Figure 3-6	Beneficial Uses/Users: Missing from the municipal areas shown on Figure 3-6 are the Central Marina and Ord Community service areas that are entirely reliant on groundwater supplied by MCWD.
8	Section 3.4.2, p. 3-20	Beneficial Uses/Users: In the description of water use sectors, the SVBGSA GSP states "*Groundwater use by native vegetation is minimal*" and fails to mention or identify GDEs. As described in Attachment 3, the NC Dataset indicates that there are over 3,000 acres of actual or potential GDEs located within the Subbasin. Information about specific GDEs identified near the MGSA Area is also presented in this attachment. No data, scientific analysis, or reference to studies is provided to support the statement that groundwater use by environmental beneficial users is "minimal." This statement appears to be used improperly as a justification for omitting further discussion of GDEs in this chapter, as required under 23 CCR § 354.8(g) and Water Code § 10727.4 unless GDEs are insignificant. The GSP Regulations include specific requirements to identify and evaluate GDEs (23 CCR § 354.16(g)) using data provided by DWR (e.g., the NC Dataset) or best available information. SGMA thus requires these evaluations prior to dismissing GDEs as "minimal." TNC has developed best practices for the assessment of data from the NC Dataset to determine whether potential GDEs included in that database are likely to be groundwater dependent. MGSA has applied this procedure near the MGSA Area and confirmed that significant GDEs are present. For these reasons, the GSP must list GDEs in this section as a beneficial user of groundwater. In addition, this section mentions the potential presence of *Arundo donax*

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		in wetland areas along the Salinas River but does not mention any of the other wetland and riparian species confirmed to be present and mapped in the NC Dataset. Additional information regarding the nature of the potential GDE areas and the communities present should be included as a separate subsection of this GSP pursuant to 23 CCR § 354.8(g), and an evaluation based on data provided by DWR or best available data should be included in Chapter 5 of the GSP and referenced in this section.
9	Section 3.6, pp. 3-25 to 3-31	Existing Monitoring and Management Programs: The discussion of groundwater level monitoring programs in this section omits a significant coastal aquifer monitoring program that is being implemented and expanded by the Monterey County Water Resources Agency (MCWRA) in the seaward portion of the Subbasin. This program is described in the *Integrated Coastal Groundwater Monitoring Program and Plan for Monterey County Water Resources Agency* by Zidar and Feeney, dated May 2019. This program includes 40 nested monitoring wells completed in the Dune Sand, 180-Foot and 400-Foot Aquifers, an additional 10 wells completed in the Dune Sand Aquifer, eight wells completed in the 180-Foot Aquifer, five wells completed in the 400-Foot Aquifer, and 14 wells completed in the Deep Aquifer. This monitoring program will provide critical data to assess seawater intrusion trends in the nearshore area, and must be fully described in this section. This section of the GSP is limited to discussion of existing groundwater level and quality monitoring programs, and a brief mention of gauging stations located within the Subbasin. The SGMA regulations require discussion of "existing water resources monitoring and management programs" (23 CCR § 354.8(c)). For the GSP to comply with this requirement and provide the appropriate context to assure integration of GSP implementation with other ongoing regulatory programs, a description of jurisdictions related to aquatic resources, interconnected surface waters, instream flow requirements, and GDEs that could be affected by groundwater withdrawals is needed. Programs that should be described include the following: • Vernal pond and wetland habitat that is monitored and managed under the City of Marina's LCP and adopted monitoring programs as discussed in Attachment 1. • National wildlife refuges, coastal preserves, sensitive habitats, and critical riparian and aquatic habitat areas that are managed and monitored under the oversight of the relevant agencies, including the United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and local entities, which conduct monitoring as necessary, which are listed in Attachment 2. • Critical habitat for Western snowy plover that exists along the western shoreline of the MGSA Area, extending to the north and south. • Critical habitat for tidewater goby (*Eucyclogobius newberryi*) within the Salinas River National Wildlife Refuge and mouth of the Salinas River.

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10	Section 3.6.5, p. 3-31	Incorporation of Existing Monitoring Programs: This section describes the existing monitoring program adopted in the GSP. The monitoring network adopted for the GSP in Chapter 7 currently includes only a single well completed in the 400-Foot Aquifer in the nearshore area south of the Salinas River within four miles of the coast. There is only one water level monitoring well in the Deep Aquifer and no water quality or seawater intrusion monitoring wells. This is identified as a data gap in the GSP, but there are existing wells in the MCWRA's monitoring program that could be added at this time. This is a serious flaw in the GSP because it does not recognize, monitor, or address groundwater impact issues south of the Salinas River. The City of Marina is entirely dependent on groundwater resources extracted from Subbasin aquifers in this area. In addition, several protected GDEs have been identified in this area. As conceived, SVBGSA's monitoring program does not include wells at a sufficient spatial distribution to evaluate the effects and effectiveness of plan implementation in the nearshore portion of the Subbasin, or meet the objective of monitoring impacts to the municipal and environmental beneficial uses and users of groundwater in this area (23 CCR §354.34(b)). SVBGSA must add sufficient monitoring wells in this area from MCWRA's existing coastal monitoring program to its monitoring networks (1) to assess seawater intrusion into the Dune Sand, 180-Foot, and400-Foot Aquifers in the nearshore area, (2) to serve as an early warning to detect seawater intrusion into the as yet unintruded Deep Aquifer, and (3) to assess surface-groundwater interaction and shallow water table drawdown in the vicinity of the identified GDEs in this area.
11	Section 3.10, pp. 3-39 to 3-50	General Plans and Land Use Plans: General plan descriptions should include a description of relevant environmental policies related to wetlands and riparian areas, which are beneficial users of groundwater in the Subbasin. SGMA regulations require a summary of "other land use plans governing the basin" (23 CCR § 354.8(f)(1)). Other land use plans that are relevant to the GSP should be described, including local coastal plans, and other resource management plans, such as the resource management plan for the GDEs identified near the City of Marina. Please refer to Attachment 1 for a list and description of relevant general and local land use plans near the MGSA Area.
12	Section 3.10.4, pp. 3-46 to 3-47	City of Marina General Plan: The description of the City of Marina General Plan in the GSP fails to include information regarding open space policies for protection of important habitat and scenic areas that are relevant to the management of surface-groundwater interaction and GDEs (City of Marina General Plan Section 2.3, Number 3, Open Space and Section 2.7 Open Space). Lands designated as "Habitat Reserve and Other Open Space" in the General Plan include: • Approximately 1,600 acres west of Highway 1 designated as Habitat Reserve (City of Marina General Plan Section 2.10, Number 2, Coastal Strand and Dunes); and • An area of 80 acres on the Armstrong Ranch property between Del Monte Boulevard and Highway 1 designated as Habitat Reserve due to the presence of "vernal ponds" (City of Marina General Plan Section 2.10, Number 4, Wetlands).

		The City of Marina has an approved Local Coastal Program (LCP), certified by the California Coastal Commission, that consists of a Local Coastal Land Use Plan (LCLUP) (*City of Marina Local Coastal Program Volume I Land Use Plan*, November 2013) and a Local Coastal Implementation Plan (LCIP) (*City of Marina Local Coastal Program Volume II Implementation Plan*, November 2013) to conserve coastal dependent land use and environmentally sensitive habitat areas including vernal ponds. The LCLUP provides for habitat protection for rare and endangered species and for wetlands protection. The policies of the LCLUP as well as the land use designations address these concerns and resolve them in terms of the mandates of the California Coastal Act for the beach, dunes, and vernal ponds. Policies related to habitat management relevant to the GSP are as follows: • **Vernal Ponds –** To protect and encourage the restoration of the vernal ponds to their original state and allow only those uses adjacent, which will reinforce and conserve the unique habitat qualities of these ponds. • **Dunes –** To protect the habitat of recognized rare and threatened/endangered species found in the coastal dune area. The emphasis of the LCLUP is to maximize public access consistent with the environmental sensitivity of the dune habitat and resident rare and threatened/endangered plants and animals. See Attachment 1 for further description of the goals and policies of the LCLUP. Marina also has a Comprehensive Management Plan (CMP) which was adopted in 1994 in response to development pressures that could affect the City's vernal pond resources (*Coastal/Vernal Pond Comprehensive Management Plan*, February 15, 1994). The plan provides for the preservation, management and enhancement of the coastal and vernal ponds and wetlands resources. See Attachment 1 for a description of the goals and management and enhancement actions of the CMP. City of Marina is preparing an updated CMP for the coastal and/or vernal ponds that will identify guidelines for the preservation, management, and enhancement of the region's wetland resources (City of Marina 2013). The plan will include both public and privately owned ponds, including those owned and managed by City of Marina, California Department of Parks and Recreation, and Marina Coast Water District.
13	Section 4.4, p. 3-17 to 3-19	Subbasin Hydrogeology: 23 CCR § 354.14 (a) requires that *"Each Plan shall include a descriptive hydrogeologic conceptual model of the basin based on technical studies and qualified maps that characterizes the physical components and interaction of the surface water and groundwater systems in the basin."* The interaction of the shallow aquifers, including the Dune Sand Aquifer, with the surface water is sparingly described, and the mechanism by which recharge percolates from the Salinas River into the aquifer system is not discussed. An expanded discussion of these important conceptual hydrogeologic conceptual model components is included in Attachment 4. Please expand the discussion in the GSP to include these facts.
14	Section 4.4.1	Principal Aquifers and Aquitards: The description of the Shallow Aquifer in the introductory paragraph of this section does not accurately describe the Dune Sand Aquifer, which is a significant part of the shallow aquifer system near the City of Marina. Specifically, the generalization that the shallow aquifer is of low yield and poorly connected to the

		underlying productive aquifers inaccurately characterizes the Dune Sand Aquifer. This significant local aquifer is comprised of highly permeable dune sands and could yield significant quantities of water to wells. Additional discussion is provided in Attachment 4. Airborne electromagnetics (AEM) investigations performed by Stanford University researchers and others (Gottschalk *et al.* 2018) indicate that the Dune Sand Aquifer stores nearly 200,000 acre-feet of groundwater designated under State Water Resources Control Board Resolution No. 88-63 (SWRCB Resolution No. 88-63) as having a designated beneficial use for municipal and domestic supply.
15	Section 4.4.1, p. 4-17	Principal Aquifers and Aquitards: This section identifies the principal aquifers in the Subbasin. Under SGMA regulations, principal aquifers are defined as *"aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems"* (23 CCR § 351 (aa)). GSPs must identify sustainable management criteria and designate monitoring networks to sustainably manage groundwater resources in all principal aquifers. The Dune Sand Aquifer in the shoreward portion of the Subbasin is an important local aquifer that should be identified as a principal aquifer because (1) it yields significant quantities of water to GDEs that include unique habitat for threatened and endangered species and are protected under the California Coastal Act and local management plans, (2) it stores a substantial quantity of groundwater with low concentrations of total dissolved solids (TDS) that has designated beneficial uses as domestic and municipal supply, (3) it is an important source of low-TDS groundwater recharge stored in aquifers below it, and (4) it stores low-TDS groundwater in equilibrium with an intruding saline water wedge deeper in the aquifer system, thus retarding seawater intrusion. Additions details are presented in Attachment 4 and include the following: • The City of Marina has, over 25 years, closely monitored local wetlands under the *Costal/Vernal Ponds Comprehensive Management Plan* that was developed by the City in 1994 in collaboration with several environmental non-governmental organizations (NGOs). There are seven wetlands identified for special consideration under the plan. The wetlands are supported by runoff and the shallowest groundwater-bearing unit, which in the area of Marina is the Dune Sand Aquifer. • Recent AEM geophysical studies conducted by a team including researchers from Stanford University (Gottschalk *et al.* 2018) estimate that the Dune Sand Aquifer alone stores 188,000 acre feet of groundwater with a designated beneficial use as a municipal and domestic supply within and adjacent to the Subbasin. • AEM data (Gottschalk *et al.* 2018), studies conducted by MCWRA (2017a), and investigations performed for the Monterey Peninsula Water Supply Project (MPWSP) by the Hydrogeology Working Group (HWG 2016) indicate that groundwater levels in the Dune Sand Aquifer can be drawn down by groundwater extraction from the underlying 180-Foot Aquifer.
16	Sections 4.4.1.1 to 4.4.1.4, pp. 3-17 to 3-18	Principal Aquifers and Aquitards: This section also provides a generalized description of the aquifer system and recognizes that local variations exist but fails to recognize that most of the local variations occur in the nearshore area near the City of Marina. Additional clarification is needed to support an adequate conceptual understanding for sustainable groundwater management in this part of the Subbasin (see Attachment 4). The Salinas Valley Aquitard is described as laterally continuous, but pinching out in certain areas (Kennedy/Jenks 2004, and Harding ESE 2001).

		Investigations performed by Stanford (Gottschalk *et al.* 2018) and MCWRA (2017a) and permitting studies for the proposed MPWSP (HWG 2016) indicate that near the City of Marina the Salinas Valley Aquitard is thin or absent in many locations, and the Dune Sand Aquifer is in hydraulic communication with the underlying 180-Foot Aquifer. In these locations, the 180-Foot Aquifer is not confined and groundwater extraction from this aquifer can affect groundwater levels and storage in the overlying Dune Sand Aquifer. Similarly, the 180/400-Foot Aquitard is described as overlying and confining the 400-Foot Aquifer, but being of variable thickness and quality and absent in some areas. The areas where MCWRA has determined that this aquitard is thin or absent are generally in the seaward portion of the Subbasin.
17	Section 4.4.1.5, p. 3-18	Principal Aquifers and Aquitards: The description of the Deep Aquifers omits several important established facts which should be included in the description (see Attachment 4): • The Deep Aquifers are not seawater intruded; • The Deep Aquitard is heterogeneous and includes water-producing intervals at some locations; • Evidence indicates that the Deep Aquifers are recharged with leakance from the overlying 400-Foot Aquifer; and • In part because of uncertainty regarding the potential for leakance of seawater intruded groundwater from the overlying 400-Foot Aquifer through the Deep Aquitard into the Deep Aquifers, MCWRA has recommended, and Monterey County has adopted, restrictions on the construction of new wells in the Deep Aquifers until further characterization can occur.
18	Section 4.4.3, pp. 4-20 to 4-22	Natural Recharge Areas: The GSP inaccurately generalizes that *"recharge to the productive zones of the Subbasin is very limited because of the low permeability Salinas Valley Aquitard."* This statement is inconsistent with the mapping conducted by MCWRA (https://montereycountyopendata-12017-01-13t232948815z-montereyco.opendata.arcgis.com/datasets/recharge-areas-1), which identifies most of the area at and near Marina (south of the Salinas River and north of the Subbasin boundary) as a recharge area. The area is underlain by highly permeable, well sorted dune sand deposits and soil survey data indicate most of the area is underlain by well to excessively drained soils (USDA 2019). Notably, design standards for the City of Marina assume infiltration capacities of 12 inches per hour; as a result of this rapid infiltration capacity, the City of Marina does not operate stormwater outfalls and there are no mapped surface drainages in this area. Furthermore, the Salinas Valley Aquitard is thin or absent in much of this area. It is possible that the Soil Agricultural Groundwater Banking Index (SAGBI) rating for this area, on which the incorrect statement in the GSP appears to be based, is due to incorrect assumptions about the subsurface stratigraphy. The high recharge rate in this area has important implications regarding water quality in the Dune Sand and 180-Foot Aquifers and seawater intrusion processes in the nearshore area. For these reasons, this section should be modified to accurately reflect the high recharge rates in this area. Note, the Figure 4-12 title and content are inconsistent. The title is "Piper Diagram of Groundwater General Mineral Chemistry for the 180/400-Foot Aquifer;" however, the legend presents "Potential Aquifer Recharge Areas" with a

		reference to "Rossenberg and Feeney, 2001". The potential aquifer recharge area shown on this figure is consistent with the recharge information cited above on the MCWRA web site. The information shown on Figure 4-12 should be incorporated into the GSP.
19	Section 4.4.4, p. 4-23	Natural Discharge Areas: As discussed below in Comment 22, the methodology used to eliminate potential GDEs identified in the NC Dataset downstream of the river reach near Chualar is flawed. There are insufficient shallow groundwater data at most locations to assume that the potential GDEs are not underlain by a shallow water table or to assess the potential connection of shallow groundwater to the regional aquifers. As such, the best available information regarding GDEs is the NC Dataset, and the potential GDEs identified in the NC Dataset should all be retained and identified as groundwater discharge locations. Whether or not these GDEs are dependent on groundwater that can be affected by groundwater withdrawals should be addressed as a separate question. To that end, as discussed in Comment 24 and Attachment 3, the vernal pond GDEs near the City of Marina have been confirmed as being potentially affected by groundwater extraction from the Dune Sand, 180-Foot and 400-Foot Aquifers. The remaining GDEs in the Subbasin identified in the NC Dataset should be considered potential GDEs until/unless further testing verifies that they are not connected to the underlying production aquifers because the available data are insufficient to eliminate them from consideration. Further, the type of GDE, its sensitivity to groundwater level changes, and the seasonal and interannual variations in groundwater levels should be evaluated. The City of Marina is conducting long-term monitoring of the seven vernal ponds under its 1994 CMP plan (see Attachment 1), and the SVBGSA GSP should include long-term monitoring of GDEs within the Subbasin to assure that they are not adversely impacted by groundwater withdrawals.
20	Section 4.5, p. 4-25	Surface Water Bodies: While it is beyond the scope of the GSP to address restoration of natural flow to the Salinas River, there is value in evaluating reoperation of the dams and reservoirs for recharge, as is discussed in Section 9.3.4. It is also worth noting in Section 4.5 that reservoir reoperation is a proposed project in the GSP and will be discussed later in the document.
21	Section 4.6.2, p. 4-28	Seawater Intrusion: This section presents a brief summary of seawater intrusion in the basin. The following significant details are very important to understanding the process of seawater intrusion in this Subbasin and should be added: • Seawater Intrusion processes near the shore are dominated by density-driven flow and dynamic equilibrium conditions at the interface between dense, highly saline groundwater intruding from the ocean and overlying low-TDS groundwater that is recharged near the shore (see Attachment 4). Disturbance of this equilibrium and movement of the saline water wedge can affect seawater intrusion further inland. • The fact that SWRCB Resolution No. 88-63 assigns a potential beneficial use as municipal and domestic supply to all groundwater containing less than 3,000 milligrams per liter (mg/L) TDS must be mentioned.
22	Section 4.7, p. 4-29	Data Gaps: Several known data gaps are not described in this section and should be discussed: • The GSP has identified the need for additional field reconnaissance regarding GDEs. The following data gaps are associated with GDEs and should be recognized in this section: shallow groundwater conditions near

		GDEs, the nature of the GDE communities and their reliance on groundwater, and seasonal and interannual groundwater level fluctuations near the GDEs. • The GSP has identified that limited groundwater level data are available to assess surface water – groundwater interaction, and SVBGSA is planning to install wells to better understand the hydraulic connection.
23	Appendix 4A, p. 3	The methodology for identification makes reference to assessment of whether or not a potential GDE identified in the NC Dataset is "underlain by a shallow unconfined or perched aquifer that has been delineated as being part of a Bulletin 118 principal aquifer in the Subbasin." We note that Bulletin 118 does not delineate or designate principal aquifers for the purposes of SGMA compliance. The assessment presented in the GSP improperly assumes the lateral continuity of the Salinas Valley Aquitard which, as discussed above, is now known to be absent or discontinuous in the area near the coast to the south of the Salinas River (Gottschalk *et al.* 2018, MCWRA 2017a, and HWG 2016). In addition, no hydrologic, groundwater level, or other data are presented to verify the competence of the aquitard beneath the identified potential GDEs. As such, the elimination of potential GDEs downstream of the river reach near Chualar is inappropriate given the available data. In addition, the vernal ponds near the MGSA Area must be recognized as GDEs, and in areas which are underlain by the Salinas Valley Aquitard the existence of GDEs should be identified as a data gap pending additional verification.
24	Section 5.1, pp. 5-1 to 5-30	Groundwater Levels and Gradients. One large and important omission from the GSP is a close analysis, using the best information available, of the groundwater levels and gradients of the area south of the Salinas River, including the seaward portion of the Subbasin. This section of the GSP presents a regional-level analysis of current and historical groundwater levels and gradients. Notably missing is a level of detail necessary to understand processes in the seaward portion of the Subbasin, where seawater intrusion originates. In addition, no monitoring or characterization data are provided for the shallow aquifer, including the Dune Sand Aquifer, which contains a low-TDS groundwater zone that plays an important role in retarding density-driven seawater intrusion, as explained in Attachment 4. This additional detail should be provided, or a reference made to the MGSA GSP as complementing the SVBGSA GSP with additional data in this area.
25	Section 5.2.1, p 5-31	Seawater Intrusion Data Sources: Two additional data sources are critical to understanding seawater intrusion conditions and dynamics in the Subbasin's nearshore area: water quality data gathered for the MPWSP monitoring well investigation (GeoSciences Support Service, Inc. 2019); and the nearshore AEM study (Gottschalk *et al.* 2018). These data sources represent a part of the "best available information" that is required to be used to characterize groundwater conditions under 23 CCR § 354.16. These two data sources identify the presence of a zone of low-TDS groundwater that is recharged through the Dune Sand Aquifer and is juxtaposed against a dense saline water intrusion wedge that intrudes into the Subbasin as described in Attachment 4. These features represent an important component of the nearshore dynamics of seawater intrusion and must be discussed in this section of the GSP.
26	Section 5.2.2, pp.	Seawater Intrusion Maps and Cross Sections: The MCWRA map shown on Figure 5-24 depicts several "chloride islands" that have resulted from the vertical migration of seawater intrusion through gaps in the 180/400-Foot

	5-31 to 5-34	Aquitard. This important migration pathway for seawater intrusion has been described in reports prepared by MCWRA (2017a and 2017b) and should be discussed in the GSP.
27	Section 5.2.2, pp. 5-31 to 5-34	Seawater Intrusion Maps and Cross Sections: The AEM study (Gottschalk *et al.* 2018) includes water quality cross sections and produced visualization tools depicting the nature and extent of seawater intrusion in the nearshore area of the Subbasin. These tools assist in understanding the relationship of the shallow low-TDS groundwater, the deeper dense saline water wedge, and the freshwater-saline water interface described by the Ghyben-Herzberg Principal. AEM study graphics should be included in the seawater intrusion discussion.
28	Section 5.6.2, pp. 5-56 to 5-57	Interconnected Surface Water: The shallow aquifer supports vernal ponds and wetlands within the Subbasin at and near the City of Marina as described in Attachment 3. These GDEs represent surface water resources that should be mentioned in this section of the GSP. This section identifies the assessment of surface water – groundwater interaction as a data gap to be addressed by groundwater modeling. Without shallow monitoring well data to calibrate the performance of the groundwater flow model, its ability to accurately characterize surface water – groundwater interactions will be significantly limited. The seaward portion of the Subbasin near the MGSA Area includes nested monitoring wells that span from the 400-Foot Aquifer to the Dune Sand Aquifer at eight locations, and additional wells are planned at five more locations. These wells should be utilized to characterize surface-groundwater interactions in this area and calibrate the groundwater flow model.
29	Section 6, p. 6-1	Water Budgets: As is noted in Section 4.7 (Data Gaps), very little is known about the hydrostratigraphy of the Deep Aquifer. Therefore, very little is known about the regional groundwater inflow and outflow for the Deep Aquifers. The Deep Aquifers are a critical water supply source; therefore, this data gap should be noted in the introduction to Section 6, and it should be discussed in each section with respect to how the Deep Aquifer data gap impacts the ability to estimate the water budget components.
30	Section 6.2.2; p. 6-4	Groundwater Budget: Evapotranspiration from GDEs should be identified as a groundwater budget outflow component.
31	Section 6.6.2; p. 6-19	Groundwater Evapotranspiration. This section discusses riparian evapotranspiration and omits several important facts; • As explained above, GDEs have been identified in the form of vernal ponds and riparian systems (Attachment 3). These GDEs are important beneficial groundwater users. The discussion in this section should be broadened to include a description of the types of GDEs that exist in the Subbasin, their potential habitat value, and their potential sensitivity to groundwater level drawdown. The GSP should identify any data gaps and discuss plans to fill them in the sections of the GSP that discuss monitoring networks, projects and management actions, and plan implementation. • The NC Dataset identifies many different native wetland and riparian vegetation species in the Subbasin, yet the discussion in the GSP mentions only *Arundo donax*. The focus on a single, non-native, invasive species while omitting discussion of other species known to be present is inadequate to characterize these beneficial

		groundwater users, their value, and the degree of their reliance on groundwater and sensitivity to drawdown. A more comprehensive discussion of GDE communities should be included, including the vegetation species present, their rooting depths, and their ability to adapt to groundwater level fluctuations. In addition, the potential presence of any threatened or endangered species should be discussed. Any data gaps should be identified and plans to fill them discussed in the sections of the GSP that discuss monitoring networks, projects and management actions, and plan implementation.
32	Section 7, pp. 7-1 to 7-28	Monitoring Programs: The SVBGSA GSP presents monitoring networks for each of the six sustainability indicators that are relevant to the 180/400 Foot Aquifer Subbasin. • A key flaw in the GSP is that none of the monitoring networks described in the SVBGSA GSP include wells within or near the MGSA Area. The MGSA Area is important particularly to groundwater resources and GDEs in the Subbasin because it is where the Dune Sand Aquifer is recharged and discharged and is an area that is affected by seawater intrusion. • None of the monitoring networks include monitoring of the shallow Dune Sand Aquifer. Because this aquifer supports GDEs, it should be considered a principal aquifer and wells screened in this aquifer should be added to the network. • The SVBGSA GSP has identified Data Gaps in the monitoring networks in the vicinity of the City of Marina and in other areas and has identified the need for additional groundwater monitoring wells in these areas. In order to determine if groundwater in the various aquifers is connected and the extent of the dense saline wedge, new wells in the Marina area should target the Dune Sand, 180-Foot, 400-Foot, and Deep Aquifers. This is currently planned under MCWRA's coastal monitoring program • The SVBGSA GSP does not include an interconnected surface water monitoring network. Shallow groundwater in the Dune Sand Aquifer is in communication with surface water in vernal ponds within the City of Marina and nearby. Monitoring of interconnected surface water should be considered a Data Gap in the SVBGSA GSP. The SVBGSA's GSP should either adopt wells from MCWRA's coastal monitoring program or acknowledge that MGSA's proposed monitoring program addresses these data gaps.
33	Section 7.2; pp. 7-2 to 7-15	Monitoring Networks: The proposed monitoring network includes only a single well completed in the 400-Foot Aquifer in the nearshore portion of the Subbasin south of the Salinas River and only one well completed in the Deep Aquifers anywhere. These omissions severely undermine the GSP because they fail to monitor aquifers that are critical to protecting the groundwater supply, beneficial uses, and GDEs of the communities south of the Salinas River. Thus, the existing monitoring system includes significant data gaps beyond those discussed in this section of the GSP, especially near the MGSA Area. The proposed MGSA monitoring program addresses these data gaps in the nearshore area by adopting key wells of MCWRA's coastal monitoring program. This includes nested monitoring wells in the 400-Foot, 180-Foot, and Dune Sand Aquifers at 13 locations, and an additional 14 Deep Aquifer wells. The SVBGSA's GSP should include recognition that MGSA's monitoring program will address existing monitoring data gaps in the nearshore area.

34	Section 7.4; pp. 7-17 to 7-22	Seawater Intrusion Monitoring: Similar to the groundwater level monitoring program, the GSP's seawater intrusion monitoring network includes no wells in the nearshore area and no Deep Aquifer wells. In contrast, the monitoring program in the MGSA's GSP includes four nearshore monitoring wells in the 180-Foot, 400-Foot and Dune Sand Aquifers, and 14 additional Deep Aquifer wells. In addition, the MGSA's GSP adopts inductance logging planned by MCWRA at the 13 nearshore well clusters to assess changes and trends in the nearshore seawater intrusion dynamics. This section of the GSP should acknowledge that MGSA's program fills these data gaps in SVBGSA's plan or should adopt these plan components to fill data gaps in its monitoring network.
35	Section 8.6.1 and 8.6.2; pp. 8-8 to 8-20	Chronic Decline in Groundwater Levels: The sustainable management criteria for the Chronic Decline in Groundwater Levels sustainability indicator should consider all beneficial uses and users of groundwater, including the municipal water supply and GDEs. GDEs are a beneficial user of groundwater and should be considered in the definition of Undesirable Results in Section 8.6.1 and the establishment of Minimum Thresholds in Section 8.6.2.
36	Section 8.6.4.3; p. 8-26	Effects on Beneficial Users of Groundwater: The GSP states that *"If the exceedances [of Measurable Objectives] are clustered in a small area, it will indicate that significant and unreasonable effects are being born by a localized group of landowners. To avoid this, the monitoring system is designed to have broad geographic coverage; ensuring that minimum threshold exceedances cannot be clustered in a single area."* We note that this approach will decrease the ability to detect undesirable effects but will do nothing to prevent their occurrence or decrease the extent of the effects on beneficial users. For example, near the MGSA Area, groundwater drawdown would likely result in significant and unreasonable effects on sensitive and regulated GDEs, but SVBGSA's monitoring network would not detect these drawdowns. Similarly, potential seawater intrusion into the Deep Aquifer would not be detected by the proposed monitoring system until the near-coastal municipal supply wells relied upon by the City of Marina are affected. The GSP Regulations require that *"Each Plan shall include . . . an explanation of how the network will be developed and implemented to monitor groundwater and related surface conditions, and the interconnection of surface water and groundwater, with sufficient temporal frequency and spatial distribution to evaluate the affects and effectiveness of Plan implementation. The monitoring network objectives shall be implemented to accomplish the following: . . . Monitor impacts to the beneficial uses or users of groundwater."* (23 CCR § 354.34(b)). The proposed monitoring network is insufficient to comply with these requirements in the vicinity of the MGSA Area and possibly in other areas of the Subbasin. SVBGSA must augment the monitoring network with sufficient additional monitoring wells from the MCWRA's coastal monitoring program to assure that the GSP's sustainability objectives are met for all beneficial uses and users in the Subbasin, including municipal and environmental uses near the coast.
37	Section 8.8.2; p. 8-33	Minimum Threshold for Seawater Intrusion: The GSP sets the Minimum Threshold for seawater intrusion into the Deep Aquifers as advancement of the 500 mg/L chloride isoconcentration contour to Highway 1. The City of Marina and MGSA strenuously objects to this definition. The Deep Aquifers are currently unintruded, and allowing intrusion into this aquifer violates the State's anti-degradation policy (State Water Resources Control Board Resolution No. 68-16) and puts the City of Marina's primary water supply at risk. Since the aquifer currently yields high quality

		groundwater and is unintruded, any significant groundwater quality degradation would violate this policy; therefore, the only acceptable Minimum Threshold would be a statistically significant degradation of water quality. This is the threshold that was adopted in MGSA's GSP.
38	Section 8.11; pp. 8-61 to 8-70	Sustainable Management Criteria for Interconnected Surface Water: MGSA has determined that GDEs exist near the MGSA Area in the seaward portion of the Subbasin, and these GDEs are connected to the Dune Sand Aquifer. Based on investigations of the local hydrostratigraphy, groundwater extraction from the 180-Foot and 400-Foot Aquifer could adversely affect these protected habitats. These facts, and likelihood that similar conditions could occur at other locations, should be considered in the establishment of sustainable management criteria for this sustainability indicator.
39	Section 9.4.3.7; p. 9-50	Seawater Intrusion Barrier Project: SVBGSA proposes to adopt construction of a seawater intrusion barrier as a priority project as soon as funding is available, lands and rights of way are acquired, and permits are obtained. MGSA notes that the dynamics of seawater intrusion in the nearshore area are controlled by density-driven flow, the occurrence of local recharge and the extent of low-TDS water in the upper aquifer system, and the heterogeneity of the aquifer system, including significant gaps in the intervening aquitards. A model that simulates these conditions is not yet available, and while the need for such a model is being discussed, there are no concrete plans to develop one yet. In addition, the competence of the aquitard that separates the upper aquifer system from the Deep Aquifers, and the potential for vertical seawater intrusion downward from the 400-Foot Aquifer into the Deep Aquifers has been identified as a significant data gap. At the same time, GDEs have been identified that could be adversely affected by the withdrawal of groundwater in the nearshore area. Without the appropriate tool to evaluate the potential effects of this ambitious project or a resolution to the longstanding data gap regarding the vulnerability of the Deep Aquifers to vertical seawater intrusion, it is premature to include the Seawater Intrusion Barrier as a priority project in the GSP. Not only is the design and location of the project in question (for example, the wells should probably be located as close the coastline as possible to decrease adverse impacts to the water quality of inland aquifers), but the potential for significant and unreasonable effects on the coastal aquifers, the drinking water supplies of coastal cities, and nearshore GDEs are completely unknown. We therefore urge SVBGSA to remove this ill-advised project from consideration as a priority project in the GSP at this time.

ATTACHMENT 1 – RELEVANT LAND USE PLANS FOR THE COASTAL AREAS OF THE 180/400 FOOT AQUIFER SUBBASIN

The GSP Regulations include specific requirements to provide a summary of general plans and other land use plans governing the basin (23 CCR §354.8(f)). As described below, land use is an important factor in water management. The City of Marina has land use authority over the incorporated areas of the City of Marina, which includes the Coastal Zone and the Marina Groundwater Sustainability Area (MGSA) Area. Marina has developed and adopted both a General Plan and a Local Coastal Land Use Plan. Additionally, Monterey County has land use authority over the unincorporated areas of the County and considers the general plans of all the cities within the County to allow for cooperative planning. Table 1-1 provides a list of relevant land use plans for the coastal areas of the 180/400 Foot Aquifer Subbasin and a summary of goals and policies related to groundwater and the protection of environmental beneficial uses and users.

Table 1-1. Relevant General Plans and Other Land Use Plans

Land Use Plan	Year	Goals/Policies Related to Environmental Beneficial Uses
City of Marina General Plan	2010	The overall goal of the City of Marina General Plan is "the creation of a community which provides a high quality of life for all its residents; which offers a broad range of housing, transportation, and recreation choices; and which conserves irreplaceable natural resources" (City of Marina 2010). One of the general framework goals of the plan is particularly relevant to the SVBGSA GSP—"Community development which avoids or minimizes to the greatest extent possible the consumption or degradation of nonrenewable natural resources including natural habitats, water, energy, and prime agricultural land." The General Plan specifies open space policies to ensure retention of land with significant natural resource value and includes habitat reserves and other open space to protect important habitat and scenic areas. Habitat reserve and open space include coastal strand and dune areas adjacent to Monterey Bay as well as wetlands, which provide habitat for rare and threatened wildlife and plant species.
City of Marina's Coastal/Vernal Ponds Comprehensive Management Plan (CMP)	1994	The Coastal/Vernal Ponds CMP identifies the hydrologic conditions, biological resources, and land uses of the seven vernal/coastal ponds within the City of Marina. The plan also identifies specific measures to be conducted at each pond to preserve, protect and enhance sensitive resources. The management and enhancement actions include the following: • Control of urban runoff through stormwater filtration devices and retention basins, • Removal of invasive, non-native plant species, • Revegetation of degraded areas with native plant species,

Land Use Plan	Year	Goals/Policies Related to Environmental Beneficial Uses
		• Repair of construct fencing to restrict dog access, • Control spread of non-native plant species, • Provide controlled pubic access at selected locations, • Provide interpretation and education of pond resources at public access locations, • Coordinate with mosquito abatement personnel on biologically compatible abatement measures, and • Prepare an educational brochure for City residents on pond resources and best management practices. The goals of the Coastal/Vernal Ponds CMP are derived from the City of Marina Local Coastal Program with input from the technical advisory group, the public and the project consultants and include the following: • Preserve, enhance and restore the natural resource values of the ponds and adjacent upland habitat, including dune areas. • Reduce the impacts of human activities (including water quality, sedimentation, and erosion) on the City's pond resources. • Provide passive recreational uses of the ponds and adjacent habitat where compatible with natural resource management. • Develop "Best Management Practices" (BMPs) for the ponds and immediate vicinity.
City of Marina Local Coastal Program Land Use Plan (LCLUP)	2013	The City of Marina has an approved Local Coastal Program, certified by the California Coastal Commission, to conserve coastal dependent land use and environmentally sensitive habitat areas including vernal ponds. The LCLUP provides for habitat protection for rare and endangered species and for wetlands protection. The foredune, dune, and grassy inland areas of the Coastal Zone all contain potential habitat for rare and endangered plants and animals. Site-specific studies are needed in these areas before any development can take place. Policies included in the LCLUP (City of Marina 2013, p. 15) for habitat protection include: • Before any use or change in use, areas identified as potential habitat for rare and endangered plant or animal species shall be investigated by a qualified biologist to determine the physical extent of primary habitat areas. • Primary habitat areas shall be protected and preserved against any significant disruption of habitat values and only uses dependent on those resources shall be allowed within those areas. • Potential secondary or support habitat areas to the primary habitats identified on the site should also be defined. All development in this area must be designed to prevent significant adverse impacts on the primary habitat areas.

Land Use Plan	Year	Goals/Policies Related to Environmental Beneficial Uses
		• In concert with State law, City ordinances shall require environmental review and appropriate mitigation of identified impacts for all development in the Coastal Zone, including the assurance of long-term mitigation and maintenance of habitat through the use of appropriate acreage replacement/restoration ratios for any unavoidable direct impacts to habitat areas (Resolution No. 2001-118 (October 16, 2001); approved by CCC November 14, 2001). • Development in wetlands shall be prohibited. • Where habitats of rare and endangered species are located on any parcel, owners and/or operators shall, at such time that development is proposed, develop and execute a Management Plan which will protect identified rare and endangered plant and animal communities. Policies included in the LCLUP (City of Marina 2013, p. 16) for wetlands protection include: • Because of their fragile geology, no new structures shall be allowed within a vernal pond itself. The only new structure allowed in the wetland area should be those designed for public access for nature observation. No access structure should be allowed without a thorough investigation by a qualified biologist and geologist. Design should include mitigation for all impacts identified by these specialists. • No development within the drainage areas of a vernal pond shall be approved without investigation by a qualified biologist as well as other necessary specialists. Grading setbacks, reduction of impervious surface coverage, siltation basins, and other appropriate measures shall be employed to protect the ponds and their wetlands. • A 100-foot riparian setback shall be established from the edge of all wetlands.
City of Marina Local Coastal Program Implementation Plan (LCIP)	2013	The City of Marina LCIP describes the various measures needed to carry out the City of Marina's LCLUP. The LCIP includes measures for the following: • Beach access by vertical accessways, lateral access or vernal pond accessways; • Standards for coastal protection structures; • Habitat protection; • Housing; and • Administrative procedures for coastal permits.
Monterey County General Plan	2010	Planning efforts in Monterey County have resulted in growth primarily in and around existing population areas and cities; however, the main objectives are to "provide direction for growth that supports continued viability of agricultural production and preserves as much of the County's scenic and environmental resources as possible."

Land Use Plan	Year	Goals/Policies Related to Environmental Beneficial Uses
		The Monterey County General Plan includes the following goals and policies related to land use, conservation and open space that are relevant to the SVBGSA GSP: • Land Use - Promote appropriate and orderly growth and development while protecting desirable existing land uses (GOAL LU-1). • Land Use - Encourage the provision of open space lands as part of all types of development including residential, commercial, industrial, and public (GOAL LU-8). • Open Space - Conserve listed species, critical habitat, as well as habitat and species protected in area plans (GOAL OS-5). Avoid, minimize, and mitigate significant impacts to biological resources (GOAL OS-5). • Agriculture - Ensure compatibility between the County's agricultural uses and environmental resources (GOAL AG-5).

ATTACHMENT 2 – PROTECTED LANDS UNDER FEDERAL, STATE, LOCAL, OR OTHER AGENCY JURISDICTION

There are numerous protected lands, preserves, designated critical habitat, protected wetlands, and other sensitive habitats within and adjacent to the 180/400 Foot Aquifer Subbasin. These lands fall under federal, state, local, or other regulatory agencies' jurisdictions. Among these areas are several groundwater-dependent vernal ponds located near the City of Marina and subject to protection under the California Coastal Act, the City of Marina's Local Coastal Program, and a management plan required to be implemented by the City of Marina. Table 2-1 provides a list of protected lands within the 180/400 Foot Aquifer Subbasin near the MGSA Area and a brief description of each.

Table 2-1. Description of Protected Lands

Protected Lands	Jurisdictional Agency	Description
FEDERAL JURISDICTION		
Elkhorn Slough National Estuarine Research Reserve	National Oceanic and Atmospheric Administration and California Department of Fish and Wildlife	A 1,700-acre nature reserve established to promote the environmental education, research, and protection of ecosystems, wildlife and habitats in the Elkhorn Slough salt marsh and surrounding watershed.
Monterey Bay National Marine Sanctuary	National Oceanic and Atmospheric Administration	Federally protected marine preserve that stretches along the central coast from San Francisco to Cambria and includes beaches, tide pools, kelp forests, an underwater canyon, and other marine features.
Salinas River National Wildlife Refuge	US Fish and Wildlife Service	A 367-acre federally protected wildlife refuge that encompasses sand dunes, pickleweed salt march, river lagoon, riverine habitat and a saline pond and provides habitat for several threatened and endangered species. The refuge also provides food and shelter for thousands of birds traveling along the Pacific Flyway during the spring and fall migrations.
STATE JURISDICTION		
Elkhorn Slough State Marine Conservation Area	California Department of Fish and Wildlife	One of the few coastal wetlands remaining in California that shelters an abundance of marine life and is a state marine-protected area.
Elkhorn State Marine Reserve	California Department of Fish and Wildlife	State marine-protected area that is home to marine mammals and over 340 species of birds.
Fort Ord Dunes State Park	California Department of Parks and Recreation	State park along four miles of coastline on Monterey Bay created from part of the now-closed Fort Ord.
Marina State Beach	California Department of Parks and Recreation	State protected beach on Monterey Bay within the City of Marina City Limits that winds through the Marina Dunes Natural Preserve.
Moro Cojo Slough State Marine Reserve	California Department of Fish and Wildlife	A ½-square mile marine protected area established to protect the wildlife and habitats in Moro Cojo Slough.

Protected Lands	Jurisdictional Agency	Description
Moss Landing State Beach	California Department of Parks and Recreation	A long sandy beach backed by dunes just north of the Moss landing Harbor Channel entrance in the town of Moss Landing.
Moss Landing Wildlife Area	California Department of Fish and Wildlife	A 728-acre state-protected area that includes part of the largest unaltered salt marsh on the California coast.
Salinas River Dunes Natural Preserve	California Department of Parks and Recreation	State protected reserve in Monterey County south of the town of Moss Landing
Salinas River State Beach	California Department of Parks and Recreation	An exposed sandy coastline between the Salinas River and the town of Moss Landing at Elkhorn Slough.
LOCAL AND OTHER JURISDICTION		
Lock-Paddon Wetland Community Park	Monterey Peninsula Regional Park District	A 17-acre wetland area that holds a freshwater vernal pond that provides habitat for a range of avian wildlife within the City of Marina.
Marina Dunes Natural Preserve	Monterey Peninsula Regional Park District	Narrow strip of land consisting of coastal strand and dune habitat adjacent to and south of the 180/400-Foot Aquifer Subbasin that contains a large area of environmentally sensitive habitat that extends to the north in the Marina Dunes.

ATTACHMENT 3 – GROUNDWATER DEPENDENT ECOSYSTEMS

REGULATORY REQUIREMENTS AND GDEs IN THE 180/400 FOOT AQUIFER SUBBASIN

SGMA requires that all beneficial uses and users, including environmental users of groundwater, be considered in the development and implementation of GSPs (Water Code § 10723.2). The GSP Regulations include specific requirements to identify and consider groundwater-dependent ecosystems (GDEs) (23 CCR §354.16(g)) when determining whether groundwater conditions have potential effects on beneficial uses and users. GSAs must also assess whether sustainable management criteria may cause adverse impacts to beneficial uses and users, which include environmental uses, such as plants and animals. The Nature Conservancy (TNC) recommends using the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) provided online[1] by the Department of Water Resources (DWR), as a starting point for preparation of a GDE map. The NC Dataset was developed through a collaboration between DWR, the California Department of Fish and Wildlife (CDFW) and TNC. TNC also recommends using GDE Pulse[2] and the California Natural Diversity Database (CNDDB) provided by CDFW to look up species occurrences within GSP areas. The NC Dataset viewer identifies 3,026 acres of land occupied by wetland or vegetation communities commonly associated with groundwater.

GDEs NEAR THE MARINA GROUNDWATER SUSTAINABILITY AGENCY AREA

There are no GDEs directly within the MGSA Area, but an analysis following guidelines developed by TNC for identification of GDEs (TNC 2018) identified several likely GDEs in the area east of the MGSA Area, and similar GDEs occur to the north and south. These GDEs have been identified as coastal or vernal ponds and consist of palustrine and emergent wetlands. They are Environmentally Sensitive Habitat Areas (ESHAs) under the City of Marina Local Coastal Program (LCP) Land Use Plan (City of Marina 2013), which are designated protected areas within the Coastal Zone of California under the California Coastal Act. Groundwater development within the MGSA Area could affect these GDEs. The biodiversity and unique features of coastal vernal ponds in the vicinity of the MGSA Area are protected under the 1994 City of Marina Comprehensive Management Plan (CMP), which also provides for long-term monitoring of seven vernal ponds. (The Habitat Restoration Group 1994). Potential GDEs near the MGSA Area, and in the SVBGSA GSP area include riverine wetlands and riparian habitat along the banks of the Salinas River, and palustrine and emergent wetland areas that are seasonally flooded in depressions a short distance east of the MGSA Area, north in the Salinas River National Wildlife Refuge, and south in the City of Marina.

Several of the potential GDEs identified near the MGSA Area are managed under the *Coastal/Vernal Ponds Comprehensive Management Plan* that was developed by the City in 1994 (The Habitat Restoration Group 1994). Despite their sometimes seasonal nature, these GDEs are considered

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[1] *The Department of Water Resources' Natural Communities Commonly Associated with Groundwater dataset is available at: https://gis.water.ca.gov/app/NCDatasetViewer/*

[2] *The Nature Conservancy tool GDE Pulse is available at https://gde.codefornature.org/#/home*

coastal wetlands that provide habitat and cover for migratory waterfowl and a number of animals, including the endangered black legless lizard. Table 3-1 lists the location and current ownership / management of several of the vernal ponds in the City of Marina. The plan was developed to identify guidelines for the preservation, management and enhancement of Marina's wetland resources, and the plan identifies specific measures to be conducted at each pond to preserve, protect, and enhance sensitive resources.

Table 3-1. Vernal Ponds in Marina

Pond	Location	Current Ownership/Management
Pond 1	West of Lake Drive	City of Marina
Pond 2	Reservation Road and Seaside Avenue	City of Marina
Pond 3	Reservation Road and Beach Road	Private/City
Pond 4	North of Reservation Road West of Hwy 1	Marina Coast Water District
Pond 5	South of Reservation Road West of Hwy 1	CA Department of Parks and Recreation
Pond 6	West of Hwy 1	Private (unincorporated land outside City of Marina Limits)
Pond 7	West of Lake Drive	City of Marina

Source: City of Marina Local Coastal Program Land Use Plan (City of Marina 2013)

Ponds 3, 5, and 6 are located closest to the MGSA Area: Pond 6 – Armstrong Ranch Complex Ponds are immediately to the east of the MGSA Area; Pond 5 – Marina Coast Water District Pond is south of the MGSA Area; and Pond 3 – Marina Landing Pond is south east of the MGSA Area. They are described in City of Marina planning documents as "vernal ponds," which are areas where water pools that expand during the wet season and support marshy wetlands that provide habitat for plants and animals much of the year (City of Marina 2013). These fresh and brackish water ponds are unique along the California coast and are present when a combination of circumstances (*i.e.*, a depression within the fast-draining sandy soils, a lens of less pervious soil, and a high water table) occur simultaneously.

To evaluate whether these potential GDEs are in fact groundwater dependent and whether they may be affected by groundwater extraction in the MGSA Area, the following information was considered. The Dune Sand Aquifer is the uppermost aquifer in the area and is hydraulically connected to the 180-Foot Aquifer in the MGSA Area. Modeling of the potential groundwater resources effects associated with

the proposed Monterey Peninsula Water Supply Project (MPWSP) indicates pumping from the Dune Sand and 180-Foot Aquifers to supply water for the project from the MGSA Area is expected to result in drawdown ranging from one to five feet in the Dune Sand Aquifer in the area between the MPWSP and the Salinas River (ESA 2018). While the actual amount of drawdown is uncertain, the results of this analysis strongly demonstrate the nexus between groundwater extraction in the MGSA Area and groundwater elevations in the Dune Sand Aquifer. Consistent with the guidance developed by TNC (TNC 2018), MGSA conducted an evaluation to assess the connection of the potential GDEs identified near the MGSA Area (Pond 6) and the Dune Sand Aquifer. Groundwater elevations interpolated from monitoring data in the Dune Sand Aquifer in an area within and east of the MGSA Area (Pond 6) were subtracted from land surface elevations derived from the United States Geological Survey's digital elevation model to determine the depth to groundwater beneath areas where potential GDEs were mapped. In the areas where groundwater elevation data were available, MGSA found that the mapped palustrine and emergent wetlands (coastal vernal ponds) occurred in the areas where the shallowest groundwater elevations were found to exist (zero to five feet below ground level), strongly suggesting that these features are groundwater connected and dependent.

The Armstrong Ranch Ponds are located approximately 300 to 1,000 feet southeast of the MGSA Area and include a series of seasonal wetlands with ponded water in the winter and wet herbaceous meadows likely subsisting on shallow groundwater during the dry season (The Habitat Restoration Group 1994). A representative analysis of evapotranspiration (ET) was conducted for the MGSA GSP for one of these ponds (City of Marina 2019). Summer (June, July, and August) evapotranspiration was calculated using the surface energy balance method (Paul *et al.* 2018) from remote sensing data generated by the Landsat Satellite mission by Formation Environmental under contract with DWR. The results indicate that the summer ET ranged from approximately five to ten inches from 2010 to 2013, then decreased to approximately one to five inches in 2014 and 2015 and one to three inches in 2016. In 2017, ET increased to approximately three to ten inches, and in 2018, ET was approximately five to twelve inches. The decline in ET from 2014 to 2016 occurred during a period of severe drought; however, the test slant well pumping test was also conducted from April 2015 to February 2018 (Geoscience Support Services 2019). Hydrographs for well MW-4S indicate that the seasonal fluctuation in groundwater elevations in this well was approximately two feet and suggest that pumping-induced drawdown was approximately one foot. The lowest groundwater elevations were observed in the summer of 2016 and averaged about two feet higher in summer 2017 and summer 2018.

The above ET analysis demonstrates the correlation between groundwater-levels and ET from this wetland and illustrates its sensitivity to groundwater level declines. The existence of a GDE at this location is therefore considered confirmed, and the remaining vernal ponds are also assumed to be GDEs for the purposes of this GSP. ET, and by correlation biomass productivity, rebounded with groundwater levels; however, it is not known whether the stress induced in the GDE resulted in a change in the vegetation community, habitat degradation, or habitat succession that is not readily reversible. Based on this data, it is not possible to determine the extent to which the drawdown induced during the test slant well pumping test resulted in significant and unreasonable impacts to the GDE, or whether the results were temporary and reversible.

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ATTACHMENT 4 – HYDROGEOLOGIC CONCEPTUAL MODEL DATA REGARDING AQUIFER SYSTEMS NEAR THE COAST IN THE 180/400 FOOT AQUIFER SUBBASIN

AQUIFER SYSTEMS

Previous hydrogeological studies in and around the coastal region of the 180/400 Foot Aquifer Subbasin provide detailed background information about the regional hydrostratigraphy (Fugro West Inc. 1995, Harding ESE 2001, Kennedy/Jenks Consultants 2004, MACTEC 2005; Geoscience Support Services 2014, Hopkins Groundwater Consultants 2016). Historically, in hydrostratigraphic investigations, the region that lies north of the Salinas River, which comprises most of the Salinas Valley Basin, has been discussed separately from the region south of the Salinas River, which includes the Marina and Fort Ord areas. While there are geological and geographic differences between the two regions, most of the equivalent aquifers produced for beneficial uses in each region are believed to be hydraulically connected. Here, we present a brief review of the hydrostratigraphy in the coastal region of interest, noting major differences between the regions north and south of the Salinas River. The units are discussed roughly in order of highest to lowest elevation. Much of this discussion is adapted from Gottschalk *et al.* (2018). Though these aquifer-system units are referred to here as "aquifers," they generally constitute heterogenous assemblages of fine- and coarse-grained deposits (Hanson *et al.* 2002).

DUNE SAND AQUIFER

The Dune Sand Aquifer is present south of the Salinas River and is the predominant unconfined aquifer in the Marina and Fort Ord areas. It is composed of fine to medium grained, well sorted aeolian sand of Pleistocene to Recent age that extends offshore and up to four miles inland. It also extends to depths up to 85 to 95 feet beneath the ground surface at the coast in the MGSA Area. While the Dune Sand Aquifer is laterally continuous at and in the vicinity of the MGSA Area, it is not commonly used for drinking water or agricultural irrigation. However, the Dune Sand Aquifer is connected to surface water systems and yields significant quantities of groundwater to groundwater-dependent ecosystems (GDEs), stores a substantial quantity of low-TDS groundwater with designated beneficial uses, is an important source of low-TDS groundwater recharge to aquifers below it, and contains low-TDS groundwater in equilibrium with an intruding saline water wedge deeper in the aquifer system. Therefore, the Dune Sand Aquifer is considered a principal aquifer because of its local importance.

Within much of the Marina and Fort Ord areas, the Dune Sand Aquifer overlies a clay layer known in Fort Ord groundwater investigations as the Fort Ord- Salinas Valley Aquitard (FO-SVA) and known more regionally as part of the Salinas Valley Aquitard (SVA). When underlain by the SVA, the Dune Sand Aquifer is also referred to as the Perched Dune Sand Aquifer (Hopkins Groundwater Consultants 2016) or the A-Aquifer (Ahtna Environmental Inc. 2017). The underlying SVA or other aquitards, where present, are considered to create a perched or semi-perched condition for the Dune Sand Aquifer. Near the coast and south of the Salinas River, the SVA thins out, bringing the Dune Sand Aquifer and the underlying 180-Foot Aquifer into hydraulic connection. The thinning of the SVA is coincident with a drop in the hydraulic head in the Dune Sand Aquifer. Here, the groundwater enters the underlying Upper 180-Foot Aquifer and flows

southeastward, according to the hydraulic gradient (Ahtna Environmental Inc. 2017). In the MGSA Area, the Dune Sand Aquifer is seawater intruded; however, high recharge rates have resulted in a large zone of groundwater containing lower concentrations of TDS immediately east of, and extending into the eastern portion of, the MGSA Area. The seaward discharge of low-TDS groundwater from this area and the flow of groundwater from the Dune Sand Aquifer to the Upper 180-Foot Aquifer appears to mound groundwater in the Dune Sand and Upper 180-Foot Aquifers near the coast, creating a local groundwater barrier against encroaching seawater intrusion.

As a result of the relatively high permeability of the Dune Sand Aquifer, it supports high recharge rates and has little to no runoff. It is notable that south of the Salinas River, there are no major creeks, streams or rivers that drain at and in the vicinity of the MGSA Area which relates to the high permeability, high recharge rate of the Dune Sand Aquifer. Groundwater occurs at depth beneath the tall, active dunes at the coast but can be relatively shallow further inland and beneath hollows and depressions. Near the MGSA Area, the Dune Sand Aquifer is hydraulically connected to and supports local GDEs, including palustrine and emergent wetlands which support protected species.

Salinas Valley Aquitard (SVA)

The SVA is a laterally extensive clay and sandy clay layer covering much of the Salinas Valley Basin, east of Fort Ord, and from the Monterey Bay south past Salinas. It is approximately 100 feet thick west of Salinas (Kennedy/Jenks 2004). South of the Salinas River, a similar unit of clay is locally called the FO-SVA as discussed previously. Harding ESE (2001) concluded that the SVA and the FO-SVA are "either the same or at least hydraulically equivalent." The two units are referred to collectively as the SVA. In the Salinas Valley Basin, the SVA is thicker and relatively flat, while in the Fort Ord area, the SVA is higher in elevation and dips more steeply toward the coast (*ibid*). Near the coast and south of the Salinas River, the SVA thins out, bringing the Dune Sand Aquifer and the underlying 180-Foot Aquifer into hydraulic connection.

180-Foot Aquifer

The 180-Foot Aquifer underlies the SVA and is the uppermost regional aquifer that has historically been used as a groundwater supply. Near the MGSA Area, it is seawater intruded; however, due to recharge from the overlying Dune Sand Aquifer, it contains a zone of groundwater with relatively low concentrations of TDS east of the MGSA Area. The aquifer ranges from 50 to 150 feet in thickness, and within the Salinas Valley basin, the top is often encountered 100 to 150 feet below ground surface (ft bgs) (Kennedy/Jenks 2004). The 180-Foot Aquifer extends across more than one stratigraphic or geologic unit, and various interpretations have correlated it to different combinations of stratigraphic units depending on the investigator, the area under study, and the investigator's interpretation. In the MGSA Area, it has been correlated with the lower portions of the Quaternary Alluvium and the upper portions of the Aromas Sand (ESA 2018). The Upper 180-Foot Aquifer, believed to be 20 to 60 feet thick (Harding ESE 2001), is considered to be in hydraulic connection with the Dune Sand Aquifer near the coast, as the SVA thins out. The Intermediate 180-Foot Aquitard, a sequence of silty and clayey beds, hydraulically separates the sandy Upper 180-Foot Aquifer from the gravelly Lower 180-Foot Aquifer in the Marina and Fort Ord area. Geophysical studies reported by Gottschalk *et al.* (2018) have confirmed this aquitard is discontinuous in the vicinity of the MGSA Area.

180/400-Foot Aquitard

The 180/400-Foot Aquitard separates the 180-Foot Aquifer from the underlying 400-Foot Aquifer throughout much of the Subbasin. It is a zone of "discontinuous aquifers and aquitards," of which the aquitards, where present, comprise an aquitard that separates the 180-Foot Aquifer from the underlying 400-Foot Aquifer (Geoscience 2014). The discontinuous nature of the 180/400-Foot Aquitard was documented first by Monterey County Flood Control and Water Conservation District (MCFCWCD 1960) and was a subject of focused studies by Kennedy/Jenks (2004) north of the Salinas River. South of the Salinas River, the 180/400-Foot Aquitard is relatively thin and has been recorded to pinch out at the Main Garrison area of the former Fort Ord (Harding ESE 2001). Geophysical studies reported by Gottschalk *et al.* (2018) have confirmed this aquitard is discontinuous in and near the MGSA Area, and its hydraulic connection to the overlying 180-Foot Aquifer in the vicinity of the MGSA Area is substantiated by available hydrographs.

400-Foot Aquifer

This aquifer is regionally extensive. It is composed of sand and gravel packages and is typically encountered between 275 and 460 ft bgs (Kennedy/Jenks, 2004). It is correlated with the Aromas Sand and the upper portion of the Paso Robles Formation (ESA 2018). The thickness and depth of the aquifer are variable throughout the Subbasin. Near Salinas, the aquifer is largely continuous; whereas, near Castroville, it is comprised of multiple sandy packages, separated by thin clay layers. South of the Salinas River, the 400-Foot Aquifer consists mostly of sand. In regions where the 180/400-Foot Aquitard thins out or is absent, the 180-Foot Aquifer and the 400-Foot Aquifer are in direct hydraulic communication. Hydraulic connection allows groundwater to flow unhindered from the aquifer with higher hydraulic head to the aquifer with lower hydraulic head in these areas. Generally speaking, the 400-Foot Aquifer has a lower hydraulic head than the 180-Foot Aquifer. In areas of hydraulic connection between these two aquifers, saline groundwater in the 180-Foot Aquifer, which has been recorded farther inland than in the 400-Foot Aquifer, has been documented to migrate vertically into the 400-Foot Aquifer, deteriorating water quality in the 400-Foot Aquifer (MCWRA 2017).

400-Foot/Deep Aquitard

Beneath the 400-Foot Aquifer is an aquitard that can be up to "several hundred feet thick" (Kennedy/ Jenks 2004). Logging of a boring in the City of Marina conducted by the United States Geological Survey (USGS) interpreted a zone of silty clay and mudstone from about 700 to 900 ft bgs (Hanson et al. 2002). More variable lithology has been interpreted from other deep well geophysical logs in the area (MCWRA 2017), and as discussed below, the USGS acknowledged the stratigraphic interval in which this aquitard was encountered has also been identified as containing transmissive units locally referred to as the 900-Foot Aquifer. As such, while substantial units of low permeability appear to exist within and beneath the lower portions of the upper aquifer system in the Paso Robles Formation, their regional continuity and competence are not well understood.

DEEP AQUIFER

The Deep Aquifer has received different definitions from various reports and consists of a system of aquifers. Kennedy/Jenks (2004) define the Deep Aquifer as the group of deep aquifers located between the depths of approximately 780 and 1,500 ft msl. Previous investigators delineated the Deep Aquifer system as the interval between 1,300 and more than 2,000 ft bgs (Geoconsultants, Inc. 1993) based on data from the MCWD deep-aquifer system water-supply wells. USGS (Hanson et al. 2002) states the basal part of the upper aquifer system, encountered from approximately 670 to 955 ft bgs at a deep boring in the City of Marina, is locally referred to as the 900-Foot Aquifer, which is generally considered part of the Deep Aquifer system. They conclude this part of the Deep Aquifer system may constitute terrestrial sediments of the Plio-Pleistocene Paso Robles Formation (stratigraphically equivalent to the aquitard described above). ESA (2018) states that in the MGSA Area, the 900-Foot Aquifer correlates with the Paso Robles Formation. The majority of the Deep Aquifer system appears to consist of interbedded sands, silts and clays of the Mio-Pliocene Purisima Formation that were deposited in a marine shelf environment (Hanson et al. 2002, ESA 2018). Aquifers within this formation are known to extend to a depth of approximately 2,000 feet. The basal, or lowermost, unit of the Purisima Formation is reported to consist of relatively impermeable clay and shale (ESA 2018). Portions of the Purisima Formation that correlate with the Deep Aquifer system crop out in the submarine Monterey Canyon several miles offshore.

To date, seawater intrusion has not been documented in the Deep Aquifer, even though groundwater elevations in the Deep Aquifer are consistently below sea level. This lack of seawater intrusion in the Deep Aquifer may be due, at least in part, to the geologic setting (Feeney and Rosenberg 2003). Groundwater pumping from wells in the Deep Aquifer is thought to be supported primarily by leakance from the overlying aquifer system (i.e., the 180-Foot Aquifer and 400-Foot Aquifer). Some groundwater pumping is derived from depletion of groundwater storage, but hydraulic properties of the Deep Aquifer (specifically storage coefficients) suggest that while some groundwater may come from storage immediately following the onset of pumping a well, very little groundwater is removed from storage over time. Therefore, increases in groundwater pumping in the Deep Aquifer are likely supported by increased leakance from the overlying aquifers (Feeney and Rosenberg 2003). As a result of these findings, the Monterey County Board of Supervisors voted on May 18, 2018, to place a moratorium on the construction of new wells in the Deep Aquifer as a preventive measure because, at present, seawater intrusion has not been observed in the Deep Aquifer.

WATER QUALITY AND SEAWATER INTRUSION

The distribution of water quality impacts near the MGSA Area was investigated by a team of researchers from Stanford University in 2017 using Airborne Electromagnetics (AEM) (Gottschalk *et al.* 2018). AEM relies on well-proven and long-established geophysical techniques, which have recently been deployed using helicopters. It has been used in other SGMA studies in the state, is an integral part of the SWRCB Regional Monitoring Program for salinity mapping conducted by USGS in areas of oil and gas well stimulation, and is proposed to be used for ongoing monitoring of seawater intrusion under the GSP adopted for the Santa Cruz Mid-County Groundwater Basin. The AEM data were considered together with groundwater quality monitoring data and investigations performed by MCWRA (2017a) and others

to assess the aquifer stratigraphy, water quality, and interaction dynamics of seawater and groundwater with lower concentrations of TDS within the aquifers at the western edge of the 180/400 Foot Subbasin.

The MGSA Area is at the seaward edge of the area affected by seawater intrusion in the 180-Foot and 400-Foot Aquifers. The 2017 AEM survey identified a saline groundwater wedge juxtaposed against a zone of lower TDS groundwater (<3,000 mg/L TDS) underlying the high recharge area in the dune sand deposits that occur between the MGSA Area and the Salinas River. This interface between dense, saline groundwater and the low-TDS zone extends downward into the 180-Foot and 400-Foot Aquifers east of the MGSA Area. The dynamics of such interfaces in coastal aquifers have been extensively studied since the late 19th century, and it has been determined that under equilibrium conditions the extent of saline water intrusion is directly proportional to the thickness of the overlying low-TDS water zone and the difference in density between the two zones. This is known as the Ghyben Herzberg Relationship. Groundwater flow is seaward in the overlying low-TDS zone and discharges to the ocean, and flow is landward in the intruding saline groundwater wedge. At the saline/low-TDS groundwater interface, the saline groundwater circulates and mixes with the over-riding low-TDS groundwater. Although this equilibrium may have been disturbed at the MGSA Area by the CEMEX well's pumping, the test slant well's pumping, and by recharge of saline water in the CEMEX ponds, the geometry of a saline groundwater wedge dipping beneath an over-riding low-TDS zone is clearly identifiable and consistent with the Ghyben-Herzberg model.

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November 25, 2019

Mr. Gary Petersen
General Manager,
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1385
Carmel Valley, CA 93924

VIA: E-mail to peterseng@svbgsa.org

RE: Public Comments on Draft Groundwater Sustainability Plan for 180/400 Sub-Basin of the Salinas Valley Groundwater Basin

Dear Mr. Petersen,

We would like to personally thank you and your team for the work you have done on the plan for the 180/400 Sub-Basin. It has taken a lot of collaboration, compromise and understanding to gain mutual support over a plan to manage our groundwater.

We are a small family farm in Gonzales that has been in business since the early 1900s. We have seen and been a part of many of the changes within our industry and community- water law being one of them. There are just a few comments and notes we wanted to be considered in public comment.

How are water rights, specifically appropriated water rights being considered in the plan for the 180/400 Sub-Basin? Especially when it comes to allocation and pumping.

What are the details or ideas on specifics for well extraction limits? Can previously held water rights be mandated with limits? Legal ramifications will need to be considered.

Specifically in Gonzales, please consider the jurisdiction of the former Gonzales Irrigation Company- there are special preliminary water rights in this region from this case. These pre-1914 water rights could take precedent over other rights on other parcels in Monterey County. In drought instances if there is a shortage of water, holders of these rights may have first call on river water even if it is not taken directly from the river. (See letter to Clarence "Toots" Vosti and map enclosed).

Supporting the invasive species issue in the Salinas River should not just stop at Arundo donax- a more thorough examination and analysis of the species in the river should conclude other finds that with their removal can also gain additional water to help with replenishing our aquifer. Other ways to help penetration and replenishment would be additional clearing of our river channels.

How will this plan handle well drilling rights or replacement wells?

In cases of financial hardships, there should not be a penalty or cease of water rights and/or access.

Be aware of Ag Order 4.0 on its jurisdiction of groundwater. Part of the new regulations, specifically in Table 5, is crossing into SGMA territory by requiring *irrigated* riparian

habitats/buffers. Most of the irrigated water in the Salinas Valley is groundwater. It is in the best interest of landowners, farmers and SVBGSA to monitor this cross over of regulatory agencies.

And a final note, please consider or make sure to be aware of the SVPOLA- Salinas Valley Property Owners for Lawful Assessments v. County of Monterey (Monterey County Superior Court Case No. M66890). From this court case there may need to be reconsideration of the responsibility for salt water intrusion for those represented land parcels whose owners won the ruling of this case. Most of these parcels are in the southern portion of the Pressure Area, which does not fall under the same category or jurisdiction of other parcels in the Pressure Area.

Thank you for your time and consideration. We look forward to the final plan.

Sincerely,

Wayne Gularte
President
Rincon Farms, Inc.

WILLIAMS RANCHES

Chorro Ranch LLC Williams Sisters Trust

October 8, 1997

Dear Toots,

The enclosed map is a rough out line the Gonzales Irrigation Company Canal about 1901. The crosshatched area represents those acres that were irrigated by the canal. At that time the owners of the company filed for and were granted water rights for some 230,000 acre feet of water from the Salinas River. The company was dissolved in the early 30's but those who can trace a continuity of ownership to the canal have, theoretically, a right to the portion of that water that they have put to reasonable and practical use.

These pre-1914 water rights take precedence over the rights that the county currently holds to the water they are keeping behind the dams which theoretically means that in times of drought or other instances when there is a shortage of water, holders of these rights would have first call on river water before others, even if it is not taken directly from the river.

This is all based upon what several lawyers have told me and if you asked some lawyers on the other side I am sure you could get another opinion. It is interesting to note, however, that the county's legal staff has chosen to ignore the issue and move on to less controversial topics.

As you know the State Water Resources Board is going to start hearings early next year on the adjudication of water rights for the valley and it may be time for those of us with potential superior rights to prepare to defend our position.

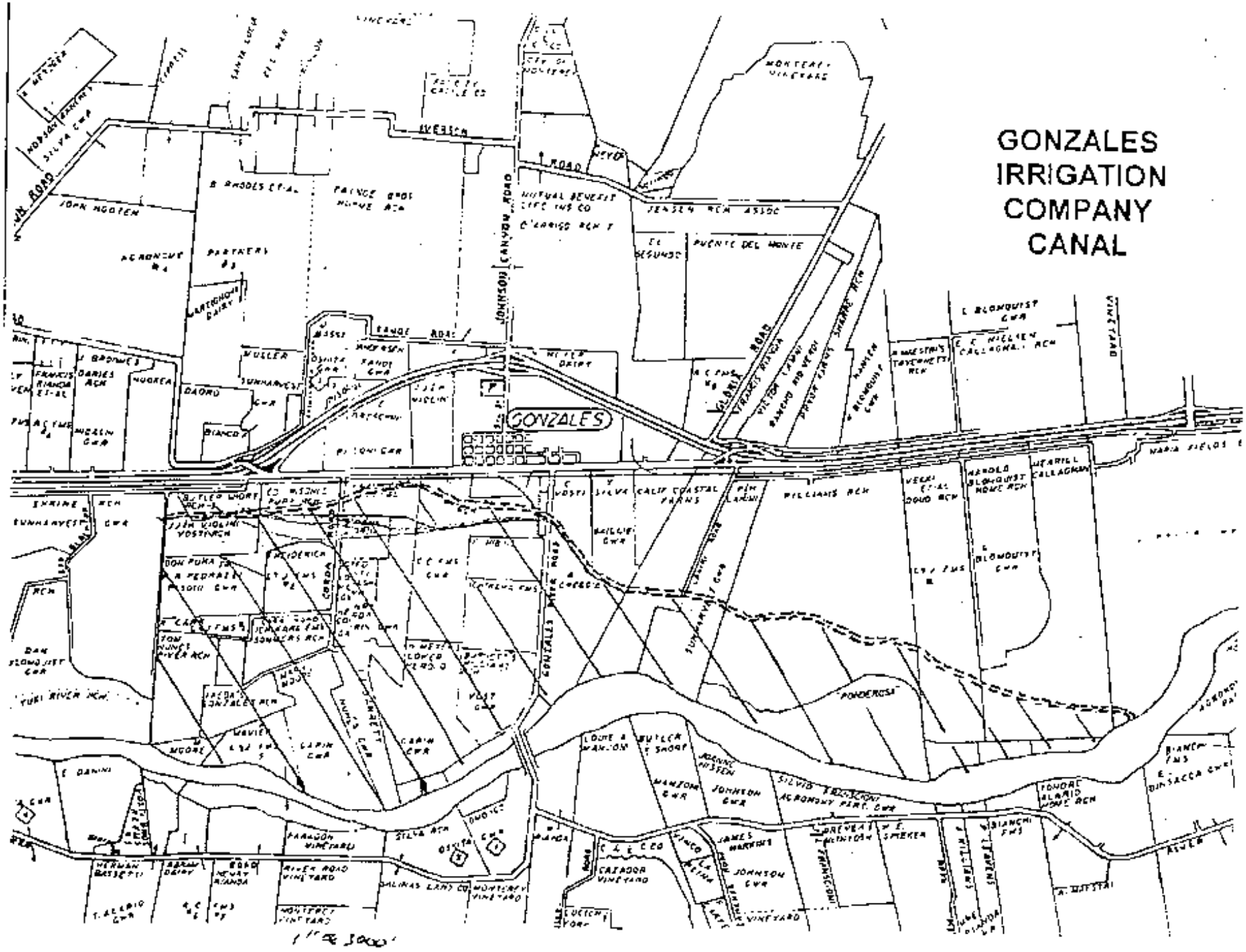
Please take a look at the attached map and let me know what you think about the whole situation.

Thanks,

Fred Williams

77 Hazel Avenue, Larkspur, California 94939 - Box 883, Salinas, CA 93902
FAX (415) 927-9043

GONZALES IRRIGATION COMPANY CANAL



RESOURCE CONSERVATION DISTRICT OF MONTEREY COUNTY

744 La Guardia Street, Building A, Salinas, CA 93905 (831) 975-7775

November 25, 2019

From: Paul Robins
Executive Director
RCD of Monterey County

To: Gary Peterson
General Manager
Salinas Basin Groundwater Sustainability Agency

Subject: Brief comments regarding the Groundwater Sustainability Plan, Chapter 9

My comments are limited to two work areas with which the Resource Conservation District is actively engaged: agricultural water conservation and Salinas River invasive species management.

Agricultural water use efficiency

Agricultural water use efficiency is briefly referenced as an activity with beneficial outcomes relative to the GSP in section 9.3.3 "Priority Management Action 2: Outreach and Education for Agricultural BMPs" starting on page 9-12. According to personal communication with local UC Cooperative Extension Farm Advisors (Drs. M. Cahn and R. Smith), they have observed potential agricultural water use efficiency increases of 10% on average among the farmers they have surveyed and/or with whom they have conducted water use efficiency trials while factoring in necessary leaching fractions and maintaining comparable yields. We actively engage in local producer and irrigator trainings for water use efficiency. However, beyond simply providing outreach and education, we need to invest in critical tools for guiding more efficient irrigation management decisions. Placement of additional weather stations throughout the valley that better reflect the variable microclimates that farmers experience moving west to east and north to south is a relatively low-cost project with substantial potential benefit. Such stations can be installed relatively cheaply (around $10k each) and connected to the CA Dept of Water Resources' California Irrigation Management Information System (CIMIS) for easy online access and incorporation of weather and reference evapotranspiration data for informing day-to-day water management on area farms. Support for more stations in the Salinas Valley could be a low-expense relative to impact project for the GSP.

Invasive Species Control

We are pleased to hear that our work treating *Arundo donax* and other water-thirsty riparian weeds has been recognized for its substantial water conservation benefit along with habitat improvement and flood risk reduction in the context of Section 9.4.3.2 "Preferred project 1: Invasive Species Eradication" starting on page 9-24. As this work is understandably important to us, we offer the following simple comments and questions for clarification.

1. The RCD's official name is the 'Resource Conservation District *of* Monterey County (RCDMC)' rather than the 'Monterey County Resource Conservation District (MCRCD).'

2. There are two programs currently underway on the river: the RCD's Arundo Control Program, and the Salinas River Stream Maintenance Program (SMP). While we work very closely and compatibly, and in-fact do have substantial interconnectivity between the two programs, they are, in fact, distinct, with separate lead agencies and separate environmental permits. The RCD is CEQA lead and holds all permits for the Arundo Control Program, and Monterey County Water Resources Agency is the CEQA lead and holds the primary permits for the SMP. It is a bit confounding that the RCD is the CDFW permittee on behalf of the SMP, and that arundo control is a valuable mitigation option for SMP participants. That's a blessing of a history of positive collaboration between two mutually-beneficial programs developed somewhat in parallel in the first half of this decade. The majority of arundo control work on the river is being conducted under the RCD's program.
3. It's important to acknowledge the pivotal role that the Monterey County Agricultural Commissioner's Office has played in the genesis, development and continuity of the RCD's Arundo Control Program. They provided the initial funding and encouragement to initiate the program in 2009 and remain a critical partner to the RCD in this endeavor. As such, they are also an important partner for the GSA.
4. On page 9-27, reference is made to the wide range of estimated potential water savings to be garnered from arundo eradication. We have communicated to GSA consultants that there is research needed to better understand the actual water conservation benefits on the Salinas River and that we have pursued research partnerships with Cal State University Monterey Bay (CSUMB) and UC Santa Barbara for this purpose, both at very different scales. CSUMB is currently funded through one of our Wildlife Conservation Board grants to use satellite imagery and data to estimate differences in evapotranspiration rates on Salinas River lands with and without arundo. UCSB is measuring water use on individual plants, a method that would provide the highest level of accuracy for understanding water consumption on-site, but for which we have not yet been able to develop or fund a collaboration. We would encourage GSA consideration of inclusion of research funding to better understand the actual water conservation benefits of arundo control along with seeking funding for the arundo control and maintenance work itself.
5. On this same topic, figures 9-2 and 9-3 on pages 9-28 and 9-29, respectively, show modeled groundwater elevation benefits from arundo eradication within the 180/400-Foot aquifer subbasin, but it is not clear what base numbers (4 ac-ft/ac/year or 20 ac-ft/ac/year?) were used for informing the model, and the units for the groundwater level benefit gradations (feet?) are not identified.

We are proud of our work and honored to be considered a valuable potential partner in helping Monterey County reach its water balance goals. Thank you for your consideration of our comments, and please contact me or Emily Zefferman, RCDMC Ecologist, with any questions regarding this letter or related matters.

Sincerely,

Paul Robins
Executive Director

November 25, 2019

Sent via email to peterseng@svbgsa.org

Re: Comments on Draft Groundwater Sustainability Plan for Salinas Valley – 180/400-Foot Aquifer Subbasin

Dear Mr. Peterson,

On behalf of the above-listed organizations, we would like to offer the attached comments on the draft Groundwater Sustainability Plan for the Salinas Valley – 180/400-Foot Aquifer Subbasin. Our organizations are deeply engaged in and committed to the successful implementation of the Sustainable Groundwater Management Act (SGMA) because we understand that groundwater is a critical piece of a resilient California water portfolio, particularly in light of our changing climate. Because California's water and economy are interconnected, the sustainable management of each basin is of interest to both local communities and the state as a whole.

Our organizations have significant expertise in the environmental needs of groundwater and the needs of disadvantaged communities.[1]

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[1] The Nature Conservancy, in collaboration with state agencies, has developed several tools (https://groundwaterresourcehub.org/) for identifying groundwater dependent ecosystems in every SGMA groundwater basin and has made that tool available to each Groundwater Sustainability Agency.

- Local Government Commission supports leadership development, performs community engagement, and provides technical assistance dealing with groundwater management and other resilience-related topics at the local and regional scales; we provide guidance and resources for statewide applicability to the communities and GSAs we are working with directly in multiple groundwater basins.
- Audubon California is an expert in understanding wetlands and their role in groundwater recharge and applying conservation science to develop multiple-benefit solutions for sustainable groundwater management.
- Clean Water Action and Clean Water Fund are sister organizations that have deep expertise in the provision of safe drinking water, particularly in California's small disadvantaged communities, and co-authored a report on public and stakeholder engagement in SGMA. (https://www.cleanwater.org/publications/collaborating-success-stakeholder-engagement-sustainable-groundwater-management-act)
- Community Water Center (CWC) acts as a catalyst for community-driven water solutions through organizing, education, and advocacy. CWC seeks to build and enhance leadership capacity and local community power around water issues, create a regional movement for water justice in California, and enable every community to have access to safe, clean, and affordable drinking water. CWC has supported SGMA implementation through hosting several technical capacity building workshops, developing SGMA education materials, and supporting local leadership and community engagement.
- The Union of Concerned Scientists has been working to ensure that future water supply meets demand and withstands climate change impacts by supporting stakeholder education and integration, and the creation and implementation of science-based Groundwater Sustainability Plans.

Because of the number of draft plans being released and our interest in reviewing every plan, we have identified key plan elements that are necessary to ensure that each plan adequately addresses essential requirements of SGMA. A summary review of your plan using our evaluation framework is attached to this letter as Appendix A. Appendix B provides a more detailed evaluation of the water quality and drinking water elements of the Plan. Our hope is that you can use our feedback to improve your plan before it is submitted in January 2020.

This review does not look at data quality but instead looks at how data was presented and used to identify and address the needs of disadvantaged communities (DACs), drinking water and the environment. In addition to informing individual groundwater sustainability agencies of our analysis, we plan to aggregate the results of our reviews to identify trends in GSP development, compare plans and determine which basins may require greater attention from our organizations.

Key Indicators

Appendix A provides a list of the questions we posed, how the draft plan responds to those questions and an evaluation by element of major issues with the plan. Below is a summary by element of the questions used to evaluate the plan.

1. Identification of Beneficial Users. This element is meant to ascertain whether and how DACs and groundwater-dependent ecosystems (GDEs) were identified, what standards and guidance were used to determine groundwater quality conditions and establish minimum thresholds for groundwater quality, and how environmental beneficial users and stakeholders were engaged through the development of the draft plan.
2. Communications plan. This element looks at the sufficiency of the communications plan in identifying ongoing stakeholder engagement during plan implementation, explicit information about how DACs were engaged in the planning process and how stakeholder input was incorporated into the GSP process and decision-making.
3. Maps related to Key Beneficial Uses. This element looks for maps related to drinking water users, including the density, location and depths of public supply and domestic wells; maps of GDE and interconnected surface waters with gaining and losing reaches; and monitoring networks.
4. Water Budgets. This element looks at how climate change is explicitly incorporated into current and future water budgets; how demands from urban and domestic water users were incorporated; and whether the historic, current and future water demands of native vegetation and wetlands are included in the budget.
5. Management areas and Monitoring Network. This element looks at where, why and how management areas are established, as well what data gaps have been identified and how the plan addresses those gaps.
6. Measurable Objectives and Undesirable Results. This element evaluates whether the plan explicitly considers the impacts on DACs, GDEs and environmental beneficial users in the development of Undesirable Results and Measurable Objectives. In addition, it examines whether stakeholder input was solicited from these beneficial users during the development of those metrics.
7. Management Actions and Costs. This element looks at how identified management actions impact DACs, GDEs and interconnected surface water bodies; whether mitigation for impacts to DACs is discussed or funded; and what efforts will be made to fill identified data gaps in the first five years of the plan. Additionally, this element asks whether any changes to local ordinances or land use plans are included as management actions.

Conclusion

We know that SGMA plan development and implementation is a major undertaking, and we want every basin to be successful. We would be happy to meet with you to discuss our evaluation as you finalize your Plan for submittal to DWR. Feel free to contact Suzannah Sosman at suzannah@aginnovations.org for more information or to schedule a conversation.

Sincerely,

Jennifer Clary
Water Program Manager
Clean Water Action/Clean Water Fund

Samantha Arthur
Working Lands Program Director
Audubon California

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Appendix A
Review of Public Draft GSP

Groundwater Basin/Subbasin: Salinas Valley – 180/400-Foot Aquifer Subbasin (DWR 3-004.01)
GSA: Salinas Valley Basin GSA
GSP Date: October 2019 Public Review Draft

1. Identification of Beneficial Users

Were key beneficial users identified and engaged?

Selected relevant requirements and guidance:
GSP Element 2.1.5, "Notice & Communication" (§354.10):
(a) A description of the beneficial uses and users of groundwater in the basin, including the land uses and property interests potentially affected by the use of groundwater in the basin, the types of parties representing those interests, and the nature of consultation with those parties.
GSP Element 2.2.2, "Groundwater Conditions" (§354.16):
(d) Groundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and map of the location of known groundwater contamination sites and plumes.
(f) Identification of interconnected surface water systems within the basin and an estimate of the quantity and timing of depletions of those systems, utilizing data available from the Department, as specified in Section 353.2, or the best available information.
(g) Identification of groundwater dependent ecosystems within the basin, utilizing data available from the Department, as specified in Section 353.2, or the best available information.
GSP Element 3.3, "Minimum Thresholds" (§354.28):
(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

Review Criteria		Yes	No	N/A	Relevant Info per GSP	Location (Section, Page[1])
1. Do beneficial users (BUs) identified within the GSP area include:	a. Disadvantaged Communities (DACs)	X			The Salinas Valley Groundwater Stakeholder Issue Assessment identifies that DACs are among the beneficial users in the basin, but does not identify what DACs this includes, how many community members this represents, where the DACs are located, etc.	Appendix 11C, Page 875
	b. Tribes		X			
	c. Small community public water systems (<3,300 connections)	X			Public water systems are represented on the Board and on the Advisory Committee, though it is not clear from the text which systems have fewer than 3,300 connections.	Appendix 11A, Page 855 Appendix 11B, Page 856
2. What data were used to identify presence or absence of DACs?	d. DWR DAC Mapping Tool[2]		X		The data source is not clear from the GSP.	
	i. Census Places		X			
	ii. Census Block Groups		X			
	iii. Census Tracts		X			
	e. Other data source		X			
3. Groundwater Conditions section includes discussion	f. Drinking Water Quality	X			"Data were summarized by groundwater basin/subbasin and well type: - On-farm domestic wells: tend to be of shallower depths and represents	5.5.3, Page 165

[1] Page numbers refer to the page of the PDF.
[2] DWR DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/

of:					water used for domestic drinking water supply - Irrigation supply wells: tend to be of intermediate depths and represents water used for primarily for agricultural supply beneficial uses."	
	g. California Maximum Contaminant Levels (CA MCLs)[3] (or Public Health Goals where MCL does not exist, e.g. Chromium VI)	X			Section 5.5.3 discusses groundwater quality data in comparison to MCLs for all constituents included; the GSP focuses primarily on nitrate.	5.5.3, Page 165-169
4. What local, state, and federal standards or plans were used to assess drinking water BUs in the development of Minimum Thresholds (MTs)?	h. Office of Environmental Health Hazard Assessment Public Health Goal (OEHHA PHGs)[4]		X			
	i. CA MCLs[3]	X			Groundwater quality MTs for municipal wells, small water system wells, and domestic well constituents in ILRP wells were developed based on MCLs/SMCLs.	Table 8-5, Page 300
	j. Water Quality Objectives (WQOs) in Regional Water Quality Control Plans	X			Groundwater quality MTs for agricultural irrigation constituents in ILRP wells were developed based on WQOs.	Table 8-5, Page 300
	k. Sustainable Communities Strategies/ Regional Transportation Plans[5]		X			
	l. County and/or City General Plans, Zoning Codes and Ordinances[6]		X			
5. Does the GSP identify how environmental BUs and environmental stakeholders were engaged throughout the development of the GSP?			X		The Joint Exercise of Powers Agreement (Appendix 2A) lists the Board of Directors that includes a Director representing environmental users and interests. This is the only mention of environmental users in Chapter 11. No details are given as to the types and locations of environmental uses and habitats supported, or the designated beneficial environmental uses of surface waters that may be affected by groundwater extraction in the Subbasin.	Appendix 2A, Page 479

Summary/ Comments
It is recommended that the GSP provide more detailed descriptions of all beneficial users of groundwater.

The GSP should provide much more thorough information on DACs. For example: which communities are DACs? where are these communities located? what data sources were used to identify the presence of DACs? The GSP also does not discuss how and to what extent DAC members rely on groundwater. For example: how much of the population relies on private domestic wells for drinking water? how much of the population relies on small community water systems? are those community water systems solely depending on groundwater? how many connections do the small water systems serve? This information is valuable for the reader to understand the scale of the vulnerable population dependent on groundwater for drinking water. DACs are defined by California Water Code §79505.5 as communities with an annual median household income that is less than 80 percent of the statewide annual median household income. The DWR DAC Mapping Tool can be used to help identify the locations of these communities and their populations: https://gis.water.ca.gov/app/dacs/

The GSP does not identify whether native American tribes are present in the GSA area, and/or what sources were used to support that conclusion.

[3] CA MCLs: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.html
[4] OEHHA PHGs: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.html
[5] CARB: https://ww2.arb.ca.gov/resources/documents/scs-evaluation-resources
[6] OPR General Plan Guidelines: http://www.opr.ca.gov/planning/general-plan/

The draft GSP identifies numerous constituents that have been detected in groundwater above drinking water standards, but, with the exception of nitrate, does not present these data spatially or even in tabular format. Even though the draft GSP sets water quality MTs for these constituents (Table 8-6 through 8-9), the supporting data are not presented, and no analyses of spatial or temporal water quality trends are presented. This does not present a clear and transparent assessment of current water quality conditions in the subbasin with respect to drinking water beneficial use (23 CCR § 354.16(d)). It is recommended that the GSP include specific discussions supported by maps and charts, of the spatial and temporal water quality trends for constituents that have exceeded drinking water standards.[7]

The GSP should provide details on the types and locations of environmental uses and habitats supported, and the designated beneficial environmental uses of surface waters that may be affected by groundwater extraction in the Subbasin (https://groundwaterresourcehub.org/sgma-tools/environmental-surface-water-beneficiaries/).

To identify environmental users, please refer to the following:

- Natural Communities Commonly Associated with Groundwater dataset (NC Dataset) – (https://gis.water.ca.gov/app/NCDatasetViewer/) which identifies the potential presence of groundwater dependent ecosystems in this basin.
- The list of freshwater species located in the 180/400-Foot Aquifer Subbasin can be found here: https://groundwaterresourcehub.org/sgma-tools/environmental-surface-water-beneficiaries/. Please take particular note of the species with protected status.
- Lands that are protected as open space preserves, habitat reserves, fisheries, wildlife refuges, conservation areas or other lands protected in perpetuity and supported by groundwater or ISWs should be identified and acknowledged.

Refer to the Critical Species Lookbook (https://groundwaterresourcehub.org/sgma-tools/the-critical-species-lookbook/) to review and discuss the potential groundwater reliance of critical species in the basin. The GSP should include a discussion regarding the management of critical habitat for these aquatic species and its relationship to the GSP.

[7] Stanford, 2019. *A Guide to Water Quality Requirements Under the Sustainable Groundwater Management Act,* Spring 2019. (https://stacks.stanford.edu/file/druid:dw122nb4780/A%20Guide%20to%20Water%20Quality%20Requirements%20under%20SGMA.pdf)

2. Communications Plan

How were key beneficial users engaged and how was their input incorporated into the GSP process and decisions?

Selected relevant requirements and guidance:
GSP Element 2.1.5, "Notice & Communication" (§354.10):
Each Plan shall include a summary of information relating to notification and communication by the Agency with other agencies and interested parties including the following:
(c) Comments regarding the Plan received by the Agency and a summary of any responses by the Agency.
(d) A communication section of the Plan that includes the following:
(1) An explanation of the Agency's decision-making process.
(2) Identification of opportunities for public engagement and a discussion of how public input and response will be used.
(3) A description of how the Agency encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin.
(4) The method the Agency shall follow to inform the public about progress implementing the Plan, including the status of projects and actions.

DWR Guidance Document for GSP Stakeholder Communication and Engagement[8]

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Is a Stakeholder Communication and Engagement Plan (SCEP) included?	X			Appendix 11D. Stakeholder Outreach and Communication Strategy (no date)	Appendix 11D, Page 883
2. Does the SCEP or GSP identify that ongoing engagement will be conducted during GSP implementation?	X			"The SVBGSA will routinely provide information to the public about GSP implementation and progress towards sustainability and the need to use groundwater efficiently. The SVBGSA website will be maintained as a communication tool for posting data, reports, and meeting information. This website features a link to an interactive mapping function for viewing Salinas Valley Groundwater Basin-wide data that were used during GSP development."	10.1.3, Page 419
3. Does the SCEP or GSP specifically identify how DAC beneficial users were engaged in the planning process?	X			DACs are represented on the Board by Primary Director Ron Stefani (Alternate Director position currently vacanti). DACs are also represented on the Advisory Committee by CHISPA and Environmental Justice Coalition for Water. Communication tools include "Radio interviews and features, particularly Spanish radio".	Appendix 11A, Page 855 Appendix 11B, Page 856 Appendix 11D, Page 892
4. Does the SCEP or GSP explicitly describe how stakeholder input was incorporated into the GSP process and decisions?	X			Section 11.3 and 11.4 describes how stakeholder input was incorporated. "From 2015 through 2017, local agencies and stakeholders worked with the Consensus Building Institute (CBI) to facilitate the formation of the SVBGSA. CBI began by conducting a Salinas Valley Groundwater Stakeholder Issue Assessment (Appendix 11C), which included interviews and surveys, and	11.3-11.4, Page 432-438

[8] DWR Guidance Document for GSP Stakeholder Communication and Engagement
https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Guidance-Document-for-Groundwater-Sustainability-Plan---Stakeholder-Communication-and-Engagement.pdf

				resulted in recommendations for a transparent, inclusive process for the local implementation of SGMA and the formation of the GSA." "The SVBGSA is required to develop a GSP for each separate subbasin. Given the critical overdraft identification of the 180/400-Foot Aquifer Subbasin, initial planning efforts have focused on the development of this GSP in order to meet the January 31, 2020 deadline for submittal. The SVBGSA Board has also determined that another level of planning, not required by SGMA Legislation, would be completed. This plan, identified as the Integrated Sustainability Plan (ISP), identifies overarching issues that are common to all subbasins as well as identifying opportunities for all subbasin stakeholders to share resources. Several chapters of the ISP have been developed concurrently with chapters for the critically over drafted basin." "Phase 2 began for this subbasin in 2017 and will continue until the GSP is submitted to DWR by January 31, 2020. In 2018 and 2019, the development of the GSP has been undertaken by the SVBGSA Board of Directors, SVBGSA, Advisory Committee, Planning Committee and stakeholders for feedback and input. During 2018 and 2019, a series of community workshops were held in the Salinas Valley to educate and inform stakeholders about SGMA and the GSP process, while also soliciting feedback and input. Phase 2 of the GSP planning and development process has included outreach and education activities that involve stakeholders affected by water management in the Basin. The outreach and education process have informed and educated them about SGMA, groundwater management, and the GSP planning process; and, solicit and address issues and opportunities to improve groundwater management for the Salinas Valley Sub-basins the following activities have been undertaken by the SVBGSA: • Identify existing notification lists that could be used to reach the various social, cultural, and economic elements of the Salinas Valley Basin population. • Develop and provide information regarding SGMA, GSP planning, and groundwater management. • Solicit stakeholder and public input on groundwater analysis and modeling, sustainability goals, management actions, and implementation plans. • Provide and summarize stakeholder and public input for the Advisory Committee, the Planning Committee and the SVBGSA Board throughout the GSP process. • Identify and provide opportunities for public input at key project milestones Developed a website that includes access to maps and data and allows stakeholders to register in order to receive meeting notifications and relevant	

				documents."	

Summary/ Comments
The GSP does not provide specific details on how the public was engaged through the GSP development process, such as how many meetings were held, when and where the meetings were held, and how the meetings were noticed to the public other than through the website.

It is important that stakeholder engagement be maintained through the development of future projects and management actions and other SGMA compliance and implementation steps.

GSP Appendix 11 identifies the Board Alternate Director as David Morisoli. However, it is our understanding that this alternate director position is currently vacant. The GSP should be revised to reflect the current board members and representatives.

3. Maps Related to Key Beneficial Uses

Were best available data sources used for information related to key beneficial users?

Selected relevant requirements and guidance:
GSP Element 2.1.4 "Additional GSP Elements" (§354.8):
Each Plan shall include a description of the geographic areas covered, including the following information:
(a) One or more maps of the basin that depict the following, as applicable:
(5) The density of wells per square mile, by dasymetric or similar mapping techniques, showing the general distribution of agricultural, industrial, and domestic water supply wells in the basin, including de minimis extractors, and the location and extent of communities dependent upon groundwater, utilizing data provided by the Department, as specified in Section 353.2, or the best available information.

GSP Element 3.5 Monitoring Network (§354.34)
(b) Each Plan shall include a description of the monitoring network objectives for the basin, including an explanation of how the network will be developed and implemented to monitor groundwater and related surface conditions, and the interconnection of surface water and groundwater, with sufficient temporal frequency and spatial density to evaluate the affects and effectiveness of Plan implementation. The monitoring network objectives shall be implemented to accomplish the following:
(c) Each monitoring network shall be designed to accomplish the following for each sustainability indicator:
(1) Chronic Lowering of Groundwater Levels. Demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features by the following methods:
(A) A sufficient density of monitoring wells to collect representative measurements through depth-discrete perforated intervals to characterize the groundwater table or potentiometric surface for each principal aquifer.
(4) Degraded Water Quality. Collect sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators, as determined by the Agency, to address known water quality issues.
(6) Depletions of Interconnected Surface Water. Monitor surface water and groundwater, where interconnected surface water conditions exist, to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions. The monitoring network shall be able to characterize the following:
(A) Flow conditions including surface water discharge, surface water head, and baseflow contribution.
(B) Identifying the approximate date and location where ephemeral or intermittent flowing streams and rivers cease to flow, if applicable.
(C) Temporal change in conditions due to variations in stream discharge and regional groundwater extraction.
(D) Other factors that may be necessary to identify adverse impacts on beneficial uses of the surface water.
(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:
(3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.

Review Criteria		Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP Include Maps Related to Drinking Water Users?	a. Well Density	X			Figure 3-7. Density of Domestic Wells Figure 3-9. Density of Municipal Wells	Figure 3-7, Page 50 Figure 3-9, Page 52
	b. Domestic and Public Supply Well Locations & Depths		X		No maps are provided other than the well density maps. Well depths appear to be used when analyzing impacts of MTs on domestic wells, but are not otherwise provided in the document.	

	i. Based on DWR Well Completion Report Map Application[9]?	X			"The DWR data were used for simplicity and consistency with other DWR data used in this GSP. DWR's Well Completion Report Map Application classifies wells as domestic, production, and municipal; the majority of wells classified as production wells are assumed to be used for agricultural irrigation, with some production wells used for industrial purposes."	3.5, Page 48
	ii. Based on Other Source(s)?		X		Other sources are identified, but not used in the GSP. "Other data sources are available from MCWRA or other sources, and they may result in different well densities. The DWR data were used for simplicity and consistency with other DWR data used in this GSP."	
2. Does the GSP include maps related to Groundwater Dependent Ecosystem (GDE) locations?	a. Map of GDE Locations	X			Decisions to remove, keep, or add polygons from the NC dataset into a basin GDE map should be based on best available science in a manner that promotes transparency and accountability with stakeholders. Any polygons that are removed, added, or kept should be inventoried in the submitted shapefile to DWR, and mapped in the plan. We recommend revising Figure 4-10 to reflect this change. Please note the following best practices for depth to groundwater contour maps: ● Are the wells used for interpolating depth to groundwater sufficiently close (<5km) to NC Dataset polygons to reflect local conditions relevant to ecosystems? ● Are the wells used for interpolating depth to groundwater screened within the surficial unconfined aquifer and capable of measuring the true water table? ● Is depth to groundwater contoured using groundwater elevations at monitoring wells to get groundwater elevation contours across the landscape? This layer can then be subtracted from land surface elevations from a Digital Elevation Model (DEM) to estimate depth-to-groundwater contours across the landscape. This will provide much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found. Depth to groundwater contours developed from depth to groundwater measurements at wells assumes that the land surface is constant, which is a poor assumption to make. It is better to assume that water surface elevations are constant in between wells, and then calculate depth to groundwater using a DEM of the land surface to contour depth to groundwater. If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in	Figure 4-10, Page 102

[9] DWR Well Completion Report Map Application: https://www.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37

					the GSP until data gaps are reconciled in the monitoring network.	
	b. Map of Interconnected Surface Waters (ISWs)		X		The groundwater levels shown on Figure 5-35 are irrelevant to the discussion of ISWs since they do not map the shallow water table. The use of piezometric head from confined aquifers should be eliminated from these ISW mapping efforts, since they do not adequately reflect the position of the true water table. Mapping ISW locations would be best done using contours of depth to groundwater measured from multiple points in time (different seasons and water year types) rather than only from Fall 2013. Groundwater conditions evaluated across the range of seasonal and interannual time frames provides a more representative view of ISWs. It is unclear on Figure 5-35 whether missing groundwater levels along certain reaches of the Salinas River are due to groundwater levels >20 feet bgs or due to data gaps in groundwater levels. Mapping the position of wells used for the interpolation of groundwater elevation data used to map groundwater level contours near surface water would help provide further clarification.	
	i. Does it identify which reaches are gaining and which are losing?		X			
	ii. Depletions to ISWs are quantified by stream segments.		X			
	iii. Depletions to ISWs are quantified seasonally.		X			
3. Does the GSP include maps of monitoring networks?	a. Existing Monitoring Wells	X			Figure 7-1. Current 180-Foot Aquifer CASGEM Monitoring Network for Water Levels Figure 7-2. Current 400-Foot Aquifer CASGEM Monitoring Network for Water Levels Figure 7-3. Current Deep Aquifer CASGEM Monitoring Network for Water Levels Figure 7-7. 180-Foot Aquifer Monitoring Network for Seawater Intrusion Figure 7-8. 400-Foot Aquifer Monitoring Network for Seawater Intrusion Figure 7-9. Locations of Wells in the Groundwater Quality Monitoring Network for Public Water Supply Wells Figure 7-10. Locations of ILRP Wells Monitored under Ag Order 3.0	Figure 7-1, Page 231 Figure 7-2, Page 232 Figure 7-3, Page 233 Figure 7-7, Page 243 Figure 7-8, Page 244 Figure 7-9, Page 248 Figure 7-10, Page 249
	b. Existing Monitoring Well Data sources: i. California Statewide Groundwater Elevation Monitoring (CASGEM)	X			"A CASGEM network has already been established by MCWRA for the 180/400-Foot Aquifer Subbasin (MCWRA, 2015b)"	7.2, Page 224-232
	ii. Water Board Regulated monitoring sites	X			"There are multiple sites at which groundwater quality monitoring is conducted as part of investigation or compliance monitoring programs through the Central Coast Regional Water Quality Control Board."	3.6.3.2, Page 55
	iii. Department of Pesticide Regulation (DPR) monitoring wells		X			
	c. SGMA-Compliance Monitoring Network	X			"All of the monitoring sites shown in figures and tables in this Chapter are considered RMS [representative monitoring sites] (except where noted)."	See above.
	i. SGMA Monitoring Network map includes identified DACs?		X			
	ii. SGMA Monitoring Network map includes		X			

	identified GDEs?					

Summary/ Comments
The GSP should provide the locations and depths of all domestic and public supply wells in the GSA area using the best available information, and present this information on maps along with the proposed SGMA-compliance monitoring network so that the public can evaluate how well the monitoring network addresses these key beneficial users. If no better source is available, DWR has made well construction records available through its Well Completion Report Map application website: https://www.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37

There are no water level representative monitoring wells (RMWs) located in the northernmost portion of the subbasin, in an area with a high concentration of domestic well users. Thus, the water level monitoring network is inadequate to properly monitor for these sensitive beneficial users, as required under 23 CCR §354.34 (b)(2).

The draft GSP does not clearly identify what wells will specifically be used as water quality RMWs, but rather lists MTs by general type of well. As required under 23 CCR §354.34(h), the GSP must clearly identify on both a map and in tabular form each of the wells to be used as RMWs for water quality. Without this information, the public cannot review and assess the adequacy of the proposed GSP to monitor impacts to beneficial users of groundwater, in particular those reliant on domestic wells for drinking water purposes.

Providing maps of the monitoring network overlaid with location of DACs, GDEs, and any other sensitive beneficial users will also allow the reader to evaluate adequacy of the network to monitor conditions near these beneficial users.

Refer to TNC's guidance on Identifying GDEs Under SGMA (https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_NCdataset_BestPracticesGuide_2019.pdf) for best practices for using local groundwater data to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer.

The GSP should present or refer to a depth to groundwater map in Section 4.4.4. Only wells screened in the shallow unconfined aquifer should be used to develop the depth to groundwater maps. If there are insufficient groundwater level data in the shallow aquifer, then the GDE polygons in these areas should be included as GDEs in the GSP until data gaps are reconciled in the monitoring network.

The GSP should clarify how the light blue shaded area shown in Figure 4A-3 (depth to water < 30 ft south of Chualar) is used for the GDE analysis. The figure implies an incorrect interpretation of the GDE Guidance.

Care should be taken when considering rooting depths of vegetation. The GSP should list the species in each GDE, and whether the GDE was eliminated or retained based on the 30-foot standard, and provide evidence for the decision.

We highly recommend using depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons.

The GSP should include a description of the types of species (protected status, native versus non-native), habitat, and environmental beneficial uses and assign an ecological value to the GDEs.

While groundwater in the 180- and 400-foot Aquifers is generally not considered to be hydraulically connected to the Salinas River or its tributaries, the Shallow Aquifer (which resides above the Salinas Valley Aquitard) likely does. To address this, interconnections of surface water with groundwater in the Shallow Aquifer should be evaluated in Section 5.6 of the GSP, since the Shallow Aquifer is within the 180/400-Foot Aquifer Subbasin. Where data gaps exist, cite them here or refer to a subsequent section of the GSP. Cite

cross-sections that relay the conceptual understanding of the shallow aquifer interaction with surface water. It is recommended that the ISW be mapped using contours of depth to groundwater measured from multiple points in time. The position of wells should also be included. The GSP should elaborate on how depth to groundwater contours were developed for Figure 5-19 and on Figure 5-35. It is recommended to map the gaining and losing reaches onto Figure 5-19 using the data from Figure 5-23. If this is not possible due to insufficient data, then as with the first bullet above, the data gaps would be best addressed by the Monitoring Network.

4. Water Budgets

How were climate change projections incorporated into projected/future water budget and how were key beneficial users addressed?

Selected relevant requirements and guidance:
GSP Element 2.2.3 "Water Budget Information" (Reg. § 354.18)
Each Plan shall include a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions, and the change in the volume of water stored. Water budget information shall be reported in tabular and graphical form.

*Projected water budgets shall be used to estimate future baseline conditions of supply, **demand**, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components. The projected water budget shall utilize the following methodologies and assumptions to estimate future baseline conditions concerning hydrology, water demand and surface water supply availability or reliability over the planning and implementation horizon:*
(b) The water budget shall quantify the following, either through direct measurements or estimates based on data:
(5) If overdraft conditions occur, as defined in Bulletin 118, the water budget shall include a quantification of overdraft over a period of years during which water year and water supply conditions approximate average conditions.
(6) The water year type associated with the annual supply, demand, and change in groundwater stored.
(c) Each Plan shall quantify the current, historical, and projected water budget for the basin as follows:
*(1) Current water budget information shall quantify current inflows and outflows for the basin using the most recent hydrology, water supply, **water demand**, and land use information.*

DWR Water Budget BMP[10]
DWR Guidance for Climate Change Data Use During GSP Development and Resource Guide[11]

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Are climate change projections explicitly incorporated in future/ projected water budget scenario(s)?	X			"The projected water budget is extracted from the SVIHM projected hydrologic conditions with climate change simulations."	6.10, Page 212
2. Is there a description of the methodology used to include climate change?	X			Section 6.10.1 provides details on the methodology. "Several modifications were made to the SVIHM in accordance with recommendations made by DWR in their Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development (DWR, 2018). Three types of datasets were modified to account for 2030 and 2070 projected climate change: climate data (precipitation and reference evapotranspiration, ET0), streamflow, and sea level." The GSP then describes in more detail how climate change factors were applied to climate data, streamflow, and sea level rise.	6.10, Page 212-221

[10] DWR BMP for the Sustainable Management of Groundwater Water Budget:
https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-4-Water-Budget.pdf
[11] DWR Guidance Document for the Sustainable Management of Groundwater Guidance for Climate Change Data Use During GSP Development:
https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Climate-Change-Guidance_Final.pdf

3. What is used as the basis for climate change assumptions?	a. DWR-Provided Climate Change Data and Guidance[12]	X			"Several modifications were made to the SVIHM in accordance with recommendations made by DWR in their Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development (DWR, 2018)."	6.10.1.2.1, Page 213
	b. Other		X			
4. Does the GSP use multiple climate scenarios?			X		"Two projected water budgets are presented, one incorporating estimated 2030 climate change projections and one incorporating estimated 2070 climate change projections."	6.10, Page 212
5. Does the GSP quantitatively incorporate climate change projections?		X			Section 6.10.3 to 6.10.5 discusses and presents in tables the quantitative results of climate change projections. "Three types of datasets were modified to account for 2030 and 2070 projected climate change: climate data (precipitation and reference evapotranspiration, ET0), streamflow, and sea level."	6.10.3-6.10.5, Page 214-221
6. Does the GSP explicitly account for climate change in the following elements of the future/projected water budget?	a. Inflows: i. Precipitation	X			Water budget components are listed in Sections 6.10.3 and 6.10.4. "There is no water imported into the 180/400-Foot Aquifer Subbasin from outside the Salinas River watershed."	6.10, Page 212-221
	a. Inflows: ii. Surface Water	X				
	a. Inflows: iii. Imported Water			X		
	a. Inflows: iv. Subsurface Inflow	X				
	b. Outflows: i. Evapotranspiration	X				
	b. Outflows: ii. Surface Water Outflows (incl. Exports)	X				
	b. Outflows: iii. Groundwater Outflows (incl. Exports)	X				
7. Are demands by these sectors (drinking water users) explicitly included in the future/projected water budget?	a. Domestic Well users (<5 connections)		X		It is not clear from the GSP if demands by which or all of these water systems were considered. The GSP states that "Total groundwater extraction including municipal, agricultural, and rural domestic pumping". However, in Table 6-30, rural-domestic water use was "considered minimal" and was set as zero. The GSP also does not identify the size (number of connections) of the various public water systems present in the basin.	6.10.4, Page 220
	b. State Small Water systems (5-14 connections)		X			
	c. Small community water systems (<3,300 connections)		X			
	d. Medium and Large community water systems (> 3,300 connections)		X			
	e. Non-community water systems		X			
8. Are water uses for native vegetation and/or wetlands explicitly included in the current and historical water budgets?		X			"The groundwater budget outflows include: • Groundwater pumping • Riparian evapotranspiration • Subsurface outflows to adjacent subbasins" Table 6-14: Riparian Evapotranspiration in Historical and Current Water	6.2.2, Page 179 6.6.2, Page 194 6.10.1, Page 213
9. Are water uses for native vegetation and/or wetlands explicitly included in the projected/future water budget?		X				

[12] DWR Guidance Document for the Sustainable Management of Groundwater Guidance for Climate Change Data Use During GSP Development: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Climate-Change-Guidance_Final.pdf
DWR Resource Guide DWR-Provided Climate Change Data and Guidance for Use During GSP Development: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Resource-Guide-Climate-Change-Guidance_v8.pdf

				Budgets "Three types of datasets were modified to account for 2030 and 2070 projected climate change: climate data (precipitation and reference evapotranspiration, ET0), streamflow, and sea level."	

Summary/ Comments

Given the uncertainties of climate change, the GSP should include and analyze the effects of multiple climate scenarios, such as single dry years and multiple dry years.

The GSP should clearly identify and quantify water demands of all drinking water users in the projected water budget, including domestic well users, as well as the small and large public water systems.

The GSP should provide more detail on the various public water systems in the basin, including number of connections, population served, and current, historical, and projected demands by each system.

The draft GSP identifies three principal aquifers, i.e., the 180-Foot Aquifer, the 400-Foot Aquifer, and the Deep Aquifers. However, despite this, the draft GSP lumps all three aquifers together in its evaluation of the water budget, and does not appear to account for lag time and flows between aquifers, or the effects of differential pumping rates and changes in pumping rates between aquifers. Given this, it is not clear that the projected water budget, as developed in the draft GSP, is sufficiently robust and representative of subbasin conditions for purposes of fully assessing sustainable yield.

5. Management Areas and Monitoring Network

How were key beneficial users considered in the selection and monitoring of Management Areas and was the monitoring network designed appropriately to identify impacts on DACs and GDEs?

Selected relevant requirements and guidance:
GSP Element 3.3, "Management Areas" (§354.20):

(b) A basin that includes one or more management areas shall describe the following in the Plan:
(2) The minimum thresholds and measurable objectives established for each management area, and an explanation of the rationale for selecting those values, if different from the basin at large.
(3) The level of monitoring and analysis appropriate for each management area.
(4) An explanation of how the management area can operate under different minimum thresholds and measurable objectives without causing undesirable results outside the management area, if applicable.
(c) If a Plan includes one or more management areas, the Plan shall include descriptions, maps, and other information required by this Subarticle sufficient to describe conditions in those areas.

CWC Guide to Protecting Drinking Water Quality under the SGMA[13]
TNC's Groundwater Dependent Ecosystems under the SGMA, Guidance for Preparing GSPs[14]

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP define one or more Management Area?	X			The subbasin is managed as one management area. "At this time, management areas have not been defined for the 180/400-Foot Aquifer Subbasin."	7.1.3, Page 224
2. Were the management areas defined specifically to manage GDEs?			X		
3. Were the management areas defined specifically to manage DACs?			X		
a. If yes, are the Measurable Objectives (MOs) and MTs for GDE/DAC management areas more restrictive than for the basin as a whole?			X		
b. If yes, are the proposed management actions for GDE/DAC management areas more restrictive/ aggressive than for the basin as a whole?			X		
4. Does the GSP include maps or descriptions indicating what DACs are located in each Management Area(s)?		X			
5. Does the GSP include maps or descriptions indicating what GDEs are located in each Management Area(s)?	X			Figure 4-10. Groundwater Dependent Ecosystems	Figure 4-10, Page 102
6. Does the plan identify gaps in the monitoring network for DACs and/or GDEs?	X			"To develop the needed empirical data regarding the extent and timing of hydrologic connection, the SVBGSA will install two shallow wells along the Salinas River in the 180/400-Foot Aquifer Subbasin, as discussed in Chapter	7.7, Page 251

[13] CWC Guide to Protecting Drinking Water Quality under the SGMA: https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858
[14] TNC's Groundwater Dependent Ecosystems under the SGMA, Guidance for Preparing GSPs: https://www.scienceforconservation.org/assets/downloads/GDEsUnderSGMA.pdf

a. If yes, are plans included to address the identified deficiencies?	X			10." Section 7.7 states that "… there is little to no interconnection between the 180-Foot, 400-Foot or Deep Aquifer and surface water in the 180/400-Foot Aquifer Subbasin." However, the section further states that "the Salinas River is potentially in connection with groundwater in the shallow water bearing sediments" and Section 8.11.2 states that the average annual surface water depletion of the Salinas River is 67,000 acre feet. The GSP should explain how this amount of recharge can be redistributed through the aquifer system without any significant interconnection between the shallow and deeper aquifer systems. Furthermore, it is our understanding that the rate of surface water depletion from the Salinas River is in fact correlated historical groundwater level declines in the shallow and 180-Foot aquifer systems which have also resulted in seawater intrusion into the subbasin. The installation of two groundwater monitoring wells is insufficient to characterize surface-groundwater interactions across the entire subbasin. The BMP cited in section 7.2 instructs GSAs to "Monitor surface water and groundwater … to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions." Per the BMP, 13 to 14 monitoring wells would be more adequate to achieve this objective. Please revise this section to (1) reflect what is known and published regarding potential surface-groundwater interactions in the subbasin and related groundwater level and budget trends, (2) identify the existing data gaps, and (3) provide recommendations for an adequate number of monitoring wells to assess surface-groundwater interaction and shallow groundwater level trends. The wells listed in Table 7.2 and proposed for monitoring do not include any wells completed in the Shallow Alluvial or Dune Sand Aquifers. As such, the proposed monitoring well network is inadequate to assess the potential effects of groundwater pumping and management on ISWs and GDEs. This fact should be acknowledged with a cross reference to Section 7.2.4 which describes the proposed actions to remedy this situation. The GSP Regulations (23 CCR §354.34 (a) and (b)) require that monitoring must address trends in groundwater and related surface conditions (emphasis added). This includes "the tools and methods necessary to calculate depletions" and "[o]ther factors that may be necessary to identify adverse impacts on beneficial uses of the surface water," including impacts to GDEs. Please specify what other monitoring data and methods will be implemented to inform a determination whether significant and unreasonable impacts to GDEs are occurring, and explain how they will adequately meet the requirements of 23 CCR §354.34(c)(6) relative to GDEs and ISWs.	

Summary/ Comments
If management areas are defined in the future, care should be taken so that they and the associated monitoring network are designed to adequately assess and protect against

impacts to all beneficial users, including GDEs and DACs. The GSP should revise Section 7.7 to (1) reflect what is known and published regarding potential surface-groundwater interactions in the subbasin and related groundwater level and budget trends, (2) identify the existing data gaps, and (3) provide recommendations for an adequate number of monitoring wells to assess surface-groundwater interaction and shallow groundwater level trends. The GSP should specify what monitoring data and methods will be implemented to inform a determination whether significant and unreasonable impacts to GDEs are occurring, and explain how they will adequately meet the requirements of 23 CCR §354.34(c)(6) relative to GDEs and ISWs.

6. Measurable Objectives, Minimum Thresholds, and Undesirable Results

How were DAC and GDE beneficial uses and users considered in the establishment of Sustainable Management Criteria?

Selected relevant requirements and guidance:
GSP Element 3.4 "Undesirable Results" (§ 354.26):
(b) The description of undesirable results shall include the following:
(3) Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results

GSP Element 3.2 "Measurable Objectives" (§ 354.30)
(a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin within 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Are DAC impacts considered in the development of Undesirable Results (URs), MOs, and MTs for groundwater levels and groundwater quality?	X			Water Level MTs: "The comparison showed: • In the 180-foot aquifer, 89% of all domestic wells will have at least 25 feet of water in them as long as groundwater levels remain above minimum thresholds; and 91% of all domestic wells will have at least 25 feet of water in them when measurable objectives are achieved. • In the 400-foot aquifer, 79% of all domestic wells will have at least 25 feet of water in them as long as groundwater levels remain above minimum thresholds; and 82% of all domestic wells will have at least 25 feet of water in them when measurable objectives are achieved." "Domestic land uses and users. The groundwater elevation minimum thresholds are intended to protect most domestic wells. Therefore, the minimum thresholds will likely have an overall beneficial effect on existing domestic land uses by protecting the ability to pump from domestic wells. However, shallow domestic wells may become dry, requiring owners to drill deeper wells. Additionally, the groundwater elevation minimum thresholds may limit the number of new domestic wells that can be drilled in order to limit future declines in groundwater levels caused by more domestic pumping." Water Level URs: "Over the course of any one year, no more than 15% of the groundwater elevation minimum thresholds shall be exceeded in any single aquifer. Additionally, the minimum threshold in any one well shall not be exceeded for more than two sequential years." Water Quality MTs: "Domestic land uses and users. The degradation of groundwater quality minimum thresholds generally provides positive benefits to the Subbasin's	8.6.2.2, Page 271 8.6.4.1, Page 280 8.9.2.7, Page 308

				domestic water users. Preventing constituents of concern in additional drinking water supply wells from exceeding MCLs or SMCLs ensures an adequate supply of groundwater for domestic supplies." Water Quality URs: "During any one year, no groundwater quality minimum threshold shall be exceeded when computing annual averages at each well, as a direct result of projects or management actions taken as part of GSP implementation." Seawater Intrusion MTs: "Urban land uses and users. The seawater intrusion minimum thresholds generally provide positive benefits to the Subbasin's urban water users. Preventing additional seawater intrusion will help ensure an adequate supply of groundwater for municipal supplies. Domestic land uses and users. The seawater intrusion minimum thresholds generally provide positive benefits to the Subbasin's domestic water users. Preventing additional seawater intrusion will help ensure an adequate supply of groundwater for domestic supplies." Seawater Intrusion URs: "On average in any one year there shall be no mapped seawater intrusion beyond the 2017 extent of the 500 mg/L chloride isocontour."	8.9.4.1, Page 309 8.8.2.4, Page 293 8.5, Page 261
2. Does the GSP explicitly discuss how stakeholder input from DAC community members was considered in the development of URs, MOs, and MTs?	X			"The SMC presented in this chapter were developed using publicly available information, feedback gathered during public meetings, hydrogeologic analysis, and meetings with GSA staff and Advisory Committee members. The general process included: • Presentations to the Board of Directors on the SMC requirements and implications. • Presentations to the Advisory Committee and Subbasin Specific working groups outlining the approach to developing SMC and discussing initial SMC ideas. The Advisory Committee and working groups provided feedback and suggestions for the development of initial SMC. • Discussions with GSA staff and various Board Members. • Modifying minimum thresholds and measurable objectives based on input from GSA staff and Board Members."	8.3, Page 260
3. Does the GSP explicitly consider impacts to GDEs and environmental BUs of surface water in the development of MOs and MTs for groundwater levels and depletions of ISWs?		X		Section 8.11: Please integrate the following information into this section of the GSP to appropriately establish SMC for ISWs in a way that achieves the basin's sustainability goal to balance all beneficial users of the basin: ● The shallow aquifer is indeed a principal aquifer that needs SMC established to prevent adverse impacts to surface water beneficial users, as defined in 23 CCR § 351 (aa). In addition, more nested/clustered wells are needed in the 180-400 Foot Aquifer area to determine vertical groundwater gradients and whether pumping in the deeper aquifers are causing groundwater levels to lower in the shallow aquifer and deplete surface water.	
4. Does the GSP explicitly consider impacts GDEs and environmental BUs of surface water and recreational lands in the discussion and development of Undesirable Results?		X			

				● The shallow aquifer in the 180/400 Foot Aquifer and Monterey Subbasins are likely to be supporting GDEs and interconnecting with the Salinas River. Thus, pumping in deeper aquifers can still cause adverse impacts to environmental beneficial users reliant on shallow groundwater. Even if pumping is not occurring in shallow groundwater aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, especially those that support springs, surface water and GDEs for current and future uses. ● Several published references indicate that the 180-Foot aquifer is in direct hydraulic communication with the overlying Dune Sand Aquifer or Shallow Alluvial Aquifer where the Salinas Valley Aquitard is thin or absent. These same references indicate aquitards within the 180/400 Foot aquifer system are known to be locally discontinuous. In addition, the fact that the Salinas is a losing stream and that 67,000 acre feet are recharged from the stream to the groundwater basin in an average year strongly suggests that the shallow aquifer is hydraulically connected to the underlying pumped aquifer systems. Section 8.11.1 and 8.11.2: Please include a discussion of how baseline conditions, current trends and potential adverse impacts to GDEs were considered in the definition of significant and unreasonable conditions and establishment of Minimum Thresholds and Measurable Objectives. A discussion of applicable state, federal and local standards, policies and guidelines applicable to the GDE species and habitats identified should also be provided. The section should explain how, in light of the nature and condition of the GDEs, these Sustainable Management Criteria will prevent undesirable results related to damage to GDE resources. Any data gaps and the means to address them should be identified. The listing of beneficial uses of interconnected surface water is limited to instream resources of the Salinas River alone. Please expand the listing of beneficial uses and users to address GDEs and ecosystems that are located adjacent to the river and its tributaries. We recommend the streamflow requirements set by the NMFS should be explicitly stated or referenced in the GSP. In addition, any other state, federal or local standards, requirements and guidelines pertaining to the GDE habitats and species identified in the NC dataset or the list of species included in Freshwater Species Located in the 180/400-Foot Aquifer Subbasin should also be discussed or referenced. Model estimates should be monitored more closely than every five years in order to detect potentially significant effects in a time frame that allows for rapid response and alleviation of ecosystem decline. Please discuss how the	

				minimum threshold will be measured in a way that assures protection of GDEs and instream environmental beneficial users. Section 8.6.2: Table 8-2 does not include a single well completed in the Shallow Alluvial or Dune Sand Aquifer. Please identify the lack of shallow aquifer monitoring wells as a data gap, and cross reference your plans discussed in Chapter 7 to install a sufficient number of shallow monitoring wells to assess potential undesirable results to GDEs. Please revise Section 8.6.2.3 and 8.7.2.2 to include a discussion regarding the effects of potential groundwater level declines on GDEs and limitations of groundwater level monitoring alone to assess potential undesirable results to GDEs. Please include a discussion explaining how GDEs, ISWs and recreational uses may benefit or be protected by implementation of the proposed Minimum Thresholds and Measurable Objectives. Section 8.6.4: TNC's GDE Pulse Tool shows declining ecosystem conditions along the Salinas River west of Salinas between 2014 and 2018. This section should be revised to use these data as a basis for addressing how the proposed compliance strategy will address significant and undesirable decline of GDEs at the spatial scale already observed in the GDE Pulse data.	
5. Does the GSP clearly identify and detail the anticipated degree of water level decline from current elevations to the water level MOs and MTs?		X			The water level MTs were set at 1 foot above 2015 levels, so the anticipated water level change to reach MTs should be +1 foot over drought levels.	8.6.2, Page 264
6. If yes, does it include:	a. Is this information presented in table(s)?		X		Hydrographs with MTs and MOs were provided in Appendix 8A.	Appendix 8A, Page 810
	b. Is this information presented on map(s)?		X			
	c. Is this information presented relative to the locations of DACs and domestic well users?		X			
	d. Is this information presented relative to the locations of ISW and GDEs?		X			
7. Does the GSP include an analysis of the anticipated impacts of water level MOs and MTs on drinking water users?		X			"The comparison showed: • In the 180-foot aquifer, 89% of all domestic wells will have at least 25 feet of water in them as long as groundwater levels remain above minimum thresholds; and 91% of all domestic wells will have at least 25 feet of water in them when measurable objectives are achieved. • In the 400-foot aquifer, 79% of all domestic wells will have at least 25 feet of water in them as long as groundwater levels remain above minimum thresholds; and 82% of all domestic wells will have at least 25 feet of water in them when measurable objectives are achieved." "Domestic land uses and users. The groundwater elevation minimum thresholds are intended to protect most domestic wells. Therefore, the minimum thresholds will likely have an overall beneficial effect on existing domestic land uses by protecting the ability to pump from domestic wells.	8.6.2.2, Page 271 8.6.2.5, Page 274

					However, shallow domestic wells may become dry, requiring owners to drill deeper wells. Additionally, the groundwater elevation minimum thresholds may limit the number of new domestic wells that can be drilled in order to limit future declines in groundwater levels caused by more domestic pumping."	
8. If yes:	a. On domestic well users?		X		Analyses were reported as the basis of MT development, but are not clearly illustrated with maps and tables, and does not clearly identify what communities will be most affected by these impacts.	
	b. On small water system production wells?		X			
	c. Was an analysis conducted and clearly illustrated (with maps) to identify what wells would be expected to be partially and fully dewatered at the MOs?		X			
	d. Was an analysis conducted and clearly illustrated (with maps) to identify what wells would be expected to be partially and fully dewatered at the MTs?		X		See above. Analyses were conducted but were not clearly illustrated with maps and tables.	
	e. Was an economic analysis performed to assess the increased operation costs associated with increased lift as a result of water level decline?		X			
9. Does the sustainability goal explicitly include drinking water and nature?		X			"The goal of this GSP is to manage the groundwater resources of the 180/400-Foot Aquifer Subbasin for long-term community, financial, and environmental benefits to the Subbasin's residents and businesses. This GSP will ensure long-term viable water supplies while maintaining the unique cultural, community, and business aspects of the Subbasin. It is the express goal of this GSP to balance the needs of all water users in the Subbasin."	8.2, page 258

Summary/ Comments

The GSP should explicitly consider impacts to GDEs and environmental BUs in the development of MOs, MTs, and URs. See above for detailed comments.

For many of the RMWs located in and near the areas of seawater intrusion, the MTs represent a substantial decline in water levels from the assumed conditions in 2020, to levels well below sea level. Given that current conditions are resulting in significant seawater intrusion conditions, it is unclear from the draft GSP how such declines in water levels will result in sustainability for the beneficial uses and users of the subbasin, and how seawater intrusion will be limited to 2017 limits (i.e., the seawater intrusion MTs).

The SMCs for seawater intrusion and chronic lowering of groundwater levels are in opposition of each other. Section 8.6.2.3 of the draft GSP indicates that "A significant and unreasonable condition for seawater intrusion is seawater intrusion in excess of the extent delineated by MCWRA in 2017. Lower groundwater elevations, particularly in the 180- and 400-Foot Aquifers, could cause seawater to advance inland. The groundwater elevation minimum thresholds are set at or above existing groundwater elevations. Therefore, the groundwater elevation minimum thresholds will not exacerbate, and may help control, seawater intrusion." However, as shown in Figure 8-2 and 8-3 of the draft GSP, the proposed water level MTs are set at 0 feet above mean sea level (ft MSL) along the coastline, and decrease farther east for both the 180- and 400-Foot Aquifers. Given that the inland water level MTs are below sea level, an easterly groundwater flow gradient will remain and seawater intrusion will continue. While the rate of seawater intrusion would likely be slower than observed historically, even if the water level MTs were met today, seawater intrusion will still continue within the subbasin, threatening the drinking water supplies for DACs and other vulnerable populations. The GSP should adequately describe the "relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators," pursuant to 23 CCR § 354.28 (b)(2).

Based on the seawater intrusion maps in the GSP, there is significant uncertainty regarding the extent of seawater intrusion in the northern and southern portions of the impacted area for both the 180-Foot and 400-Foot Aquifers. As these data are used as the basis for MTs, the GSP should clearly and transparently present this uncertainty so that the public could better evaluate to what degree the proposed seawater intrusion MTs are protective of beneficial users in these areas.

The MTs for water quality constituents are based on selective sampling that may not fully represent the conditions of domestic or small system wells. The draft GSP does not present a monitoring network that is sufficient to monitor for impacts to beneficial users who rely on domestic wells and small water systems for drinking water (pursuant to 23 CCR § 354.34(b)(2)) and the draft GSP does not fully evaluate how these selective MTs will affect the interests of these beneficial users (pursuant to 23 CCR §354.28(b)(4)).

It is recommended that the GSP present a thorough and robust analysis, supported by maps, that identifies the location of the likely impacted wells with respect to DACs and other communities and systems dependent on groundwater.

A proactive assistance program should be developed for potentially impacted beneficial users, including DACs, small water systems, and domestic wells, to mitigate potential future adverse impacts, particularly to water quality resulting from agricultural impacts and seawater intrusion.

7. Management Actions and Costs

What does the GSP identify as specific actions to achieve the MOs, particularly those that affect the key BUs, including actions triggered by failure to meet MOs? What funding mechanisms and processes are identified that will ensure that the proposed projects and management actions are achievable and implementable?

Selected relevant requirements and guidance
GSP Element 4.0 Projects and Management Actions to Achieve Sustainability Goal (§ 354.44)
(a) Each Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.
(b) Each Plan shall include a description of the projects and management actions that include the following:
(1) A list of projects and management actions proposed in the Plan with a description of the measurable objective that is expected to benefit from the project or management action.

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP identify benefits or impacts to DACs as a result of identified management actions?		X		Several projects are noted in the GSP as expected to improve water quality, including the (1) SRDF Winter Flow Injection, (2) Recharge Local Runoff from Eastside Range, and (3) Winter Potable Reuse Water Injection. The potential benefits and impacts specific to DACs were not explicitly discussed in the GSP.	
2. If yes: a. Is a plan to mitigate impacts on DAC drinking water users included in the proposed Projects and Management Actions?		X			
b. Does the GSP identify costs to fund a mitigation program?		X			
c. Does the GSP include a funding mechanism to support the mitigation program?		X			
3. Does the GSP identify any demand management measures in its projects and management actions?	X				
4. If yes, does it include: a. Irrigation efficiency program	X			9.3.3 Priority Management Action 2: Outreach and Education for Agricultural BMPs	9.3.3, Page 341
b. Ag land fallowing (voluntary or mandatory)	X			9.3.2 Priority Management Action 1: Agricultural Land and Pumping Allowance Retirement "Agricultural land retirement relies on willing sellers."	9.3.2, Page 339
c. Pumping allocation/restriction	X			9.2 Water Charges Framework 9.3.5 Priority Management Action 4: Restrict Pumping in CSIP Area	9.2, Page 331 9.3.5, Page 345
d. Pumping fees/fines	X			9.2 Water Charges Framework	9.2, Page 331
e. Development of a water market/credit system	X			9.3.2 Priority Management Action 1: Agricultural Land and Pumping Allowance Retirement	9.3.2, Page 339
f. Prohibition on new well construction	X			9.3.6 Priority Management Action 5: Support and Strengthen MCWRA Restrictions on Additional Wells in the Deep Aquifers	9.3.6, Page 347
g. Limits on municipal pumping		X		The GSP does not appear to have limits on municipal pumping.	
h. Limits on domestic well pumping		X		The GSP does not appear to have limits on domestic well pumping.	

	i. Other		X			
5. Does the GSP identify water supply augmentation projects in its projects and management actions?		X				9.4, Page 351-413
6. If yes, does it include:	a. Increasing existing water supplies	X			9.4.3.3 Preferred Project 2: Optimize CSIP Operations, 9.4.3.6 Preferred Project 5: Maximize Existing SRDF Diversion, etc.	
	b. Obtaining new water supplies	X			9.4.3.5 Preferred Project 4: Expand Area Served by CSIP, 9.4.3.8 Preferred Project 7: 11043 Diversion Facilities Phase I: Chualar, 9.4.3.9 Preferred Project 8: 11043 Diversion Facilities Phase II: Soledad	
	c. Increasing surface water storage	X			9.4.3.3 Preferred Project 2: Optimize CSIP Operations	
	d. Groundwater recharge projects – District or Regional level	X			9.4.3.10 Preferred Project 9: SRDF Winter Flow Injection, etc.	
	e. On-farm recharge	X			9.4.4.2 Alternate Project 2: Recharge Local Runoff from Eastside Range	
	f. Conjunctive use of surface water	X			Several projects listed here also involve conjunctive use of surface water.	
	g. Developing/utilizing recycled water	X			9.4.3.4 Preferred Project 3: Modify Monterey One Water Recycled Water Plant – Winter, etc.	
	h. Stormwater capture and reuse	X			9.4.4.2 Alternate Project 2: Recharge Local Runoff from Eastside Range	
	i. Increasing operational flexibility (e.g., new interties and conveyance)	X			Several projects listed here also involve increasing operational flexibility.	
	j. Other		X			
7. Does the GSP identify specific management actions and funding mechanisms to meet the identified MOs for groundwater quality and groundwater levels?		X			As discussed under the "Relevant Measurable Objectives" sections, Priority Management 1 to 5 address groundwater level MOs. Groundwater quality MOs are not explicitly identified.	9.3, Page 339-351
8. Does the GSP include plans to fill identified data gaps by the first five-year report?		X			10.3 Implementation Activity 3: Address Identified Data Gaps	10.3, Page 420
9. Do proposed management actions include any changes to local ordinances or land use planning?		X			"To promote use of CSIP water, the SVBGSA will pass an ordinance preventing any pumping for irrigating agricultural lands served by CSIP." "SVBGSA will work with the MCWRA to extend this ordinance to prevent any new wells from being drilled into the Deep Aquifers until more information is known about the Deep Aquifers' sustainable yield."	9.3.5, Page 345 9.3.6, Page 347
10. Does the GSP identify additional/contingent actions and funding mechanisms in the event that MOs are not met by the identified actions?		X			"Alternative Projects: The alternative projects are the generally less cost-effective projects. Depending on the efficacy of the priority projects, one or more of the alternative projects may be implemented to meet the SMCs." Funding mechanisms are not clear from the GSP.	9.4, Page 350
11. Does the GSP provide a plan to study the interconnectedness of surface water bodies?		X			"Adequate monitoring sites for interconnected surface water monitoring is identified as a data gap in Chapter 7. The monitoring network for interconnected surface water monitoring will be enhanced, as described in Section 10.4.6. The enhanced monitoring network will be incorporated into MCWRA's existing monitoring system, which will replace the CASGEM system after GSP submission. After the enhanced monitoring network is established, SVBGSA will annually download the interconnected surface water data from the CASGEM system, prepare summary tables and figures, and compare the data to sustainability goals."	10.1.1.6, Page 418 10.1.9, Page 423

12. If yes:	a. Does the GSP identify costs to study the interconnectedness of surface water bodies?		X			
	b. Does the GSP include a funding mechanism to support the study of interconnectedness surface water bodies?		X			
13. Does the GSP explicitly evaluate potential impacts of projects and management actions on groundwater levels near surface water bodies?		X			9.3.4 Priority Management Action 3: Reservoir Reoperation "Interconnected surface water measurable objective. By allowing more flows to stay in the Salinas River year-round, the areas that are interconnected would stay connected to groundwater and benefit all beneficial users on the river."	9.3.4, Page 344

Summary/ Comments

The GSP should identify the potential impacts of the proposed projects or management actions on DACs. If impacts are expected, the GSP should include plans to monitor for, prevent, and/or mitigate against such impacts, provide the estimated costs, and identify the funding sources.

The GSP does not appear to include any plans to address impacts to domestic well users if these wells are dewatered or if water quality in these wells is degraded in the future from surface or seawater impacts. The GSP should include plan to monitor for and mitigate impacts to DAC drinking water users, particularly due to sea water intrusion.

The GSP identifies a plan to study interconnected surface water, but does not clearly identify the anticipated costs or funding mechanism to support this work. The GSP should lay out a clear implementation timeline and plan to fund and implement this work within the next 5 years.

The draft GSP identifies an estimated groundwater storage deficit of up to 9,600 AFY under 2030 conditions and up to 10,300 AFY under 2070 conditions (Table 6-29), which represents roughly 8.5% of agricultural pumping and 6% of total pumping in the basin (Table 6-30). In order to arrest and roll back seawater intrusion to 2017 levels, significant projects and management actions will need to be implemented. The draft GSP identifies several potential options but does not select one clear path forward.

The draft GSP identifies a seawater intrusion pumping barrier and estimates that operation will require withdrawing up to 30,000 AFY of groundwater, which would then be conveyed to discharge into the Pacific Ocean or to a new or existing desalination plant (Section 9.4.3.7). The draft GSP also states that an "optional barrier using injection instead of extraction was also considered" and that this option would require injection of approximately 46,000 AFY of water to create a protective mounding effect. While it is clear that one of these options is necessary to achieve the seawater intrusion MTs, the draft GSP does not consider and fully articulate impacts of these options on the projected water budget or sustainable yield. Implementation of either an extraction or a recharge barrier will, by definition, change the localized groundwater flow gradients. An extraction barrier will result in localized seaward flow gradients, and some portion (likely significant) of the estimated 30,000 AFY extracted will be of freshwater from the subbasin. Based on the numbers presented in the draft GSP, implementation of a pumping barrier will exacerbate the existing overdraft conditions and result in an annual storage deficit on the order of 40,000 AFY under 2070 climate change conditions. This represents approximately 40% of the agricultural pumping and approximately 28% of the total pumping in the subbasin, based on table 6-30. Therefore, the draft GSP significantly underrepresents the actual deficit and needs of the subbasin in order achieve sustainability.

The draft GSP contemplates "Agricultural Land and Pumping Allowance Retirement [sic]" as a management action (Section 9.3.2), but does not actually quantify the scale or expected benefit of such a management action. Based on our review of the information presented in the draft GSP, the future overdraft conditions including implementation of a pumping barrier represent approximately 40% of agricultural pumping. The draft GSP also identifies several potential recharge projects to augment the groundwater supply, but these projects, along with the pumping barrier, require construction of infrastructure and will take years to implement even under the best circumstances. In order to achieve the seawater intrusion MTs and to avoid further degradation of the subbasin, more immediate action is necessary. Thus, the draft GSP should: 1) more transparently lay out and quantify the deficit that needs to be addressed by projects and management actions; 2) provide a clear plan for implementing pumping restrictions and agricultural land retirement with specific targets; 3) clearly articulate how much pumping will need to be reduced in the subbasin; and 4) quantify and present the degree of continued seawater

that will occur before the projects and management actions are implemented. The 180/400-Foot Aquifer Subbasin includes GDEs and ISWs that are beneficial uses and users of groundwater and may include potentially sensitive resources and protected lands. Environmental beneficial users and uses should be considered in establishing project priorities. For projects that construct recharge basins, please consider identifying if there is habitat value incorporated into the design and how the recharge basins will be managed to benefit environmental users. In addition, consistent with existing grant and funding guidelines for SGMA-related work, consideration should be given to multi-benefit projects that can address water quantity as well as providing environmental benefits or benefits to disadvantaged communities. Please include environmental benefits and multiple benefits as criteria for assessing project priorities. If ISWs and GDEs will not be adequately protected by the projects listed, please include and describe additional management actions and projects targeted for protecting ISWs and GDEs. It is recommended that the GSP considers adding Management Actions, which include education and outreach for protection of GDEs and ISWs as well as specific management of these ecosystems and the species they provide for.

Focused Technical Review:

October, 1 2019 Draft Salinas Valley: 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan (GSP)

As shown on **Figure 1**, a significant proportion of the 180/400-Foot Aquifer Subbasin (subbasin) is designated as Disadvantaged Communities (DACs), totaling a population of roughly 50,000 people based on DWR-provided Census data.[1] Members of these DACs and other communities receive their drinking water from roughly 500 domestic wells located within the subbasin and a variety of public water systems, including approximately 30 separate community water systems.

Figure 1 also shows the proposed Minimum Threshold (MT) contours for seawater intrusion for the 180-Foot and 400-Foot aquifers. According to Section 8.8.2 of the draft GSP, these MT contours represent "the 2017 extent of the 500 mg/L [milligrams per liter] chloride concentration isocontour as mapped by MCWRA [Monterey County Water Resources Agency]," and thus represent near-current seawater intrusion conditions. Based on these data, a significant portion of the drinking water supply in the subbasin is at imminent risk of seawater intrusion impacts if seawater intrusion is not halted, including: 1) a high concentration of domestic well users located east of Moss Landing and north of Castroville, 2) domestic well users in and around the DAC of Boranda, 3) public supply wells located near Castroville (a DAC), and 4) public supply wells located near Salinas (which includes DACs). **For the reasons discussed further below, the draft GSP does not lay out a clear and robust plan to achieve sustainability, and protect drinking water for these vulnerable beneficial uses and users.**

Groundwater Conditions

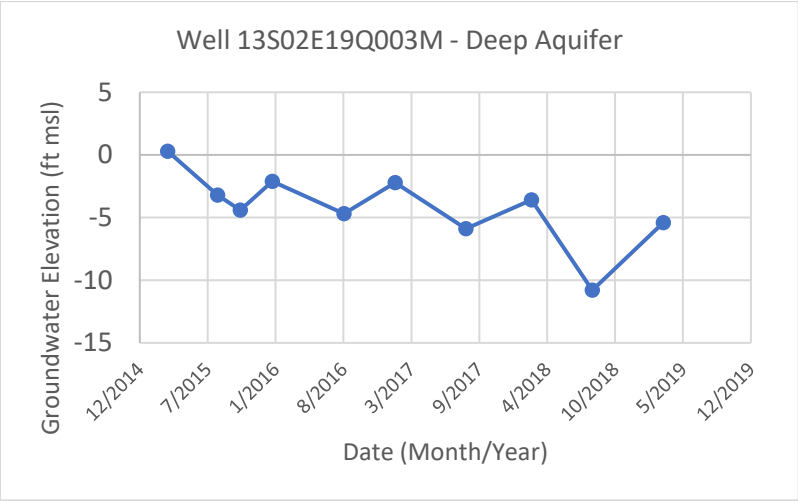
- Based on the seawater intrusion maps developed by the MCWRA, there is significant uncertainty regarding the extent of seawater intrusion in the northern and southern portions of the impacted area for both the 180-Foot and 400-Foot Aquifers.[2] These uncertainties are not reflected in the draft GSP's presentation of MCWRA's historical seawater intrusion boundaries (Figure 5-23 and 5-24), or in the draft GSP's adoption of these boundaries as the basis for its seawater intrusion MTs. Therefore, it is not known how far seawater has actually intruded in the areas of Castroville and north of Castroville (DACs) and it is not known to what degree the proposed seawater intrusion MTs are protective of beneficial users in these areas. **This uncertainty is not clearly and transparently reflected in the draft GSP, which is of particular significance as these data are used as the basis for MTs.**

- The draft GSP includes hydrographs for numerous wells in the 180-Foot and 400-Foot Aquifers, but, as the draft GSP acknowledges, does not include any such data for the Deep Aquifer, which represents a significant data gap. Well 13S02E19Q003M,[3] listed in Table 7-2 of the draft GSP, is part of the California Statewide Groundwater Elevation Monitoring (CASGEM) monitoring network and water level data are available. The draft GSP should at least consider and include data from this well. While limited data are available for this well, as shown in the hydrograph below, water levels at this well show a declining trend over the available period (2014 – 2019). **In order to develop a better understanding of the subbasin, the interaction between aquifers, and the conditions of the Deep Aquifer, the Salinas Valley Basin**

[1] Several Census Block Groups and Tracts extend beyond the boundary of the subbasin, and thus not all of the population represented by the Tract lies within the basin. In addition to the DACs identified through the DWR-provided DAC Mapping tool (based on 2011-2016 estimates), the community of Moss Landing, which had insufficient data when the tool was developed, has been determined to be a DAC. Thus, the total population based on DWR-provided census data for the Block Groups and Tracts located within and across subbasin boundaries, and Moss Landing is 49,244.
[2] MCWRA Historical Seawater Intrusion Maps, April 2018.
180-Foot Aquifer: https://www.co.monterey.ca.us/home/showdocument?id=63713
400-Foot Aquifer: https://www.co.monterey.ca.us/home/showdocument?id=63715
[3] Total well depth of 1,562 feet, per Table 7-2.

Groundwater Sustainability Agency (SVGSA) should work to fill this data gap and at a minimum, should include the limited available data in the draft GSP.

Chart 1 – Hydrograph of Deep Aquifer Well



- The review of water quality data in the groundwater conditions section of the draft GSP (Section 5.5) is very limited and focused almost entirely on nitrate. The draft GSP identifies numerous constituents that have been detected in groundwater above drinking water standards, but, with the exception of nitrate, does not present this data spatially or even in tabular format. Even though the draft GSP sets water MTs for these constituents (Table 8-6 through 8-9), the supporting data are not presented, and no analyses of spatial or temporal water quality trends are presented. This does not present a clear and transparent assessment of current water quality conditions in the subbasin with respect to drinking water beneficial use (23 CCR § 354.16(d)). **It is therefore recommended that the GSP include specific discussions supported by maps and charts, of the spatial and temporal water quality trends for constituents that have exceeded drinking water standards.**[4]

Water Budget and Sustainable Yield

- The draft GSP identifies three principal aquifers, i.e., the 180-Foot Aquifer, the 400-Foot Aquifer, and the Deep Aquifers, and notes that the subbasin's "aquitards and aquifers have long been recognized, and are the distinguishing features of this subbasin" (Section 4.4.1). However, despite this, the draft GSP lumps all three aquifers together in its evaluation of the water budget, and does not appear to account for lag time and flows between aquifers, or the effects of differential pumping rates and changes in pumping rates between aquifers. **Given this, it is not clear that the projected water budget, as developed in the draft GSP, is sufficiently robust and representative of subbasin conditions for purposes of fully assessing sustainable yield.**

- The projected sustainable yield values presented in Table 6-31 of the draft GSP reflect a roughly 7% reduction in groundwater pumping, but still reflect an annual change in storage deficit of approximately 4,700 acre-feet per year (AFY). It is not clear how the sustainable yield of a subbasin already severely impacted by seawater intrusion can include continued decline in storage, particularly when the proposed inland groundwater flow gradients under the water level sustainable management criteria (SMCs) will allow for continued seawater intrusion into the subbasin. This sustainable yield value also does not take into account of the effects of a hydraulic barrier, which the draft GSP highlights as necessary to achieve

[4] Stanford, 2019. *A Guide to Water Quality Requirements Under the Sustainable Groundwater Management Act,* Spring 2019.

the seawater intrusion SMCs. [5] **Thus, the sustainable yield values presented in Section 6.10.5 do not appear to be reflective of the sustainability conditions outlined elsewhere in the draft GSP.** It is important that the sustainable yield values take into consideration all factors that will lead to long-term sustainability of the subbasin, especially given that these values form the basis for the Water Charges Framework described in Section 9.2.

Sustainable Management Criteria

- In its discussion of the relationship between the water level MTs to other sustainability indicators, Section 8.6.2.3 of the draft GSP indicates that "A significant and unreasonable condition for seawater intrusion is seawater intrusion in excess of the extent delineated by MCWRA in 2017. Lower groundwater elevations, particularly in the 180- and 400-Foot Aquifers, could cause seawater to advance inland. The groundwater elevation minimum thresholds are set at or above existing groundwater elevations. Therefore, the groundwater elevation minimum thresholds will not exacerbate, and may help control, seawater intrusion." However, as shown in Figure 8-2 and 8-3 of the draft GSP, the proposed water level MTs are set at 0 feet above mean sea level (ft MSL) along the coastline, and decrease farther east for both the 180- and 400-Foot Aquifers. Figure 8-2 and 8-3 are excerpted below and shown alongside the August 2017 groundwater level contours (Figure 5-3 and 5-5 from the draft GSP). As illustrated here, while the groundwater flow gradient would be less steep, the direction is consistent with the conditions that have resulted in seawater intrusion. Given that the inland water level MTs are below sea level an easterly groundwater flow gradient will remain and seawater intrusion will continue. **While the rate of seawater intrusion would likely be slower than observed historically, even if the water level MTs were met today, seawater intrusion will still continue within the subbasin, threatening the drinking water supplies for DACs and other vulnerable populations.** Therefore, even if the water level MTs are met, the seawater intrusion MTs will be exceeded, as seawater intrusion continues inland. **Thus, the SMCs for seawater intrusion and chronic lowering of groundwater levels are in opposition of each other, and the draft GSP does not adequately describe the "relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators," pursuant to 23 CCR § 354.28 (b)(2).**

[5] The draft GSP identifies a seawater intrusion pumping barrier and estimates that operation will require withdrawing up to 30,000 AFY of groundwater, which would then be conveyed to discharge into the Pacific Ocean or to a new or existing desalination plant (Section 9.4.3.7). The draft GSP also states that an "optional barrier using injection instead of extraction was also considered" and that this option would require injection of approximately 46,000 AFY of water to create a protective mounding effect.

Comparison of Current Water Level Gradient to MT Water Level Gradient – 180-Foot Aquifer

Figure 5-3. August 2017 180-Foot Groundwater Level Contours

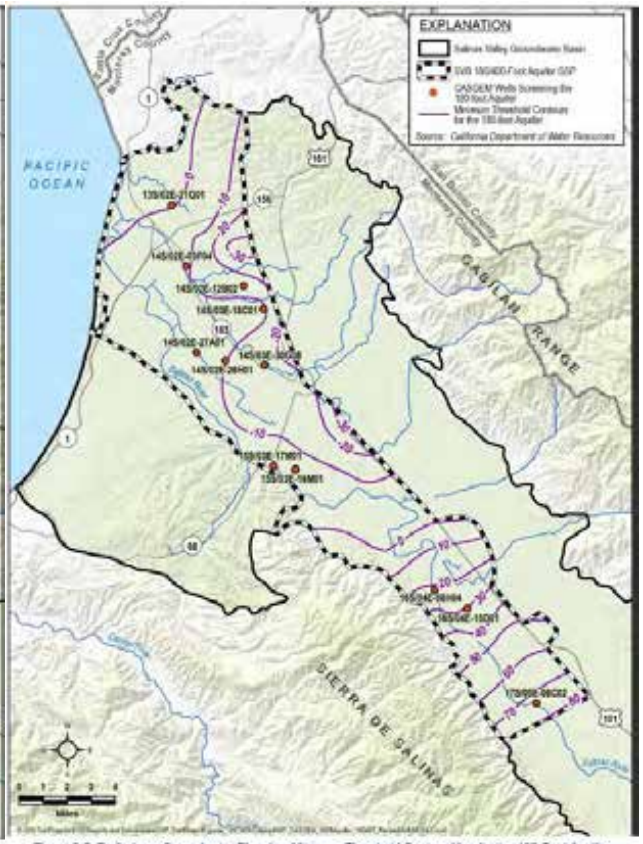


Figure 9-2: Preliminary Groundwater Elevation Minimum Threshold Contour Map for the 180-Foot Aquifer

Comparison of Current Water Level Gradient to MT Water Level Gradient – 400-Foot Aquifer

Figure 5-5. August 2017 400-Foot Aquifer Groundwater Level Contours

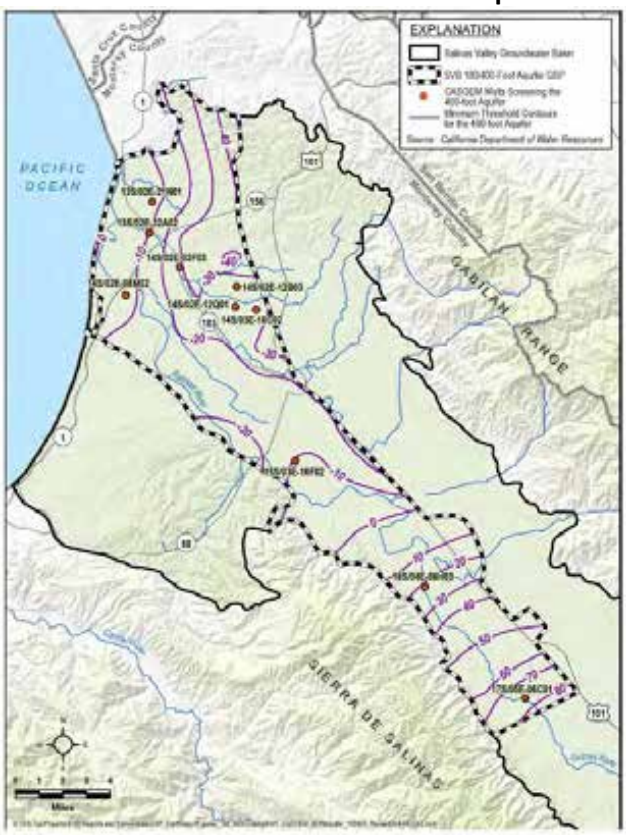


Figure 9-3: Preliminary Groundwater Elevation Minimum Threshold Contour Map for the 400 Foot Aquifer

- **Charts 2a** and **2b** below reflect the proposed SMCs (per Table 8-3 of the draft GSP) for the 180-Foot and 400-Foot Aquifer water level representative monitoring wells (RMWs) located in and near the areas of seawater intrusion (wells identified on excerpted Figures 8-2 and 8-3 above). If the measurable objectives (MOs) are met, this represents a relatively small decline in water levels from current conditions in most wells, and in some wells an increase in water levels. However, the MTs in most cases represent a substantial decline in water levels from current conditions, to levels well below sea level. **Given that current conditions are resulting in significant seawater intrusion conditions, it is unclear from the draft GSP how such declines in water levels will result in sustainability for the beneficial uses and users of the subbasin, and how seawater intrusion will be limited to 2017 limits (i.e., the seawater intrusion MTs).**

Chart 2a – SMCs for 180-Foot Aquifer Water Level RMWs Near Coast

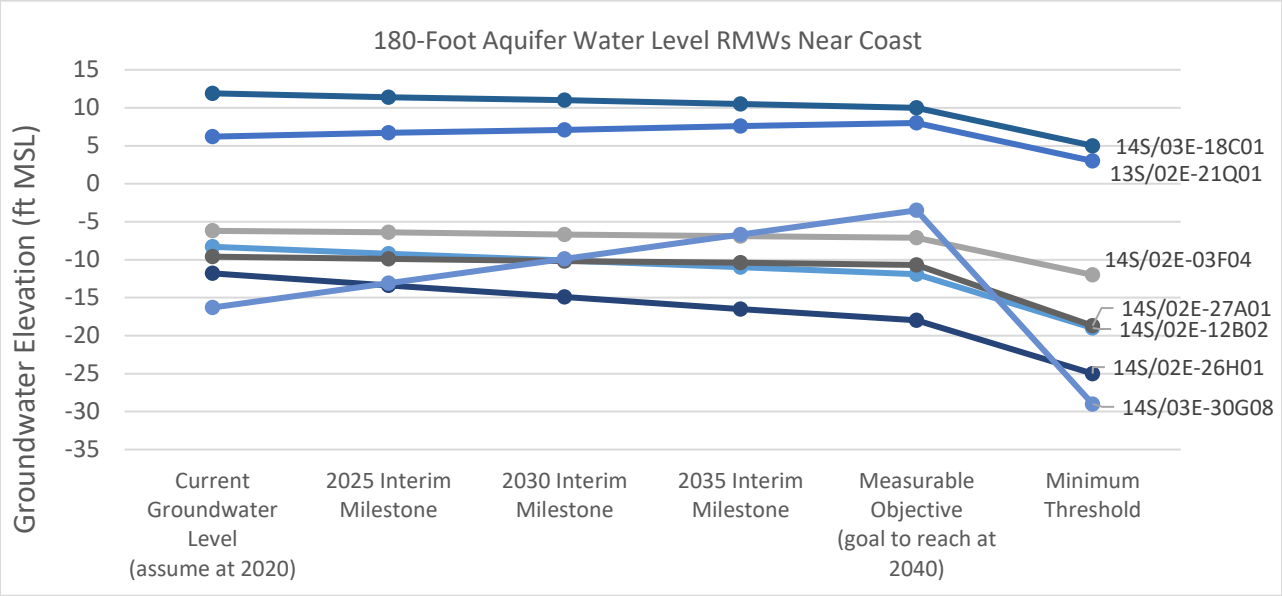
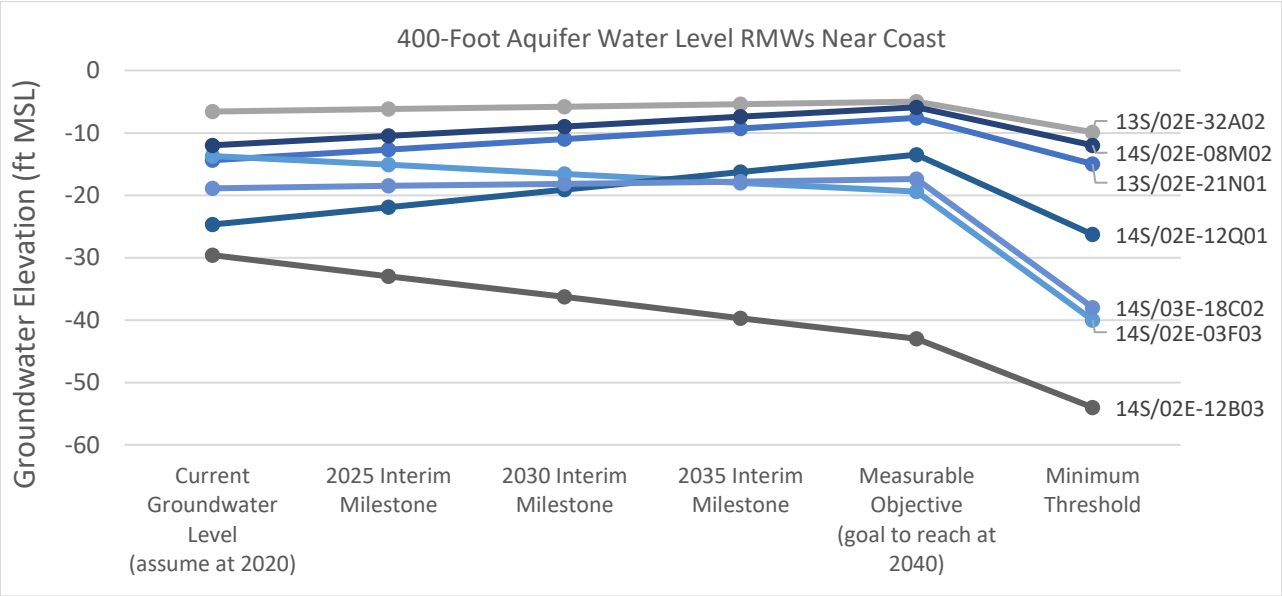


Chart 2b – SMCs for 400-Foot Aquifer Water Level RMWs Near Coast



- The draft GSP definition for degraded water quality identifies constituents of concern (COCs) as those that have an established level of concern or affect crop production and have been found in the subbasin above those levels of concern (Section 8.9.2). Further, the list of monitored COCs is dependent on the water quality constituent that each type of well is monitored for independent of the Sustainable Groundwater Management Act (SGMA). As illustrated in Tables 8-6 through 8-9 of the draft GSP, many COCs have been detected in municipal supply wells that have not been detected in domestic or small system wells, because these wells are not routinely tested for as many constituents as municipal supply wells. **Given this selective sampling and establishment of MTs for water quality constituents, the draft GSP does not present a monitoring network that is sufficient to monitor for impacts to beneficial users who rely on domestic wells and small water systems for drinking water (pursuant to 23 CCR § 354.34(b)(2)) and the draft GSP does not fully evaluate how these selective MTs will affect the interests of these beneficial users (pursuant to 23 CCR §354.28(b)(4)).**

Monitoring Network

- **Figure 2** shows the RMWs for water levels as well as the locations of domestic wells, public supply wells, DACs and public water systems in the subbasin, and the seawater intrusion MO and MTs. There are no water level RMWs located in the northernmost portion of the subbasin, in an area with a high concentration of domestic well users. **Thus, the water level monitoring network is inadequate to properly monitor for these sensitive beneficial users, as required under 23 CCR §354.34 (b)(2).**

- **Figures 3A** and **3B** show the estimated water decline from current conditions that would occur at each RMW if water levels reach the MTs for the 180-Foot and 400-Foot Aquifers, respectively. As shown in Figure 3B, the MTs for two RMWs (14S/02E-03F03 and 14S/02E-12B03) located along the 2017 seawater intrusion line/seawater intrusion MT are more than 20 feet below current groundwater conditions. **The GSP should explain how continued water level declines in areas already or imminently impacted by seawater intrusion will result in sustainable conditions for beneficial users.**

- The draft GSP does not clearly identify what wells will specifically be used as water quality RMWs, but rather lists MTs by general type of well (i.e., Municipal Supply Wells, Small Systems Supply Wells, Irrigated Lands Regulatory Program (ILRP) Domestic Wells, and Agricultural Use in ILRP Wells) in Tables 8-6 through 8-9, and states that the MOs are the same as the MTs (Section 8.9.3).[6] However, under 23 CCR §354.34(h), the GSP must include "The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used." **Thus, the GSP must clearly identify on both maps and in tabular form each of the wells to be used as RMWs for water quality.** Without this information, the public cannot review and assess the adequacy of the proposed GSP to monitor impacts to beneficial users of groundwater, in particular those reliant on domestic wells for drinking water purposes.

- Table 7-2 of the draft GSP tabulates the locations and well depths of existing CASGEM wells and Table 7-4 of the draft GSP tabulates the locations and well depths of seawater intrusion RMWs. However, the well locations and well depths are different between these two tables for a given well (based on the State Well

[6] Section 7.5 of the draft GSP states that "The public water supply wells included in the monitoring network were identified by reviewing data from the State Water Resources Control Board (SWRCB) Division of Drinking Water. Wells were selected that had at least one of the constituents of concern reported from 2015 or more recently, and totaled 51 wells (Burton and Wright, 2018). These wells are listed in Appendix 7E and shown in Figure 7-9." However, the table in Appendix 7E lists 76 wells, rather than 51 wells, and Appendix 7E does not seem to be inclusive of all of the wells identified in Tables 8-6 through 8-9.

Number [SWN]).[7] **Therefore, it is unclear what well information is accurate, and as a result the draft GSP does not fulfill the requirement of 23 CCR § 354.34(h).**

Projects and Management Actions

- The draft GSP identifies an estimated groundwater storage deficit of up to 9,600 AFY under 2030 conditions and up to 10,300 AFY under 2070 conditions (Table 6-29), which represents roughly 8.5% of agricultural pumping and 6% of total pumping in the basin (Table 6-30). In order to arrest and roll back seawater intrusion to 2017 levels, significant projects and management actions will need to be implemented. The draft GSP identifies several potential options but does not select one clear path forward. The options include a hydraulic barrier, which "can be operated as a recharge barrier, wherein water is injected into the wells and the resulting water level mound creates the hydraulic barrier. Or the barrier can be operated as an extraction barrier, wherein the wells are pumped and the resulting water level trough creates the hydraulic barrier" (Section 9.4.1.4). The draft GSP identifies a seawater intrusion pumping barrier and estimates that operation will require withdrawing up to 30,000 AFY of groundwater, which would then be conveyed to discharge into the Pacific Ocean or to a new or existing desalination plant (Section 9.4.3.7). The draft GSP also states that an "optional barrier using injection instead of extraction was also considered" and that this option would require injection of approximately 46,000 AFY of water to create a protective mounding effect. While it is clear that one of these options is necessary to achieve the seawater intrusion MTs, the draft GSP does not consider and fully articulate impacts of these options on the projected water budget or sustainable yield. Implementation of either an extraction or a recharge barrier will, by definition, change the localized groundwater flow gradients. An extraction barrier will result in localized seaward flow gradients, and some portion (likely significant) of the estimated 30,000 AFY extracted will be of freshwater from the subbasin. Based on the numbers presented in the draft GSP, implementation of a pumping barrier will exacerbate the existing overdraft conditions and result in an annual storage deficit on the order of 40,000 AFY under 2070 climate change conditions. This represents approximately 40% of the agricultural pumping and approximately 28% of the total pumping in the subbasin, based on table 6-30. **Therefore, the draft GSP significantly underrepresents the actual deficit and needs of the subbasin in order achieve sustainability.**

- The draft GSP contemplates "Agricultural Land and Pumping Allowance Retirement [sic]" as a management action (Section 9.3.2), but does not actually quantify the scale or expected benefit of such a management action. The draft GSP states "Because it is unknown how many landowners will willingly enter the land retirement program, it is difficult to quantify the expected benefits at this time….direct correlation between agricultural land retirement and changes in groundwater levels is likely not possible because this is only one among many management actions and projects that will be implemented in the Subbasin" (Section 9.3.2). As identified above, the future overdraft conditions including implementation of the pumping barrier represents approximately 40% of agricultural pumping. The draft GSP also identifies several potential recharge projects to augment the groundwater supply, but these projects, along with the pumping barrier, require construction of infrastructure and will take years to implement even under the best circumstances. In order to achieve the seawater intrusion MTs and to avoid further degradation of the subbasin, more immediate action is necessary. **Thus, the draft GSP should: 1) more transparently lay out and quantify the deficit that needs to be addressed by projects and management actions; 2) provide a clear plan for implementing pumping restrictions and agricultural land retirement with specific targets; 3) clearly articulate how much pumping will need to be reduced in the subbasin; and 4) quantify and present the degree of continued seawater that will occur before the projects and management actions are implemented.**

[7] For purpose of the attached figures, we have used Table 7-2 for location of water level RMWs and Table 7-4 for location of seawater intrusion RMWs.

Attachments

Figure 1 – Seawater Intrusion SMCs Relative to Domestic Wells, Public Supply Wells, DACs, and Community Water Systems

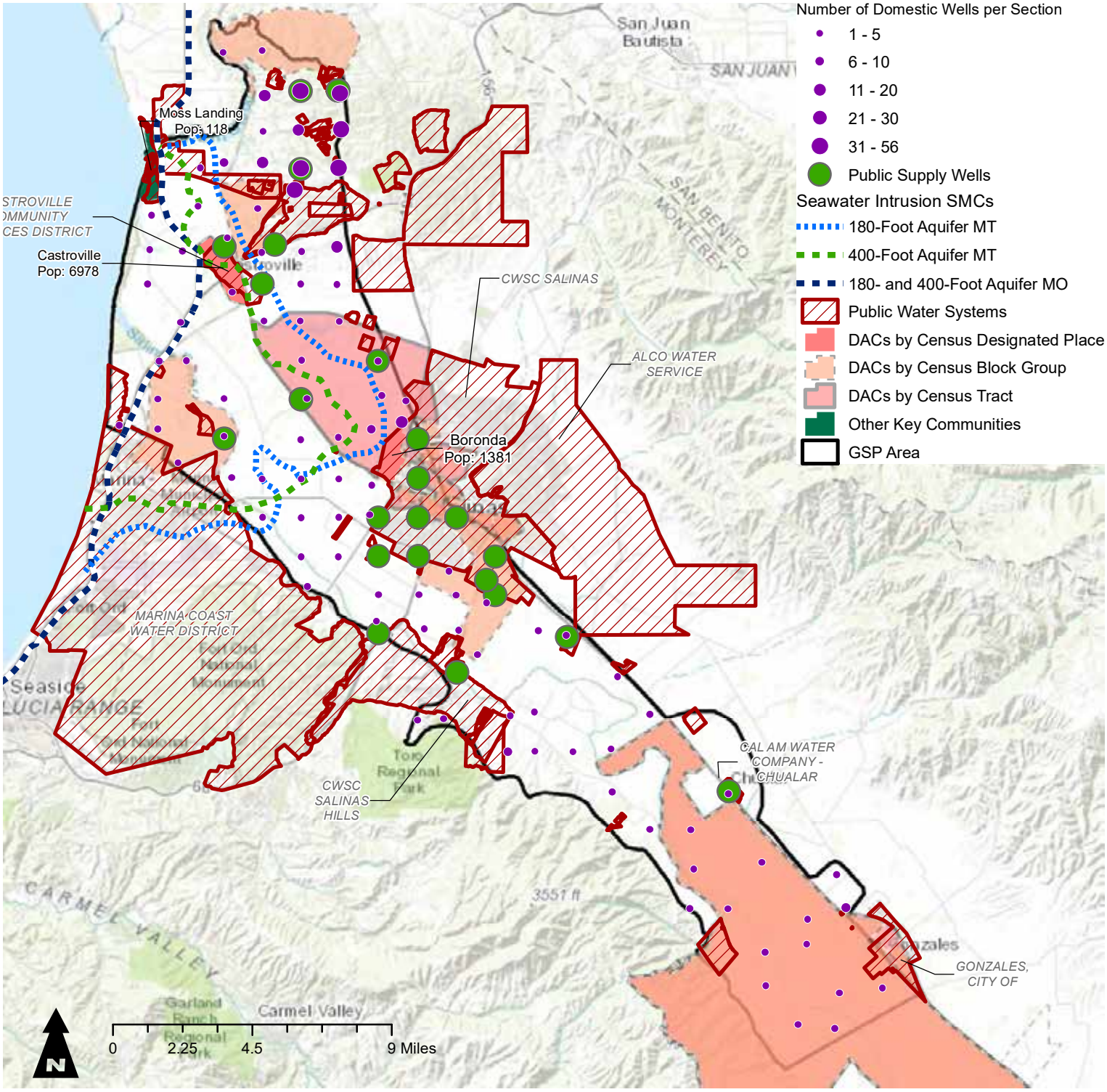
Figure 2 – Representative Monitoring Network for GW Levels Relative to Domestic Wells, Public Supply Wells, DACs, and Community Water System

Figure 3A – Estimated Water Level Decline at Minimum Thresholds in the 180-Foot Aquifer

Figure 3B – Estimated Water Level Decline at Minimum Thresholds in the 400-Foot Aquifer

Figure 1 - Seawater Intrusion SMCs Relative to Domestic Wells, Public Supply Wells, DACs, and Community Water Systems

Salinas Valley Basin GSA



Notes

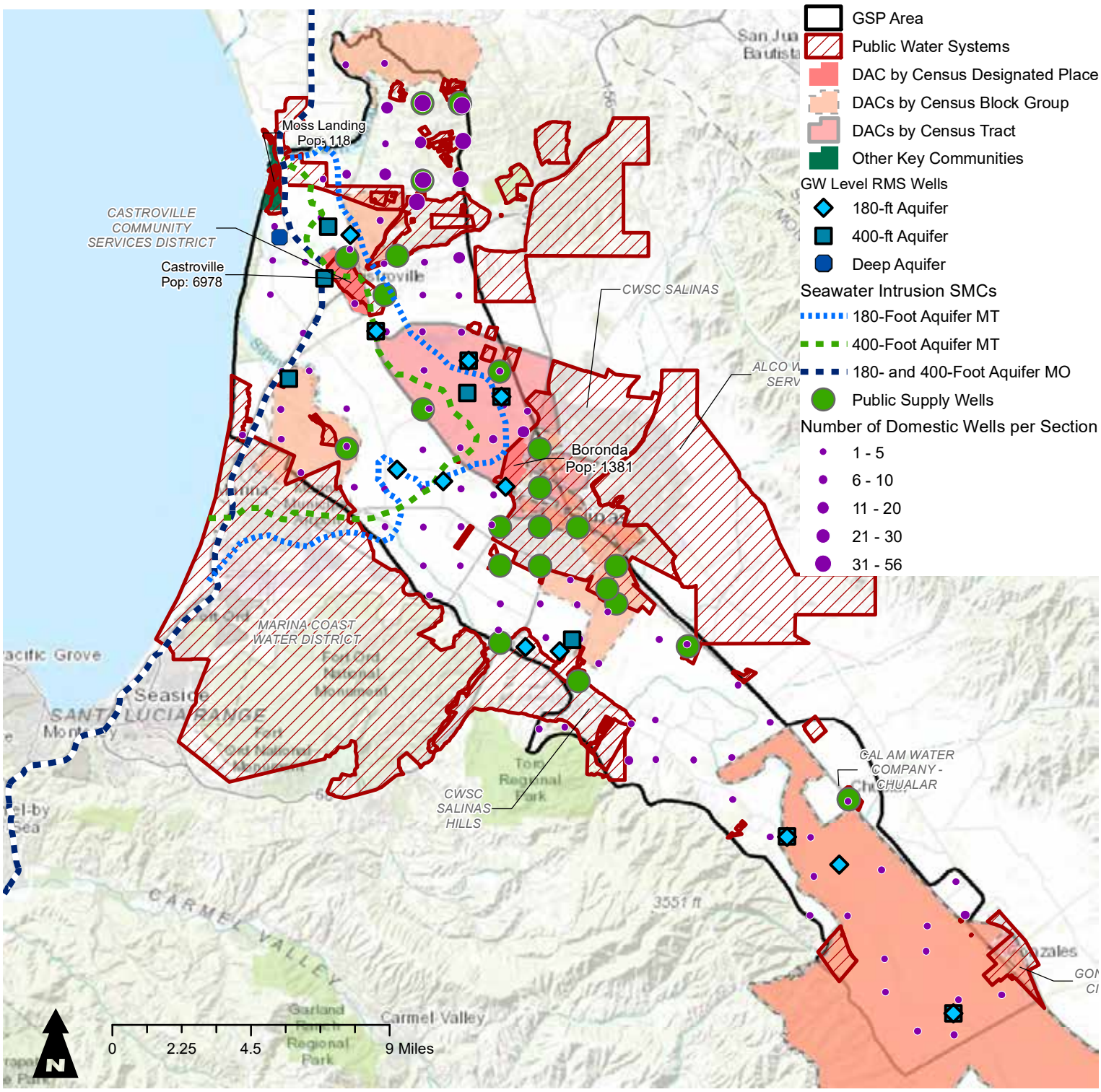
1. All locations are approximate.

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Public supply well data: DWR Well Completion Reports downloaded on August 30, 2018 from https://atlas-dwr.opendata.arcgis.com/datasets/.
3. Disadvantaged and other key community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/.
4. Public Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer. The dataset includes "community" and "non-community" water systems.
5. Seawater Intrusion MOs and MTs: Figure 8-6 and Figure 8-7 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.

Figure 2 - Representative Monitoring Network for GW Levels Relative to Domestic Wells, Public Supply Wells, DACs, and Community Water Systems

Salinas Valley Basin GSA



Notes

1. All locations are approximate.
2. Location of Water Level Representative Monitoring Site Wells is based on Table 7-2 of the SVBGSA GSP (2019).

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Public supply well data: DWR Well Completion Reports downloaded on August 30, 2018 from https://atlas-dwr.opendata.arcgis.com/datasets/.
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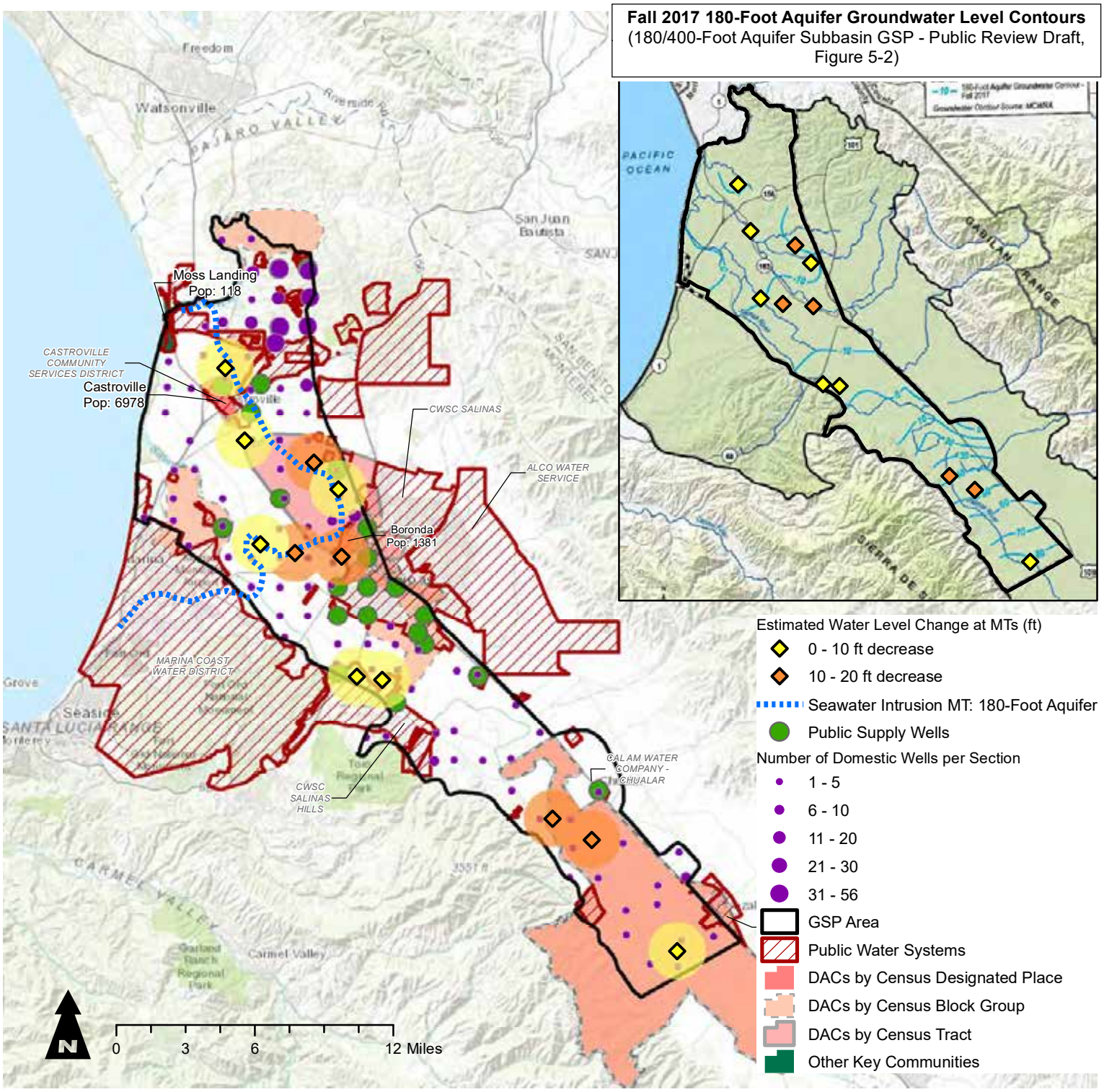
4. Public Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer. The dataset includes "community" and "non-community" water systems.
5. Water Level RMW locations: Table 7-2 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.
6. Seawater Intrusion MOs and MTs: Figure 8-6, Figure 8-7, and Section 8.8.3.1 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.

Figure 3A - Estimated Water Level Decline at Minimum Thresholds in the 180-Foot Aquifer

Salinas Valley Basin GSA



Notes

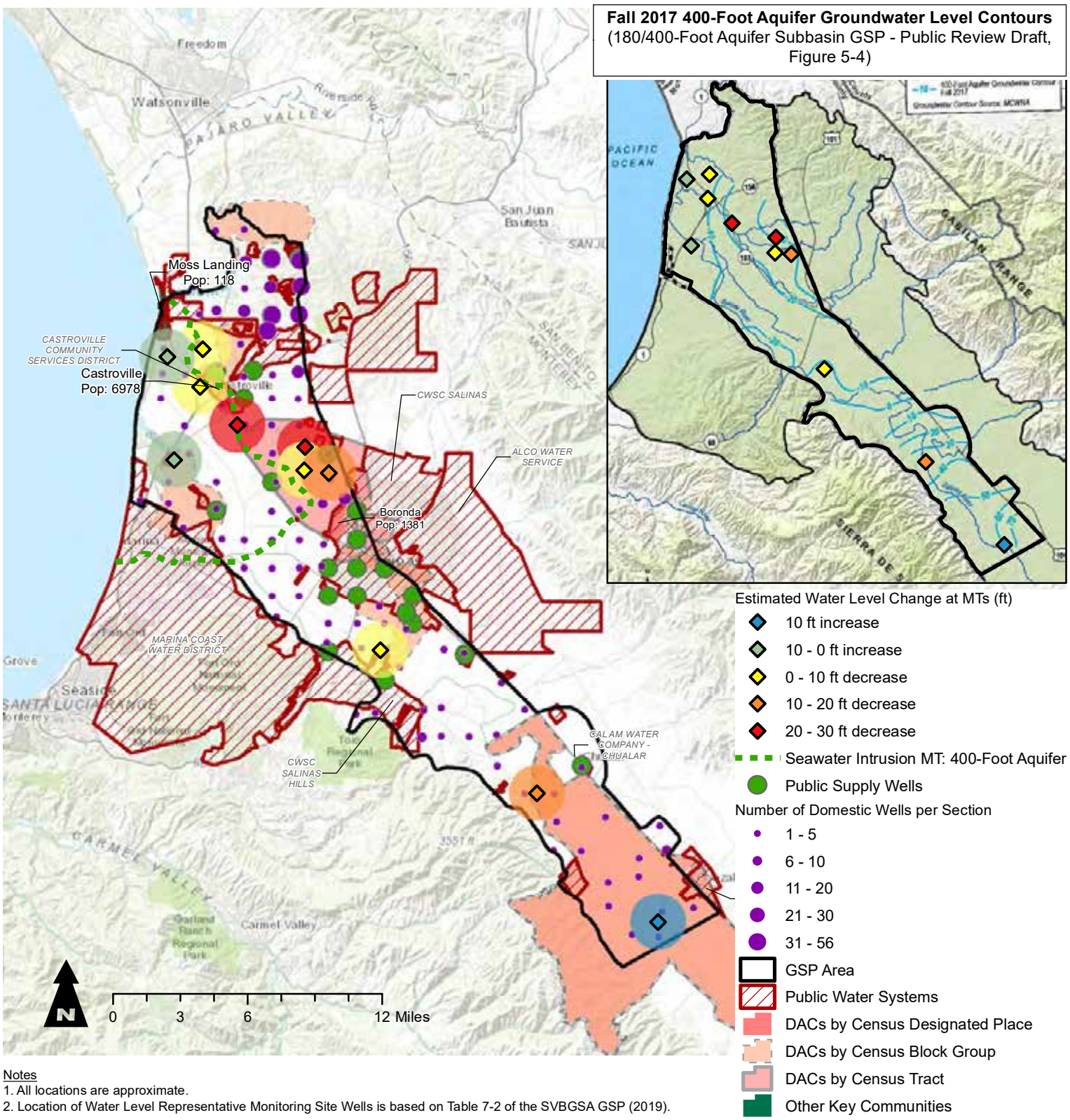
1. All locations are approximate.
2. Location of Water Level Representative Monitoring Site Wells is based on Table 7-2 of the SVBGSA GSP (2019).

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Public supply well data: DWR Well Completion Reports downloaded on August 30, 2018 from https://atlas-dwr.opendata.arcgis.com/datasets/.
3. Disadvantaged and other key community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/.
4. Public Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer. The dataset includes "community" and "non-community" water systems.
5. Water Level RMW locations, MTs, and contour map: Tabel 7-2, Table 8-2, and Figure 5-2 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.
6. Seawater Intrusion MTs for the 180-Foot Aquifer: Figure 8-6 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.

Figure 3B - Estimated Water Level Decline at Minimum Thresholds in the 400-Foot Aquifer

Salinas Valley Basin GSA



Notes
1. All locations are approximate.
2. Location of Water Level Representative Monitoring Site Wells is based on Table 7-2 of the SVBGSA GSP (2019).

References
1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Public supply well data: DWR Well Completion Reports downloaded on August 30, 2018 from https://atlas-dwr.opendata.arcgis.com/datasets/.
3. Disadvantaged and other key community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/.
4. Public Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer. The dataset includes "community" and "non-community" water systems.
5. Water Level RMW locations, MTs, and contour map: Tabel 7-2, Table 8-2, and Figure 5-4 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.
6. Seawater Intrusion MTs for the 400-Foot Aquifer: Figure 8-7 of the 180/400-Foot Aquifer Subbasin GSP - Public Review Draft, dated October 2019.

From: james sang
Sent: Wednesday, January 8, 2020 8:23 PM
To: Gary Petersen; BoardSVBGSA
Cc: Jane Parker; Luis Alejo; John Phillips; Mary Adams; Chris Lopez; Diane Kennedy; Lois Henry; Ann Camel; Thomas Berg; james sang
Subject: Fw: Is your almond milk latte sinking the California Aqueduct?Well...

Good Evening Everyone,

I wanted to express my opinion about the finalized SVBGSA plan.

I don't think that enough projects are planned for the main topic of groundwater sustainability. The wells are going dry and there is no one plan to increase the supply of aquifer water for these wells. The plan of injection wells for the coast is to keep seawater from infiltrating further into the main aquifers, The eradication of the arundo plants is to increase the water supply in the Salinas River? maybe?

The Managed Aquifer Recharge plan is nonexistent (meaning nothing new planned here), the CISP plan is good. But are these plans enough to keep the entire 1500 wells in this area from going dry. This is why I advocate starting a pilot plan of building ponds and swales around the existing 1500 wells to see if we can help fill the aquifers around these wells.

The idea of retiring agriculture land and limiting water pumping will only partially increase the aquifer level. These two ideas will cause a lot of lawsuits. Farmers will not want to limit their water pumping and retire their agriculture farmland after they have invested thousands and millions of dollars in their business!

I will now quote some articles from SJV Water(The Splash) written by Lois Henry (sjvwater@gmail.com) . Lois puts out a monthy email to her subscribers about the water problems in San Joaquin Valley.

Lawsuit 1. "We are giving options to (ag) pumpers so they understand they have a limited future here and can make the best decisions for their businesses," said Kern County Supervisor Mick Gleason who represents the area and sits on the Indian Wells Valley Groundwater Authority Board. Last week several ag companies fired back with a lawsuit."

Lawsuit 2. The sprawling Semitropic Water Storage District, in the northwest corner of Kern County, has filed an application with the State Water Resources Control Board claiming the Kings River water Association has forfeited two of its floodwater licenses by not using that water. Fight over Kings River flood water heats up."

Lawsuit 3. "The relative lull in lawsuits over Kern River water was broken Dec. 11 when Rosedale-Rio Bravo Water Storage District filed a complaint against the City of Bakersfield.

Let's avoid this by drafting plans that will directly recharge the wells aquifer water .

Thank you for reading this.

I want to encourage everyone to subscribe to Lois Henry's email articles SJV Water (sjvwater@sjvwater.org}

James Sang

From: Abby Ostovar
To: Caryn S. Fogel; Victoria Hermosilla
Subject: FW: SVBGSA PROJECT
Date: Monday, November 25, 2019 9:08:50 AM

Here's another one. Just put it under one row in whole GSP, and include this part:

I disagree with the proposed groundwater sustainability project unless it can add a managed aquifer recharge project!

My objection is that majority of the proposed projects take water and don't add water. The injections wells need a source of water to work. CSIP requires recycled water and water from the Salinas River to work. The Arundo project sounds iffy. Plants only transpire 10 percent of the atmosphere water vapor, which is a small amount of water effecting the ground moisture.

I would like the project to include my proposed swale and pond idea to see if we can recharge the ground water and the aquifer and wells. I believe that this is a project that will be accepted by the property owner because this would directly effect the well owner. The project can be monitered easily to find the results and the well owner can use the surface pond water to irrigate.

Abby

Abby Ostovar, PhD
MONTGOMERY & ASSOCIATES

From: Ann Camel [mailto:acamel@rgs.ca.gov]
Sent: Monday, November 25, 2019 7:31 AM
To: Abby Ostovar
Subject: FW: SVBGSA PROJECT

Sent from Mail for Windows 10

From: 'james sang' via Board
Sent: Sunday, November 24, 2019 11:14 AM
To: Gary Petersen; BoardSVBGSA
Cc: Ann Camel; DIANE KENNEDY
Subject: SVBGSA PROJECT

To Mr. Peterson and the Board,

Good Morning,

I disagree with the proposed groundwater sustainability project unless it can add a managed aquifer recharge project!

My objection is that majority of the proposed projects take water and don't add water. The injections wells need a source of water to work. CSIP requires recycled water and water from the Salinas River to work. The Arundo project sounds iffy. Plants only transpire 10 percent of the atmosphere water vapor, which is a small amount of water effecting the ground moisture.

I would like the project to include my proposed swale and pond idea to see if we can recharge the ground water and the aquifer and wells. I believe that this is a project that will be accepted by the property owner because this would directly effect the well owner. The project can be monitered easily to find the results and the well owner can use the surface pond water to irrigate.

I have sent you the plans being done in the Santa Cruz area and seems to be successful. This

plan involves hundreds of acres. They concluded that the project seems successful. This a managed aquifer project.

I hope that you can include the projects written above. It does not make sense to solve the groundwater sustainability problem by taking water out and not replacing it!

James Sang sangjames@yahoo.com

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To unsubscribe from this group and stop receiving emails from it, send an email to board+unsubscribe@svbgsa.org.

ARROYO SECO GROUNDWATER SUSTAINABILITY AGENCY

599 Camino Real Greenfield CA 93927 | 831-647-5591

November 25, 2019

Board of Directors
c/o Gary Petersen GM
Salinas Valley Basin GSA
1441 Schilling Place
Salinas CA, 93902

Subject: ASGSA Comments SVBGSA Groundwater Sustainability Plan – Pressure 180/400 Basin

Dear Members of the Board,

We provide the following comments with the intent to improve planning efforts between both organizations, and acknowledge the SVBGSA efforts to conclude the negotiations of our Coordination Agreement. Our preference would be to have our technical teams collaborate under a Coordination Agreement framework, and address the comments like the following between technical team members in lieu of producing multi-page comment letters.

General Comments

The draft 180/400 Foot Aquifer Subbasin GSP repeatedly oversteps its appropriate geographic scope, which should be limited to the 180/400 Foot Aquifer Subbasin. It is written as if it were the "Valley-Wide Plan". The SVBGSA may develop a Valley-wide plan, but it is not appropriate for a single basin plan. Valley-wide planning has not yet even commenced, much less reached a point that results can be published. There has been negligible coordination between SVBGSA and ASGSA regarding data, methods and groundwater conditions outside the 180/400 Foot Subbasin, and there has been no discussion of sustainability criteria or management actions. If interbasin agreements had been developed as part of the 180/400 Foot Aquifer GSP process, it would be appropriate to discuss those in this GSP. However, no agreements have been reached. It is premature to discuss valley-wide problems and solutions in this document. Its geographic scope should be the 180/400 Foot Aquifer Subbasin.

Under SGMA, each subbasin is to prepare its own GSP, which is an acknowledgement of the unique hydrogeologic, water balance and sustainability conditions in each subbasin. The draft 180/400 Foot GSP does not present analysis to justify the inclusion of the other subbasins in a valley-wide plan. It fails to address the nexus between the other subbasins—particularly the Forebay and Upper Valley Subbasins—on sustainability in the 180/400 Foot Subbasin. The technical chapters (1 through 8) are nearly silent with respect to the Forebay and Upper Valley Subbasins, but Chapter 9 suddenly sweeps them into a valley-wide plan for solving problems in the 180/400 Foot Subbasin.

It would be simple for the draft GSP to achieve a narrower geographic focus because only two of the five management actions (reservoir reoperation and agricultural BMP educational outreach) and one of the nine projects (*Arundo* eradication) would involve or benefit the ASGSA area or Upper Valley Subbasin, and only two additional projects would benefit non-ASGSA parts of the Forebay Subbasin. Furthermore,

the water charges framework is unnecessary in the ASGSA area because reductions in pumping are not needed to address sustainability concerns.

Almost all of the activities and all of the benefits of the management actions and projects described in the draft GSP are local to the 180/400 Foot Subbasin (in some cases with spillover effects in the Monterey and Eastside Subbasins). Therefore, the GSP should describe implementation of those activities within the 180/400 Foot Subbasin. By the same token, the water charges framework should be implemented within the 180/400 Foot Subbasin to appropriately reflect the geographic extent of the projects and benefits. To the extent that the Monterey and Eastside Subbasins benefit from any projects, the water charge program could be extended to those areas in the context of their forthcoming GSPs.

The proposed water charges framework should not even be considered for implementation outside the coastal subbasins unless 1) the physical nexus between water use in those areas and seawater intrusion has been quantified, and 2) the amounts of the proposed charges are spelled out and are proportional to whatever impacts Forebay and Upper Valley water users might have on intrusion. Even if a physical nexus is eventually established, it is unacceptable to propose water charges without support technical analysis.

Although the draft GSP repeatedly implies that management actions and projects would provide benefits and achieve sustainability throughout the Salinas Valley, the actions are in reality very focused on water balance and seawater intrusion problems near the coast. As a package, there is little benefit to the rest of the valley. To illustrate, the management actions and projects are listed in **Table 1**, grouped by whether they involve or benefit the ASGSA area.

Table 1. Proposed Actions in 180/400 Foot Aquifer Subbasin GSP

180/400 Foot Aquifer Proposed Action	Estimated Cost		Benefits ASGSA Area
	Capital	Annual O&M	
Water charges framework[a]	$0	$300,000	X
Management Actions			
1 Agricultural Land and Pumping Allowance Retirement	?	?	X
2 Outreach and Education for Agricultural BMPs	$0	$100,000	✓
3 Reservoir Reoperation	$150,000	$0	✓
4 Restrict Pumping in CSIP Area	$100,000	?	X
5 Restrictions on Additional Deep Aquifer Wells	$160,000		X
Projects			
1 Invasive Species Eradication	$35,230,000	$325,000	✓
2 Optimize CSIP Operations	$16,400	$200,000	X
3 Modify M1W Recycled Water Plant	$0	$0	X
4 Expand Area Served by CSIP	$73,366,000	$480,000	X
5 Maximize Existing SRDF Diversion[b]	$0	$2,552,000	X
6 Seawater Intrusion Pumping Barrier	$102,389,000	$9,800,000	X
7 11043 Diversion Facilities Phase I: Chualar	$47,654,000	$2,296,000	X
8 11043 Diversion Facilities Phase II: Soledad	$60,578,000	$5,050,000	X
9 SRDF Winter Flow Injection	$51,191,000	$7,629,000	X
Total	$370,834,400	$28,732,000	
ASGSA percentage of Salinas River length[c]	6.4%		
ASGSA percentage of valley-wide irrigated cropland[d]	9.2%		
Subtotal possibly benefitting ASGSA[e]	$2,278,536	$30,060	
ASGSA reasonable share of total cost	0.61%	0.10%	

Notes:

[a] Assume three full-time staff members to administer metering, charges and collections.

[b] Per Section 9.4.4.6 approximately 11,600 AFY would be delivered at a cost of $220/AF.

[c] The ASGSA area fronts 6.3 miles of the 98-mile length of the Salinas River within the Salinas Valley.

[d] The ASGSA area contains 19,655 acres of the 214,411 valley-wide acres of irrigated cropland, based on 2014 land use mapping.

[e] Invasive species eradication pro-rated based on river miles. Reservoir reoperation and agricultural BMP outreach pro-rated based on irrigated cropland.

Only two of the management actions and one of the projects would possibly benefit the ASGSA area. If the capital and annual costs of those items are pro-rated on the basis of Salinas River frontage (Arundo eradication) or irrigated cropland (reservoir reoperation and agricultural BMP outreach), the reasonable share of total costs attributable to ASGSA would be 0.6% of the capital costs and 0.1% of the annual costs. These tiny percentages suggest that the “valley-wide plan” is not a plan to address valley-wide

problems. The proposed actions target the coastal area, and the cost of implementation should be borne there, also.

Instead of passively accepting SVBGSA-proposed actions that could potentially benefit the ASGSA area, ASGSA would prefer to implement similar actions on its own. With respect to reservoir reoperation, ASGSA might have different priorities and seek different outcomes than affected parties from other parts of the valley. ASGSA would send its own delegates to negotiate with MCWRA. Similarly, agricultural BMPs identified as high-priority in the ASGSA area focus on reducing salt load and energy use. These might be different priorities than in other parts of the valley. Finally, ASGSA could as easily take responsibility for *Arundo* eradication in its area as contribute to a valley-wide eradication program. Therefore, the benefits of the program proposed in the 180/400 Foot Subbasin GSP are not essential for ASGSA. There is no compelling need for ASGSA to participate in that program.

Specific Comments

Section 9.1, 3rd paragraph. This is the first of many passages referring to groundwater planning for the entire Salinas Valley. Those passages should be removed because they overreach the appropriate geographic scope of the 180/400 Foot Subbasin GSP. This GSP should address actions that will be implemented within the 180/400 Foot Subbasin and explain how groundwater users within the subbasin will pay for them. When GSPs are subsequently prepared for other Salinas Valley subbasins, some of the same actions may be included to the extent that they also benefit those subbasins. The text implies that costs will be shared among all subbasins. This would only be acceptable to the extent that benefits occur in the other subbasins.

Other references to valley-wide planning that overreach the scope of the 180/400 Foot Subbasin GSP and that should be deleted include the following:

- Section 9.1, 4th paragraph. It is premature to discuss cost sharing with other subbasins that may receive no benefit. The 180/400 Foot Subbasin GSP must assume that costs will be paid by water users within that subbasin unless external subbasins agree otherwise.
- Section 9.2, 2nd paragraph.
- Section 9.2, 3rd paragraph. Note that the text implies that water charges need only be approved by SVBGSA, which is not correct.
- Section 9.2, 2nd paragraph after bullets.
- Section 9.2.2, 1st bullet. The first paragraph incorrectly assumes that pumping in other subbasins exceeds the sustainable yield. The draft GSP presents no analysis to support this statement. In fact, analysis completed by ASGSA demonstrates that pumping within the ASGSA area is sustainable, and no reduction is needed.
- Section 9.3.1, entire section.
- Section 9.3.1, 2nd paragraph. The text characterizes the proposed management actions and projects as “acceptable to stakeholders”. SVBGSA has not engaged in coordination discussions with ASGSA regarding the actions, almost none of which provide benefits in the ASGSA area. Also, the text asserts that the first three management actions would “benefit the entire Salinas Valley”. Land retirement is unnecessary to achieve sustainability in the ASGSA area and is clearly not locally beneficial. ASGSA does not accept the slate of actions as proposed.
- Section 9.3.2.1, all four bullets. None of these benefits apply to the ASGSA area, where seawater intrusion is a non-issue, long-term inelastic subsidence has not been detected, and water levels

and storage are within the sustainable range except low water levels during major droughts that are directly caused by reservoir operations, not groundwater pumping.

- Section 9.3.3, 1st paragraph.
- Section 9.3.3.1, 1st bullet
- Section 9.3.3.2, 1st paragraph.
- Section 9.3.4.1, 1st bullet. See below comment about reservoir reoperation objectives. Groundwater levels in the Forebay and Upper Valley Subbasins do not need to be raised in general. They only need to be higher during the third and subsequent years of reservoir release curtailment.
- Section 9.4.2, entire section.
- Section 9.4.3. This section should be retitled "Selected Priority Projects for Achieving Sustainability in the 180/400 Foot Subbasin". Reference to the "six Salinas Valley GSPs" in the first paragraph should be deleted.
- Section 9.4.3.2, 4th paragraph. This GSP should address *Arundo* eradication in the 180/400 Foot Subbasin. It can mention that such a program would be consistent with eradication efforts in other subbasins.
- Section 9.4.3.2.2, "Expected Benefits". Discussion of eradication in other subbasins should be omitted.
- Section 9.4.3.9.2, "Expected Benefits". If the 11043 diversion at Soledad project would not benefit the 180/400 Foot Subbasin, it should not be included in this GSP.

Section 9.3.4, 1st paragraph. Reservoir reoperation. The description of the objectives of reservoir reoperation are too vague. They appear to simply want more water more of the time, which is not possible. Based on its own analysis of water levels and simulations of reservoir reoperation, ASGSA has identified a specific reoperation objective, which is to avoid more than two consecutive years without major releases (for steelhead passage, conservation or SRDF diversions) from Nacimiento and San Antonio Reservoirs.

Section 9.3.4, 2nd paragraph. If one of the two goals of reservoir reoperation is "to allow summer flows to better reach the SRDF", then the 180/400 Foot Subbasin is also a major beneficiary of reoperation.

Section 9.3.4.1, last bullet. Conservation of mass dictates that Salinas River flows cannot be higher year-round, at least not in all years. A more specific and feasible reoperation objective needs to be proposed.

Section 9.3.4.2, 1st paragraph. During droughts, major releases during summer would be as beneficial as increased releases during winter, because both would retard the cumulative multi-year decline in groundwater levels. Summer releases supported by increased year-to-year carryover storage should be considered in addition to increased winter releases (for steelhead or conservation). Winter releases are somewhat more efficient for recharge due to lower riparian ET losses.

Section 9.4.3.2.2, "Expected Benefits" of Arundo eradication. The estimated evapotranspiration rate of 20 feet per year is unrealistic. The "Literature Review of Evapotranspiration Studies on Arundo Donax" released by The Nature Conservancy was not sufficiently critical in its evaluation of the wide range of numbers. There clearly is a problem with the leaf porometry method that results in values many times larger than the water balance and energy balance methods. Basically, the latter methods show that there is neither sufficient energy nor sufficient overall water consumption to support the numbers

obtained by the porometry method. It would be more realistic to assume values closer to the low end of the range stated in the draft GSP (that is, in the neighborhood of 4 ft/yr).

Section 9.4.3.2.8, "Expected Costs". The estimated yield of 20,000 AFY assumes an *Arundo* consumptive use of 11.1 ft/yr, which is unrealistically high (see preceding comment).

Section 9.4.3.3.2, "Expected Benefits" of optimizing CSIP operations. It is unlikely that reduced pumping in CSIP would affect groundwater levels in the Forebay and Upper Valley Subbasins. The statement regarding external benefits needs to be re-written more precisely, as follows: "This project might benefit water levels in the Monterey and Eastside Subbasins by reducing pumping that impacts neighboring subbasins."

Section 9.4.3.4.2, "Expected Benefits" of Monterey One winter use. Same as preceding comment. The text should be more precise in stating that water level benefits might spread to the Eastside and Monterey Subbasins, without implying that Forebay or Upper Valley areas would benefit.

Figures 9-21 and 9-22, effects of 11043 diversion at Soledad. The figures need to be expanded to show the entire region where water levels would be affected. Water levels in the ASGSA area are sustainable except during successive years of reservoir release curtailment during major droughts. During those droughts, there would not be Salinas River flows to support the proposed diversions, and consequently benefits to ASGSA water levels would be negligible during droughts.

Section 9.4.3.10, 1st paragraph. Delete "other subbasins, such as" so that the geographic scope of possible benefits from SRDF injection is correctly limited to the Eastside and Monterey Subbasins.

Section 9.4.3.10, 3rd paragraph. This discussion needs to clarify whether only natural flows would be diverted, or whether Nacimiento and San Antonio Reservoirs would be reoperated to supply the diversions.

Section 9.4.4.1.2, "Expected Benefits" of extraction barrier. Delete "other subbasins, such as" so that the geographic scope of possible benefits is correctly limited to the Eastside and Monterey Subbasins.

Section 9.4.4.2, recharge of runoff from eastside range. This project area includes the northern part of the Forebay Subbasin, but it would have no benefit on ASGSA water levels. ASGSA water levels already benefit from their own local recharge source: the Arroyo Seco. Undesirably low water levels occur only in part of the ASGSA area and only during consecutive years of reservoir release curtailment during major droughts. The small Gabilan Range watersheds will produce negligible amounts of runoff during major droughts and hence would not raise ASGSA area water levels at the only times when higher water levels would be beneficial.

Section 9.4.4.2.2, "Expected Benefits" of local runoff recharge. If the project provides no benefit to the 180/400 Foot Subbasin, it should not be included in this GSP.

Section 9.4.4.3.2, "Expected Benefits" of winter potable water injection. Omit "other basins, such as" so that the geographic scope of possible benefits of winter injection is correctly limited to the Eastside and Monterey Subbasins.

We welcome the opportunity for additional discussion of these issues and others at your convenience.

Sincerely,

Curtis V. Weeks
General Manager
Arroyo Seco Groundwater Sustainability Agency

cc: James Thorp, Chairman ASGSA

MCWRA Comments on Draft Groundwater Sustainability Plan for 180/400-Foot Aquifer Subbasin

Monterey Water Resources Agency; Global Comments

1. It is of the opinion of the Monterey County Water Resources Agency (MCWRA) that conflict exists between this Draft Groundwater Sustainability Plan, and the Draft Groundwater Sustainability Plan released for review by the City of Marina Groundwater Sustainability Agency. The development of Groundwater Sustainability Plans is addressed in California Code of Regulations; Title 23 (Waters); Division 2 (Department of Water Resources); Chapter 1.5 (Groundwater Management); Subchapter 2 (Groundwater Sustainability Plans); Article 1 (Introductory Provisions). Within Article 1 the following subsections define areas the MCWRA believes may indicate a deficiency in the Salinas Valley Basins Groundwater Sustainability Agency's Groundwater Sustainability Plan regarding elements of plan principals, criteria and interbasin coordination:

   350.4 - General Principles (f) - A Plan will be evaluated, and its implementation assessed, consistent with the objective that a basin be sustainably managed within 20 years of Plan implementation without adversely affecting the ability of an adjacent basin to implement its Plan or achieve and maintain its sustainability goal over the planning and implementation horizon.

   354.28 - Minimum Thresholds GSP must address (3) - How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.

   355.4 - Criteria for Plan Evaluation (7; Referring to what DWR will consider when evaluating a GSP...) - Whether the Plan will adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of its sustainability goal.

   357.2 - Interbasin Agreements - Interbasin agreements may be included in the Plan to support a finding that implementation of the Plan will not adversely affect an adjacent basin's ability to implement its Plan or impede the ability to achieve its sustainability goal.

2. The GSP refers frequently to the "Eastside" subbasin. Bulletin 118 uses a two-word naming of this subbasin: East Side.

3. The GSP refers to the "Deep", "deep aquifer", "Deep Aquifer", and "Deep Aquifers". Suggest that this be standardized to 'Deep Aquifers' for consistency with MCWRA nomenclature.

Comments on Executive Summary

- **Section ES-1, page 1** – Paragraph three begins with "The Salinas Groundwater Valley". Suggest changing to "The Salinas Valley Groundwater Basin".
- **Section ES-1, page 3** – "Spreckles" should be corrected to "Spreckels".
- **Section ES-1, page 3** – Paragraph two states that *"The primary water use sector is agriculture, which uses 85% of the water in the Subbasin."* Data from the 2015 Groundwater Extraction Summary report published by MCWRA in April 2017 indicates that 88% of groundwater extractions in the 180/400-Foot Aquifer Subbasin were attributed to agriculture.
- **Section ES-1, page 4** – paragraph 3 states *"...the 180-Foot Aquifers and the 400-Foot Aquifer are relatively transmissive aquifers with very good well yields."* The phrase "very good" is open to wide interpretation. Perhaps a couple of examples, or a range of well yields for the subbasin, could be used instead. Also, it is critical that the treatment of the Shallow Aquifer is consistent throughout. As it is not a principal aquifer, it should not be included in water budgets. Important gaps in the Salinas Valley Aquitard have been reported (e.g., Kennedy Jinks' 2004 report; *"Hydrostratgraphic Analysis of the Northern Salinas Valley")* that create important connectivity between the Shallow Aquifer and the 180-Foot Aquifer that must be also be addressed. Additionally, the MCWRA does not agree with the statement, *"...the 400-Foot Aquifer is a single permeable bed approximately 200 feet thick."* This disagreement in the characterization of the 400-Foot Aquifer is illustrated in analysis from Kennedy Jinks, 2004 and cross sections from Section 4 of this report. And, it will be important that the statement; *"Recharge to the productive zones of the Subbasin is very limited due to the low permeability of the Salinas Valley Aquitard, meaning it is unlikely that any significant surficial recharge in the Subbasin would reach the productive 180-Foot and 400-Foot Aquifers"* is consistent with this reports and future water budgets.
- **Section ES-1, page 4, paragraph 4** – Consider adding some discussion of induced vertical recharge to the Deep Aquifers from overlying aquifers. Also, consider including the Deep Aquifers in the list of "productive" aquifers of the Subbasin.
- **Section ES-1, page 6** – Are domestic purposes included in the list of applications used to determine change in groundwater storage? Only municipal, industrial, and agricultural purposes are listed.
- **Section ES-1, page 6** - *"High groundwater levels in 1983 suggest groundwater levels previously had the capacity to recover to earlier levels in response to recharge events, but decline since then provides no indication that they can recover to pre-1983 levels."* The MCWRA believes this statement to be incorrect and/or too simplistic. See detailed comments to Section 5.1.3 page 15.
- **Section ES-5, page 8** – Acronym for the Salinas Valley Integrated Hydrologic Model in paragraph two should be SVIHM.
- **Section ES-5, page 9** – What is the source of the groundwater pumping data shown in Figure 2? For many of the years, the agricultural/urban/domestic totals shown on the graph appear to be lower than the published values of total pumping in the Pressure area from the annual Groundwater Extraction Summary Reports published by MCWRA.
- **Section ES-5, page9, Figure2** - Percolation of streamflow plus percolation of precipitation and excess irrigation frequently provides over 100,000 afy of inflow to groundwater, which doesn't correspond to earlier statements about stream connectivity and recharge to the aquifers. Please

state what is included in the water budgets and reconcile that with the description of the conceptual model.

- **Section ES-5, page 10** – The section on Projected Water Budgets refers to the "projected SVIHM". Does this mean the provisional, "operational" version of the SVIHM? Consider differentiating between the historical SVIHM and operational SVIHM for clarity, as both versions of the model are being used for projects within Monterey County. The statement; *"The average changes in storage due to groundwater level fluctuations during the historical and current periods are approximately 400 AF/yr. and 600 AF/yr., respectively"*, does not indicate whether this is a positive or negative change in storage. The statement; *"The difference between the storage calculated based on groundwater budgets and storage estimated based on groundwater levels shows the uncertainty of the budgets"* is one measure of uncertainty within the budgets, but it should not be inferred to capture the full extent of uncertainty within the budget.
- **Section ES-5, Table 1** - Only comparing the calculated difference between the budget and estimated storage changes to the outflow seems to underestimate the "error". This is not a true measurement of error, although it is referred to that way in the text.
- **Section E-5, Table 2** - Under the "Groundwater Storage" heading, Groundwater Level Change is positive and Seawater Intrusion is negative, giving a total that is positive. The Change in Storage based on the budget components is negative. These should be reconciled.
- **Section ES-5, page 12** – GSP states that "...pumping will need to be reduced by about 7% to meet the sustainable yield." What years(s) are the basis for determining the 7% reduction? That is, a 7% reduction compared to what? Does this consider how much of the action (stream leakage, groundwater ET, and lateral fluxes) is taking place in the Shallow Aquifer, which is not used for water supply? Water that is cycled above the production aquifers should probably not be considered in the calculation of sustainable yield.
- **Section ES-6, page 13** – Consider using groundwater level data from the monitoring wells that have been, and others that are expected to be, installed as part of the Monterey Peninsula Water Supply Project in addition to CASGEM wells.
- **Section ES-7, Table 3** - The aspirational goal (Measurable Objective) for groundwater levels is 2003, but the Minimum Threshold for seawater intrusion is the 2017 extent of intrusion. What is not addressed in this GSP is; was seawater intrusion actively progressing in 2003? If so (it was), the Measurable Objective for groundwater level should reconcile what is hoped to achieve for seawater intrusion? Also, it would be clearer if the Sustainable Management Criteria stated that *pumping* is to be limited to the long-term future sustainable yield. As it stands, this could be read as suggesting that the reduction in groundwater storage could be 112,000 afy.
- **Section ES-8, page 17** – One of the management actions refers to *"MCWRA restrictions on additional wells in the Deep Aquifers."* The existing limitation on new wells in the Deep Aquifers is the result of a County ordinance (Ord. No. 5302) and is not a restriction set in place by MCWRA.
- **Section ES-8, page 18** – Section on Mitigation of Overdraft lists "optimizing CIP". Assume this should this be corrected to "CSIP".

Comments on Chapter 2 – Agency Information

- **Section 2.1, page 2-6** – The name of the "Salinas Valley Groundwater Sustainability Agency" is missing the word "Basin".

Comments on Chapter 3 – Description of Plan Area

- **Section 3.6.1.3, page 3-25** – Statement; *"These pumping depressions occur in the 180-Foot and 400-Foot Aquifers between the City of Salinas and the coast."* Figure 5-3 and 5-5 show the deepest water levels in both aquifers being approximately along the western edge of the City of Salinas, whereas the text implies that they would be found further west. Although it is understood that this GSP is only for the 180/400-Foot Aquifer subbasin, it seems like the water level monitoring should be contextualized by stating that the far deeper groundwater troughs are located further east, in the East Side. Or, remove this sentence entirely.
- **Section 3.6.1.4, page 3-25** – Most CASGEM wells are monitored monthly, except for a few that are monitored twice per year.
- **Section 3.8** – Consider including Monterey County Water Resources Agency Ordinance No. 3709 which prohibits groundwater extractions and the drilling of new groundwater extraction facilities in certain portions of the 180-Foot Aquifer after January 1, 1995.
- **Section 3.8.9, page 3-39** – This section mentions the Habitat Conservation Plan under development by MCWRA. Was consideration given to any potential impacts to operational flexibility from regulatory documents that are currently in place?

Comments on Chapter 4 – Hydrogeologic Conceptual Model

- **Section 4.3.1.1, page 4-9** – Statement; *"Previous studies of groundwater flow across this boundary indicate that there is restricted hydraulic connectivity between the subbasins."* While groundwater flow might be "restricted" it may be significant. The HBA calculated something like 8,000 afy of exchange (from Pressure to East Side).
- **Section 4.4, page 4-13** – Groundwater in the 180/400 Foot Aquifer Subbasin is increasingly being produced from the Purisima and Santa Margarita Formations that comprise the Deep Aquifers. Also, statement; *"These three cross sections are adapted from the Final report, hydrostratigraphic analysis of the Northern Salinas Valley (Kennedy-Jenks, 2004)."* I believe that Figure 4-6 is adapted from Brown and Caldwell (2015).
- **Section 4.4.1.4, page 4-18** - Statement; *"Near Salinas, the 400-Foot Aquifer is a single permeable bed approximately 200 feet thick; but in other areas the aquifer is split into multiple permeable zones by clay layers (DWR, 1973)."* This is an important qualification statement that should be used in the Executive Summary for clarification.
- **Section 4.4.3, page 4-21** – Statement; *"It is unlikely that any significant surficial recharge in the 180/400-Foot Aquifer Subbasin reaches the productive 180-Foot Aquifer or the 400-Foot Aquifer."* "Significant" should be defined. For example, in Section 6 (Water Budgets) net deep percolation to groundwater of precipitation and irrigation is about 20,000 afy, equivalent to lateral inflows from adjoining subbasins and about 20% of the total inflow to the subbasin. If just considering

recharge of precipitation, that amounts to 8,500 afy in the historical water budget, about 10% of the total inflow.

- **Section 4.6.1, page 4-28** – The caption of the figure and content of the figure do not match.

Comments on Chapter 5 – Groundwater Conditions

- **Section 5.1.1, page 5-2** – Data collected from privately-owned CASGEM wells is not available prior to 2015 when permission for data sharing was granted by the well owner.
- **Section 5.1.3, page 5-15** – Statement; *"The high groundwater levels observed in 1983 suggest that groundwater levels previously had the capacity to recover to earlier levels in response to significant recharge events."* This implies that recharge can affect water levels in the 180/400 over a period of several years. There was a statement earlier (Section 4.4.3) that local recharge is "very limited" but that seems inconsistent with the text here. Unless we're to believe that it only takes a few years for groundwater to flow in laterally from adjoining subbasins that don't have aquitards, or that this results from a decrease of pumping during wet years (very little decrease in agricultural pumping is observed in wet periods).
- **Section 5.1.3, page 5-17** – Statement; *"Groundwater levels have declined since 1983 with no indication that they will recover to pre-1983 levels."* The data does not necessarily support this conclusion. There hasn't been an extended wet period like that seen in the late 1970's/early 1980's, therefor to conclude that it would not occur again is unsupported. The last period where 2 consecutive years of +1 standard deviation on rainfall occurred was 1982-1983.
- **Figures 5-10 through 5-18, pages 5-18 through 5-15** – It is difficult to read the figures due to text/ image quality. Placement of vertical axis at 110' artificially dampens changes. Maximum range in data is approximately 85'.
- **Section 5.1.4, page 5-29** – Statement; *"Figure 5-22 illustrates how the vertical gradients at representative well pairs vary throughout the subbasin."* Is this pattern present in other well pairs in the subbasin (i.e., are these well pairs truly representative)? There should be additional support in the text for reaching this conclusion, beyond the two illustrated well pairs.
- **Section 5.2.1, page 5-31** – The 500 mg/L chloride concentration is also significant in that it represents a level that is approximately 10 times greater than native background chloride levels in the groundwater of the 180/400 Foot Aquifer.
- **Section 5.2.2, page 5-34** – Statement; *"Figure 5-23 shows that the extent of seawater intrusion in the 180-Foot Aquifer has nearly reached a local cone of depression, as represented by the small circular water level contour with a -20 foot msl label. This partially explains why the rate of seawater intrusion has slowed in recent years: the seawater intrusion is reaching a local low point and is not being drawn further inland."* The closed -20 foot msl contour does not represent a local cone of depression, it represents a local high in water level. The closed contour is between the -20 and -30 feet msl contours, which means that anything outside of the closed contour is below -20 feet msl. Therefore, the area inside the closed contour must be *above* -20 feet msl. This statement is incorrect.
- **Figure 5-25** – Consider stating the year associated with the seawater intrusion data on the figure.

- **Section 5.2.3, page 5-37** – Some of the increase in area of seawater intrusion in the 400-Foot Aquifer between 2013 and 2015 was also due to additional data points that made contouring possible, particularly in the Marina area.
- **Section 5.2.3, page 5-37** – Thin/discontinuous aquitards and improperly constructed/improperly abandoned wells may also contribute to the vertical migration of seawater intruded groundwater.
- **Section 5.3.2, page 5-37** – Seawater intrusion likely occurs preferentially along pathways determined in part by geology so the rate of advancement of the seawater intrusion "front" can be highly variable.
- **Section 5.2.3, page 5-40** – Suggest changing "Deeper Aquifers" to "Deep Aquifers".
- **Section 5.2.3, page 5-40** – Restrictions on new wells in the Deep Aquifers was also driven by previous modeling which suggests that increased pumping in the Deep Aquifers will lead to increased vertical flow from the overlying aquifers (WRIME, 2003).
- **Section 5.2.3, page 5-40** - Statement; *"The volume of seawater flowing into the subbasin every year does not strictly correspond to the acreages overlying the seawater-intruded area that is shown in Figure 5-27 and Figure 5-28. As the seawater intrusion front approaches pumping depressions, the front will slow down and stop at the lowest point in the pumping depression. The seawater intrusion front will then appear to stop; and no more acreage will be added every year. However, seawater will continue to flow in from the ocean towards the pumping depression."* There are several reasons that the volume of SWI will never correspond to the acreage intruded. For example, the area behind the mapped SWI front has variable concentrations of chloride (an acre-foot of seawater, with about 22,000 mg/L chloride, could translate to about 44 acre-feet of intruded groundwater at 500 mg/L). Also, the aquifer thickness is quite variable in the subbasin. Regarding the appearance of the SWI front to "slow or stop at pumping depressions", it is not the opinion of the MCWRA that this mechanism is a driver of the rate of SWI in the subbasin. The presented understanding of how the seawater intrusion front reacts at a pumping depression is not relevant in this situation. And in fact, a gradient toward the pumping depression will not necessarily prevent intrusion from continuing.
- **Section 5.3.1, page 5-40** – MCWRA estimates of annual change in groundwater elevation are made on a Subarea (MCWRA management zones) basis rather than for Bulletin 118 subbasins.
- **Section 5.3.2, page 5-41** – The 2015 State of the Basin report from Brown and Caldwell was prepared for Monterey County, not MCWRA.
- **Section 5.3.2, page 5-43** - It would make more sense to divide into periods based on significant change in the management of the groundwater basin (i.e., up to the beginning of operation of Nacimiento Reservoir in 1957, San Antonio Reservoir in 1967; then introduction of the CSIP in 1998 and the SVWP in 2010). This would be an approach that is defensible as it is based on known fundamental shifts in groundwater management.
- **Section 5.3.2, page 5-43** - The variation in storage from 1947 to 1998 has seen large increases in storage during wet periods, along with a cumulative positive storage change from 1949 to 1998. During the period from 1947 to 1998, there were 28 years of negative storage change and 24 years of positive storage change; while technically that indicates that "most" years had decreasing storage, it's very close to an equal number of negative and positive years. Consider revising the statement indicating a trend of steadily-decreasing groundwater storage in most years.

- **Figure 5-29** – Suggest clarifying if the figure depicts data from the 180/400 Foot Aquifer Subbasin or MCWRA's "Pressure Subarea".

Comments on Chapter 6 – Water Budgets

- **Section 6.3.1, page 6-7** - Statement; *"The BCM-reported average annual precipitation in the 180/400-Foot Aquifer Subbasin is 114,100 AF for the historical water budget period and 106,600 AF for the current water-budget period. As shown in Table 6-1, the runoff for the historical and current periods was 1,100 and 1,700 AF/yr., respectively; equivalent to approximately 1 to 2% of precipitation."* It is unclear from the text whether this analysis is limited to runoff generated within the 180/400-Foot Aquifer subbasin, or includes tributary inflow from the hills to the west (not otherwise quantified).
- **Section 6.3.1, Table 6.1 and 6.2** – It is confusing that runoff would be higher during the Current period compared to the Historical period, when precipitation is lower? In contrast, flow in the Salinas River during the Current period was substantially lower than during the Historical period (Table 6-2).
- **Section 6.3.2, page 6-7** – Statement; *"As reported by MCWRA, the Salinas River depletion during September 2017 between Soledad and Gonzales, near the Subbasin boundary, was 134 cubic feet per second (cfs). The Salinas River depletion between Gonzales and the Chualar gauge was 79 cfs. Therefore, approximately 63% of the Salinas River depletion between Soledad and the Chualar gauge occurred in the Forebay Subbasin, above Gonzales; and 37% of the Salinas River depletion occurred in 180/400-Foot Aquifer Subbasin, below Gonzales."* This stream depletion is based on a single day's measurement which may not be representative. If this analysis conclusion is used there should be a discussion of the limitations of applying a single data point to annual stream loss calculations.
- **Section 6.5.3, page 6-15** – The "Pressure Management Area" is more commonly referred to as the "Pressure Subarea". Also, when discussing CSIP deliveries, it is worth noting that SRDF diversions did not begin until 2010.
- **Section 6.5.4, page 6-17 and Table 6-11** – Statement; *"Based on groundwater flow directions and hydraulic gradients at the Subbasin boundaries, subsurface inflow to the 180/400-Foot Aquifer Subbasin from the Forebay Subbasin has been estimated as approximately 17,000 AF/yr. (Montgomery Watson, 1997; MCWRA, 2006; Brown and Caldwell, 2015)."* The Brown and Caldwell reference is incorrect in this context. This reference should also be removed from Table 6-11. The correct reference would be Montgomery Watson, 1998.
- **Figure 6-5, page 6-29** – Either the vertical scale or data shown on the graph for agricultural and urban pumping seem incorrect. For example, in 1998, total (agricultural and urban) pumping reported by MCWRA was 104,916 AF. The data in Figure 6-5 seems to suggest that total pumping was less than 100,000 AF for that year.
- **Section 6.6.2, page 6-19** – Was any consideration given to capturing variation in ET by crop type? Perhaps data reported through ranch maps could be used as a coarse approximation to group crops and provide a more refined ET value for the basin. Also, the stated ET for Arundo donax of 16 AF/year/acre should be referenced. Regarding riparian ET included with the groundwater, it is the opinion of the MCWRA that riparian ET has a more significant impact on surface water flows.

- **Section 6.6.2, page 6-19** – The estimate of riparian ET for the subbasin (12,000 AFY) differs from the calculated value of 4,277 AFY determined by the Agency in a 1997 exercise. Changes to reservoir operations and channel maintenance practices have changed since 1997, surely influencing the extent of some phreatophytes, however, does SVBGSA believe that there has there been enough of a change in coverage to account for a nearly three-fold increase in riparian ET?

- **Section 6.6.3, page 6-19 and Table 6-15** – Statement; *"The combined outflow to these two subbasins has been estimated at approximately 8,000 AF/yr. (Brown and Caldwell, 2015)."* The correct reference here and in Table 6-15 is Montgomery Watson, 1998.

- **Section 6.8.1, Table 6-17** - This section should include a discussion of why there is a substantial difference (5% for historical, 15% for current) between the surface water inflows and outflows for an average year. There is no substantial storage change in the surface water system. (Section 6.9 discusses the differences in terms of uncertainty, and that section should be summarized or referenced here.)

- **Section 6.8.1 and 6.8.2, pages 6-21 to 6-28** – In reviewing the annual water budgets given in Appendix 6, it appears the streamflow percolation to groundwater is set based on the Salinas River outflow to Monterey Bay rather than the Salinas River inflow (as indicated in Section 6.4.4). This results in 7 years where streamflow percolation is zero, even though none of those years had zero inflow from the Forebay subbasin. According to that water budget, there were only 8 years with Salinas River inflow below 80,000 afy, so almost every year should have 80,000 or 90,000 af of streamflow percolation. If the intent is to set streamflow percolation based on Salinas River *outflow*, then it seems unreasonable to think that a year like 2002, when there was 82,900 af of inflow and zero af of outflow (a difference of 82,900 af), would see no streamflow percolation.

- **Section 6.8.3, page 6-30** – Statement; *"A review of water supply sources in the 180/400-Foot Aquifer Subbasin shows that surface water supplies, as measured by the San Antonio and Nacimiento Reservoir releases to the Salinas River, allow for a stable supply in wet and normal years."* Direct diversions of reservoir releases provide a very small portion of the water supply for the 180/400-Foot Aquifer subbasin, and only since 2010. The Maximum diversion capacity of the SRDF is approximately an order of magnitude lower than total pumping in this subbasin. This statement should be revised.

- **Section 6.8.5, page 6-32** – Statement; *"Based on the water budget components, the sustainable yield of the Subbasin is 97,200 AF/yr., which represents a 10% reduction in total pumping relative to the average annual historical pumping rate."* Using the average annual storage change of -39,700 afy derived from Table 6-19, the sustainable yield would be 68,400 afy, representing a pumping decrease of 37%.

- **Section 6.9, page i** – The difference between groundwater inflow and outflow for the historical budget is referred to twice, with different totals: 39,700 AF and 39,900 AF.

- **Section 6.10.5, page xi and Table 6-31** – Statement; *"For example, the total pumping used to calculate the historical sustainable yield is 86,500 AFY, while the pumping used to estimate the projected sustainable yields varies between 115,300 and 120,600 AFY."* Total pumping from Table 6-21 is 108,100 afy, not 86,500 afy. Review value given in Table 6-31.

Comments on Chapter 7 – Monitoring Networks

- **Section 7.2.2, page 7-3** – The CASGEM network consists entirely of wells that are either owned by MCWRA or were monitored by MCWRA prior to the initiation of the CASGEM program, rather than "primarily" as stated.
- **Section 7.3.2, page 7-17** – "During implementation...the SVBGSA will verify well completion information and location." Does SVBGSA intend to collect location data for all wells during the effort to acquire an accurate accounting of wells in the subbasin? MCWRA has done some preliminary work on the availability of GPS location data for wells and may be able to assist with defining data gaps in this area.
- **Section 7.3.2, page 7-17** – "A potential data gap is the accuracy and reliability of reporting pumping rates." Is this referring to data reported to MCWRA through GEMS? If so, a clarification of what is meant by "pumping rates" would be helpful. Data reported through GEMS is done so annually and includes monthly totals of water usage but not a 'gallons per minute' type of pumping rate for each well.
- **Section 7.7, page 7-29** – Statement; "As described in Section 5.5, there is little to no connection between the 180-Foot, 400-Foot, or Deep Aquifer and surface water in the 180/400-Foot Aquifer Subbasin. However, the Salinas River is potentially in connection with groundwater in the shallow water-bearing sediments that do not constitute a principal aquifer. The shallow sediments are not used for any significant extraction, and have very little monitoring data. Therefore, the level of interconnection is unclear." According to the water budget, stream percolation accounts for 50,000 afy of the 90,000 afy of annual inflow to the subbasin, more than half the total. This indicates either that the water budget includes the Shallow Aquifer sediments, or that the River is better connected to the 180-Foot Aquifer than is indicated by the text. As stated earlier in the GSP, there are recognized gaps in the Salinas Valley Aquitard.

Comments on Chapter 8 – Sustainable Management Criteria

- **Table 8-1, page 8-6** – The Undesirable Result for Sustainability Indicator "Reduction in Groundwater Storage" refers to a "long-term average". Suggest defining how the period of time for "long-term" will be determined.
- **Table 8-1, page 8-6** – Sustainability Indicator "Seawater Intrusion" has interim milestones that suggest measurements will be made relative to some starting point, e.g. "one third of the way". Suggest clarifying the starting point, as the seawater intrusion front consists of irregularly-shaped contours or, in the case of the 400-Foot Aquifer, multiple non-contiguous contours.
- **Section 8.6.2.1, page 8-17** – Fall groundwater level contour maps are developed from data collected from October through December.
- **Section 8.8.2.1, page 8-34** – MCWRA seawater intrusion contours are developed using data from privately-owned wells and dedicated monitoring wells, not only "dedicated monitoring wells near the coast" as stated in paragraph 3.
- **Figure 8-7, page 8-36** – Suggest showing the 2017 contours as depicted by MCWRA as part of the overall front illustrated on the figure.
- **Section 8**-11, page 8-61 – The Salinas River is a losing river, independent of the year type or season.

Comments on Chapter 9 – Projects and Management Actions

- **Section 9.3:** Through its extensive experience and knowledge of facilities operation, MCWRA can provide valuable insights to aid the SVBGSA in the implementation of Management Actions. MCWRA looks forward to a cooperative approach in the assessment and implementation of Management Actions.
- **Section 9.3.2**: The SVBGSA should evaluate the impact of Prime Agricultural Land designation or Agricultural Preservation Zones prior to the development of policies or ordinances related to agricultural land retirement.
- **Section 9.3.4:** The MCWRA Board of Directors adopted a Reservoir Operations Policy in February of 2018 after a robust stakeholder process. As stated on page 2 of the policy, *"As a multi-use facility, Nacimiento Dam and Reservoir is operated with consideration to many factors including dam safety, flood protection, groundwater recharge, operation of the SRDF, water supply, fish migration, fish habitat requirements, agriculture, and recreation. This Operation Policy defines parameters and describes guidelines and requirements the Agency will follow to operate the Dam and meet the challenges of balancing the sometimes competing interests involved in operating this multi-use facility."* The MCWRA is undertaking a Habitat Conservation Plan (HCP) to update the operations of the reservoirs. The HCP will be developed through an extensive stakeholder process and robust scientific analysis that evaluate a wide range of environmental and operational considerations. The MCWRA anticipates the SVBGSA will play a significant role in the development of a Habitat Conservation Plan for future reservoir operations.
- **Section 9.3.5, page 9-16** – This management action has the potential to duplicate or conflict with parts of MCWRA Ordinance No. 3790.
- **Section 9.3.6, page 9-18** – Ordinance No. 5302 is a Monterey County ordinance. Restrictions on wells in the Deep Aquifers are not MCWRA's restrictions.
- **Section 9.4.3.1:** MCWRA will actively participate in the pre-design phase of all projects related to existing MCWRA infrastructure.
- **Section 9.4.3.2:** The RCD of Monterey County spearheads an arundo eradication project that is not considered mitigation for impacts. It is a comprehensive program that has systematically addressed this invasive species from the upstream to the downstream sections of the Salinas River. The long-term benefits of invasive species eradication will decrease as native vegetation grows in its place. The Salinas River Stream Maintenance Program allows for consistent vegetation treatment to increase flow capacity of the river and will reduce evapotranspiration for the longer term. Additional river flows as considered in Section 9.3.4 will make vegetation management actions even more critical since vegetation will thrive under those conditions.
- **Section 9.4.3.2.2, page 9-28** – Statement; *"Model results suggest that this project reduces seawater intrusion by approximately 890 AF/yr. on average."* First mention of a groundwater model, not referenced in Appendix 9C.
- **Section 9.4.3.3:** The CSIP system has integrated recycled water, well water and river diversion supply through the sharing of infrastructure. As it is currently configured, the recycled water and river diversion water share a storage pond near the treatment facilities. The wells are located out in the irrigation system and therefore serve as a critical link to distributing water when there are peak demands. Substituting more recycled water or river water does not always reduce well use as the previous two compete to fill the storage pond. Irrigation demands are dependent on many

other factors such as crop type, stage of growth, and climate conditions. Shifting the irrigation demand to when the water is available may not meet the objectives of optimal plant growth and productivity. Water storage could be from recycled water since there is a diurnal demand that could allow for some off-peak production of recycled water. Additional research should address if and when SRDF water can be stored. The storage should be limited in time to reduce any algae growth or water rights restrictions.

- **Section 9.4.3.3, page 9-31** – Supplemental wells are responsible for most pumping in the CSIP zone for the reason specified here. Private wells in the CSIP area are standby wells and can be pumped for specified circumstances.
- **Section 9.4.3.4:** MCWRA is a sister agency to M1W and the agencies work collaboratively on operating and maintaining the tertiary treatment facility (SVRP). Modifications to produce tertiary treated recycled water when demands are low is needed at the SVRP site. All wastewater is treated to the secondary level without any modifications necessary. Groundwater pumping is currently necessary for meeting demand as well as addressing pressure issues in the system. These modifications would need to be coupled with the hydraulic modeling and other system improvements described in the previous section to be most effective at reducing groundwater pumping. This project is not currently funded nor have the CSIP customers approved an increased charge. New funding estimates are $7-10 million and additional funding resources should be identified to implement this project.
- **Section 9.4.1.3, page 9-72** – Statement; *"The desalination alternative project is one of five alternative projects that may provide additional water to the Subbasin. The project will only be implemented after all five alternative projects have been refined. The most cost-effective project of the five will be selected to supply additional water to the Subbasin."* There are only four Alternative Projects listed in 9.4.4.
- **Section 9.4.3.5:** Other possible approaches to CSIP expansion should be considered moving forward. A thorough analysis of distribution system upgrades and some reliance of existing wells must be considered. Storage of recycled water may not be able to meet peak demands and SRDF water is not available every year. Areas for expansion should consider more factors than seawater intrusion. Expansion may decrease the need for the SVRP modifications described previously.
- **Section 9.4.3.6:** Scheduling irrigation deliveries to reduce peak demands and re-operating the SVRP storage pond could help increase SRDF efficiency. Additional analysis to understand how the water would be used in the system is necessary. In years when SRDF diversions are not available, an alternate back up supply, such as groundwater, will be needed. As the system is currently configured, when SVRP usage increases SRDF reduces and vice versa as they are sharing facilities that limit the amount of water that can be delivered. Capital expenditures may be necessary to accomplish the increased use of SRDF water.
- **Section 9.4.3.7**: Preferred Project 6 (Seawater Intrusion Pumping Barrier) has the potential to conflict with the GSP submitted by the City of Marina for the Marina Area of the 180/400 Foot Aquifer.
- **Section 9.4.3.7, page 9-50** - GSP States that "Supplemental water to replace the extracted water would come from one of a number of other sources" but does not elaborate on what those other sources might be.

- **Section 9.4.3.7, page 9-51** - GSP includes assumptions about the pumping rates of wells in the 180- and 400-Foot Aquifer but does not explain the origin of these assumptions, subsequently making it difficult to evaluate the validity of the assumptions and the project as a whole.
- **Section 9.4.3.9:** Preferred Project 8 (11043 Diversion Facilities Phase II: Soledad) should include coordination with MCWRA and consultation on construction and operation of a diversion facility.
- **Section 9.4.3.9.2, page 9-60** – Consider including water quality as a relevant measurable objective for this project.
- **Section 9.4.3.10:** The SRDF is a point of re-diversion from Nacimiento and San Antonio Reservoir's two water right licenses and permit. Permit 21089 is a right to store and use water from the Nacimiento River. Changes to all three would be necessary to change the time of year water could be rediverted, along with the addition of an additional storage component. These changes are currently in conflict with the amount of water available to redivert at the SRDF from April 1st to October 31st, when demands are at their peak. The reservoirs have a limit on the amount of water that can be stored on an annual basis; and the water right licenses and permits have restrictions as to how much is withdrawn from storage annually. Additionally, treatment of river water should must comply with all state and federal regulations for injection into the groundwater aquifers.

Comments on Chapter 10 – Groundwater Sustainability Plan Implementation

- **Section 10.3, page 10-8** – Statement; *"To develop better estimates of aquifer properties, the SVBGSA will identify up to three wells in the 180-Foot Aquifer and up to three wells in the 400-Foot aquifer for aquifer testing. Each well test will last a minimum of 8 hours, and will be followed by a 4-hour monitored recovery period. Wells for testing will be identified using the following criteria."* It is the opinion of the MCWRA that three data points and the minimum test period in each aquifer will do little to refine the hydrogeologic properties of this subbasin. At a minimum, the MCWRA would recommend six to eight additional data points in the Deep Aquifers with an additional four to six data points in each of the 180-Foot and 400-Foot Aquifers. Pumping for the tests should last for a minimum of 12 hours, with a six to eight-hour recovery period in order to derive aquifer properties beyond the immediate vicinity of each well (data point).
- **Section 10-4** – Numbering errors in subsections
- **Section 10-1-9 (see previous comment), page 10-8** – Two Shallow wells adjacent to the Salinas River are inadequate to characterize level of interconnection.

MONTEREY COUNTY

WATER RESOURCES AGENCY

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BRENT BUCHE
GENERAL MANAGER

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SALINAS, CA 93901

November 25, 2019

Gary Petersen, General Manager
Salinas Valley Basin Groundwater Sustainability Agency
c/o Regional Government Services
PO Box 1350
Carmel Valley, CA 93924

Re: Groundwater Sustainability Plan for the 180/400 Foot Aquifer Subbasin

Dear Mr. Petersen:

Monterey County Water Resources Agency (MCWRA) staff has reviewed the Groundwater Sustainability Plan for the 180/400 Foot Aquifer Subbasin released by the SVBGSA on October 10, 2019 and the update released on October 21, 2019.

MCWRA believes conflict exists between this Draft Groundwater Sustainability Plan (GSP) and the Draft Groundwater Sustainability Plan released for review by the City of Marina Groundwater Sustainability Agency. The development of Groundwater Sustainability Plans is addressed in California Code of Regulations; Title 23 (Waters); Division 2 (Department of Water Resources); Chapter 1.5 (Groundwater Management); Subchapter 2 (Groundwater Sustainability Plans); Article 1 (Introductory Provisions). Multiple sections within Article 1 address the consideration and/or impact of a GSP on adjacent basins. MCWRA believes that the apparent conflict between the two draft GSPs may indicate a deficiency in the SVBGSA's GSP for the 180/400-Foot Aquifer in terms of plan principles, evaluation criteria and interbasin coordination. MCWRA has provided specific comments on the Draft GSP in the enclosure.

MCWRA appreciates the opportunity to comment on the GSP for the 180/400 Foot Aquifer Subbasin. If you have any questions regarding the enclosed comments, please contact MCWRA at 831-755-4860.

Sincerely,

FOR:

Brent Buche
General Manager

Salinas Valley Water Coalition
33 El Camino Real • Greenfield, CA 93927
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TRANSMITTED VIA EMAIL

Salinas Valley Groundwater Sustainability Agency
Atten: Mr. Gary Petersen, General Manager

November 25, 2019

Re: SVBGSA 180/400 Aquifer GSP

Dear Mr. Petersen

We again thank you for this opportunity to comment on the Salinas Valley Basin Groundwater Sustainability Agency's ("SVBGSA") Groundwater Sustainability Plan ("GSP") for the 180/400 Foot Aquifer Subbasin ("180/400 Subbasin"). Our comments previously submitted on September 10, 2019; the notes from your meeting held in Greenfield on July 18, 2019 and the various comments made by Nancy Isakson during the SVBGSA's committee and/or Board meetings, are incorporated herein by reference.

We also believe that many of the comments made by others, including those submitted by LandWatch and Mr. Thomas Virsik, should be carefully and thoughtfully addressed as to whether further changes should be made to the 180/400 GSP and/or whether there would be potential impact to the 180/400 GSP by not addressing the concerns expressed.

The SVWC's comments are summarized below along with comments to specific sections of the 180/400 GSP.

Global comments:

- Many of the references to the other Sub-Basins within the text of the 180/400 GSP should be deleted as they are confusing as to whether they apply other subbasins and/or how they would apply. This GSP is specific to the 180/400 Aquifer Subbasin and it should be clear to the reader that the various thresholds, standards, projects and/or management actions work to provide the needed and required sustainability to the 180/400 Aquifer Subbasin.

- Data gaps and lack of data: Section ES-5, Historical and Current Water Budgets states the historical and current water budgets are based on "best available data and tools", but goes on to state that "no groundwater model is available that produces an accurate historical and current water budget." That is, there are significant data gaps due to the unavailability of a groundwater model. We understand that it is anticipated that the water budgets will be updated to reflect the SVIHM output when it is released. The water budgets are key to this critically overdrafted subbasin. It is difficult to fully know what management actions and projects are needed to bring this subbasin into sustainability without having accurate historical and current water budgets.

  This is an important element of the entire GSP. Because of the lack of accurate data and tools, it is important to look at what management actions and projects should be implemented in the near-term (immediately) and the short-term (within 6 months to one year) and the long-term in order to bring the 180/400 subbasin into sustainability as soon as possible while preparing to meet long-term sustainability.

  This section also states that the "relatively high percentage error emphasizes the need to adopt the modeled historical groundwater budget when the historical SVIHM becomes available." It is because of this statement, in part, that it is difficult to understand the extent of the existing seawater intrusion problem in the 180/400 subbasin and the level of management actions and/or projects needed to meet sustainability, and whether the ones presented in the GSP will provide it.

  Table 1 on page 10 demonstrates the level of uncertainty of using the 'best available data and tools', and only further confuses the matter and the reader.

ES-8 Projects and Management Actions:

- **Water Charges Framework:** The water charges framework discussion should be geared only for the 180/400 GSP. While this type of framework may work for the other subbasins, this plan is ONLY for the 180/400 subbasin and what management actions and projects need to be implemented to meet the required sustainability for this critically overdrafted subbasin. Any contemplated water charges for implementing management actions and/or projects to address the seawater intrusion issue in this subbasin, should not be applied to the other subbasin unless

and until it is shown how, and if, the other subbasins contribute to the seawater intrusion of the 180/400 subbasin and how they will benefit from the implementation of the management actions and/or projects.

  - Please know that the Salinas Valley Water Coalition supports all lands within the entire SVGBGSA paying fees to meet the overall administrative costs. However, they do not support blanket implementation of pumping charges to offset costs of implementing management actions and/or projects within the 180/400 subbasin; the costs for implementing these actions and projects should be paid for by those who would benefit from them – i.e. those within the 180/400 subbasin.

- **Management Actions:** This section identifies six management actions that "are most reliable, implementable, cost-effective, and acceptable to stakeholder." The GSP then goes on to state "the first three would benefit the entire Salinas Valley; the last three are specific to the 180/400 Aquifer Subbasin."
  - "Agricultural land and pumping allowance retirement". The SVWC does not believe that the Salinas Valley, other than the 180/400 Aquifer Subbasin will benefit from such pumping allowances and/or agricultural land retirement. Science and 'accurate' data has shown that areas outside of the 180/400 Aquifer do not contribute to seawater intrusion in the 180/400 and/or will the Salinas Valley, other than the 180/400, benefit from stopping seawater intrusion – except and to the extent of being a good neighbor and wanting to see this problem in the northern end of the Salinas Valley solved. Science and data have shown that this problem can only be solved by those within the 180/400 Aquifer Subbasin.
  - Reservoir reoperation. While SVWC believes reoperation of the reservoirs may benefit the entire Salinas Valley, we believe this is more than simply a 'management action'. There are potentially many benefits to reoperating the reservoirs, but there are also potentially many impacts – especially to existing projects, such as the Salinas Valley Water Project (SVWP).
    - Rather than including reoperation of the reservoirs, we suggest considering how the existing SVWP can be fully implemented to provide the benefits to the landowners as promised – including those within the 180/400 Aquifer.
  - Restrict pumping in CSIP area. This is a critical management action. It should be considered within regards to what level of restriction would be required in the near-term, the short-term and then the long-term IF other management actions and/or projects are not implemented.

- **Direct recharge through recharge basins or wells:** The SVWC has supported the consideration of, and the potential implementation of, the existing MCWRA Permit 11043. We would like to see additional information provided on this project, where it is in process with the State Water Resources Control Board and what actions need to occur to be able to implement it. We also believe that further project development utilizing Permit #11043 would be better suited during the development of the Eastside Subbasin GSP.

- **Indirect recharge through decreased evapotranspiration or increased infiltration.** We would like the GSP to consider the inclusion of other species as well.

Process

Without offering a tracked changes version for each document, it is difficult for the public to sift through all text, figures and tables to determine what has been changed. Although the SVB GSA website is a repository for all documents, not all previous versions of Chapters are easily accessible to the public. On the GSP Valley Wide page, only Chapter 7 (released 5/16/19), Chapter 5 ((released 3/14/19) and Chapter 4 ((released 1/10/19) are available.[1] The 180/400 page lists a simple one page "Update No. 1" description of a few high level changes. [2]

Instead, one has to look through old meeting agendas and packets to find previous versions of documents. Unfortunately, many of these documents, although included as part of a dated agenda, do not have a date and the bottom of the document.

For example, to find changes made to Chapter 9, arguably one of the more important chapters, a reader would have to find drafts at the flowing locations:

- First Draft: Advisory Committee Meeting, July 18, 2019[3]
- Second Draft: Board of Directors Meeting, August 8, 2019[4]

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[1] https://svbgsa.org/groundwater-sustainability-plan/valley-wide-integrated-groundwater-sustainability-plan/
[2] https://svbgsa.org/wp-content/uploads/2019/10/1-Update-No.-1-to-180-400-GSP.pdf
[3] https://legistarweb-production.s3.amazonaws.com/uploads/attachment/pdf/395302/Draft_Ch_9_Projects_and_Management_7_12_2019_for_Advisory_Committee_87642_.pdf
[4] https://legistarweb-production.s3.amazonaws.com/uploads/attachment/pdf/405668/7e_SVBGSA_Draft_180_400_GSP_Ch_9_20190802.pdf

- Third Draft: October 10, 2019 Release of 180/400 Draft[5]

Chapter 9 Implementation

9.2 Water Charges Framework: As mentioned above, the water charges framework should be considered for implementation **only** within the 180/400 Aquifer Subbasin. It should not be assumed to apply and be appropriate for the entire Salinas Valley. The GSP should also include other types of funding mechanisms to fund the implementation of management actions and projects for this GSP – but again, it should only consider such funding mechanisms as needed for the 180/400 Aquifer Subbasin, and not the entire Salinas Valley. Each subbasin should be allowed to consider other funding mechanisms as need to support implementation of their individual GSP.

The following are specific comments as to the text:

- as described, it is a "proposed" framework, still needs BOD approval
- Any votes related to cost of water shall require ¾ agricultural members voting for it
- Pg 9-3 – if the goal/benefit of the WCF is to incentivize reduction of groundwater pumping, won't the program eventually defund itself? This has happened in other utilities. *"Tier 2 and Tier 3 funds are used to build projects and pay annual costs of purchasing and treating water that have a defined benefit to individuals or groups."*
    - These statements should be further clarified so it is clear to the reader that the Tier 2 and Tier 3 charges will only be considered for implementation in other subbasins of the Salinas Valley once the GSP's for the other subbasins are completed and cost/benefit analysis of potential projects have been defined.
- What economic analysis will be required to price water at the three levels at the correct amounts with varying fluctuations of crop and land values, availability of new project water, etc.? This will take significant economic study, yet the budget in table 10-2 seems to have an imbalance, giving a facilitator a budget of $450K over 3 years but allows for a technical budget of only $120K over three years. It would seem that the technical analyses is critical to providing the needed information for the stakeholders/landowners to understand the benefits to be provided.
- If the Water Charges Framework is not adapted for all sub-basins, at some point, the budget item should be moved from Table 10-2 and distributed to the sub basins that are using it.

9.2.6 Administration, Accounting and Management: This section states "the SVBGSA would use Water Charges revenues to fund project that develop new water supplies for the benefit of the 180/400-Foot Aquifer Subbasin." These water charges should only be applied to the 180/400 Aquifer Subbasin as they will be ones who benefit.

* This section also states that agriculture pumping "will be metered", and that pumping will be reported directly to either the MCWRA or the SVBGSA.

Note: The SVWC has not taken a position as to whether to support or not support the requirement of agricultural meters, we do believe that whichever agency requires the meters should also collect the reports to maintain consistency.

9.2.7 Details to be Developed

- As we have stated above, this section should add: "Which financing method will fund GSA functions and projects for the 180/400 sub basin"
    - The option for multiple funding sources is clearly stated earlier, but at this point the document is making it sound as if WCF is already finalized and that it will be applied throughout all subbasins in the Salinas Valley—when it should only be applied within the 180/400 Aquifer Subbasin for this GSP and then may be considered within the other subbasins as their GSP's are developed and implemented.
    - Page 9-2: *"Depending on the outcome of the negotiations, long-term GSP implementation* ***may be*** *funded by the water charges framework,* ***other financing method*** *as permitted by SGMA and other state law, or a combination thereof."*
- The GSP states, *"What is an equitable balance between the Tier 1 Sustainable Pumping Charge collected in the 180/400-Foot Aquifer Subbasin and the Tier 1 Sustainable Pumping Charge collected in other subbasins? "*
    - However, this seems to conflict with what is stated on Page 9-2: *"Therefore, actual costs seen by growers* ***are proportional to individual needs*** *project water."*
    - This statement assumes that other subbasins will have Tiered WCF similar to the 180/400, as we have stated, this may not be the case. The 180/400 Aquifer Subbasin GSP should clearly state that the water charges framework will be applied to the 180/400

[5] https://svbgsa.org/wp-content/uploads/2019/10/5-Updated-Volume-3.pdf

Aquifer Subbasin GSP and "may' be considered for implementation in other subbasins as their GSP's are developed.

9.3.2 Agricultural Land and Pumping Allowance Retirement

- We support the right of landowners to do as they please with their lands in terms of wanting to continue farming, temporarily fallowing or permanently retiring agricultural lands under SGMA. However, we find this section lacking in detail and therefore may not garner the attention from landowners that may be interested. The cost analysis is also incorrect and needs revision. In a basin that has seawater intrusion and facing a long list of expensive projects, we believe it warrants a more proactive and thoughtful approach than the proposed "let's see if anyone's interested."
- The assumption of Chapter 9 is that a combination of reduced pumping *and* projects are likely needed, however, doesn't state how we may be able to achieve our goal with reduced pumping <u>alone.</u> The 180/400 Aquifer Subbasin GSP should state what other action(s) would be needed if projects are not supported and approved – this would be comparable to including a 'no project' alternative. The 180/400 GSP should inform landowners and growers of a more comprehensive cost/benefit analysis and should clearly state:
    - How many acre feet do we need to reduce pumping in the 180/400 Aquifer Subbasin to come into balance and provide sustainability without any projects?
        - How many acres in the 180/400 Aquifer Subbasin would have to be fallowed to bring the subbasin in balance and be sustainable?
        - What percent of acres in the 180/400 Aquifer Subbasin of total current cropped acres is this?
    - To clarify it for the public, we suggest that you add here or in section 9.6: "Pumping reductions of XX,XXX AFY in the 180/400 Aquifer Subbasin would be required to mitigate all overdraft without any projects. This would be the equivalent of reducing XX% of total annual pumping from the basin or fallowing XX acres of land annually."
    - Although the total loss of farmland may be infeasible and undesirable for the 180/400 Aquifer Subbasin, this information would help land owners and farmers understand their options and it may especially be a useful strategy when a cost/benefit analysis is presented for other basins that are closer to sustainability (e.g. it may be better to fallow a small amount of acreage vs. invest in new projects).
- SGMA requires projects and management actions to have quantified benefits. Management Action #1 is the only Management Action that has potential water savings, therefore <u>it should either state those savings or be moved to the Projects section in the Final Draft.</u> It should consider, and be limited to, opportunities for such savings within the 180/400 Aquifer.
  The "Project" would be for SVB GSA staff or consultants <u>to conduct a geospatial analysis to assess the best areas to potentially purchase lands for retirement, study the economic value of the land *and* water,</u> and proactively contact the specific landowners to see if there is interest. For example priority areas could include:
    - Specific areas within the 180/400 Aquifer where reductions in pumping would significantly reduce seawater intrusion.
    - Farmed areas within the 180/400 Aquifer that are distant from CSIP services (cost/AF delivered vs. retirement cost-benefit analysis).
    - Areas within the 180/400 Aquifer where SVBGSA wants to co-locate other SVBGSA projects (recharge basins, injection wells)
    - Areas within the 180/400 Aquifer where other public funding could be sourced to drive down cost of agreement
        - Wetlands/riparian or other areas for habitat restoration
        - Steeply sloped areas that pose erosion, sedimentation and water quality problems
- <u>In order provide a full understanding as to what it would be mean to the 180/400 Aquifer if NO projects were approved and implemented, at the minimum, the Permanent Retirement estimated cost calculations (9.3.2.8) needs to be refined:</u>
    - Cost estimate is simply calculated land cost divided by <u>one year</u> of water savings. <u>These numbers ($8,700, $23,300) are essentially meaningless and should be deleted from the document as "retirement" is permanent</u>. As written:
        - $26,000/acre / 3 AF saved = $8,700/AF low estimate
        - $70,000/acre / 3 AF saved = $23,300/AF high estimate
    - Water savings is permanent: While comparing 25 years to 25 years for structural projects is somewhat useful, it isn't useful to neglect that water savings continues (without cost) beyond year 25. Assuming the land is permanently retired, the simple cost per acre foot water for 100 years (saving 3AF/year *100 years) is as follows:
        - $26,000/acre / 300 AF saved = $86/AF low estimate
        - $70,000/acre / 300 AF saved = $233/AF high estimate

    - Cost is one-time event:
        - Years 2-25: No ongoing staffing, facilities or O&M costs beyond year 1.
        - Years 25+: No significant future costs – replacing machinery, structures etc.
    - There is no mention that funding could be sourced from other grant programs such as water quality, habitat, conservation easements etc., further driving down the cost of the Management Actions.
- Future development of the GSP should address some challenging questions:
    - How do you weigh retirement of acres with new acreage being planted?
    - Is the range of land costs accurate, and include both the cost of agricultural land retirement *and* water savings for the sub-basin?
- Education for land owners: This could be tied to Management Action #2, SVB GSA should provide landowner education on potential funding sources for land sales, tax benefits of conservation easements etc.

Relevant Measurable Objectives - Why isn't Water Quality Objective mentioned in any of these sections?

- The GSP should state that it is the intent to collaborate with other agencies, entities, including the Regional Water Quality Control Board to promote water quality objectives.

Preferred Project #3 – M1Water

9.4.3.4.6 Estimated Cost

"The project cost will be covered through delivery charges to existing CSIP customers. Because a funding mechanism for this project has already been identified, these costs will not be incorporated into the Water Charges Framework."

- Seems that this would apply to PP2 and PP5 as well. Shouldn't optimizing CSIP be paid by those who would benefit, and expanding CSIP be paid by those who benefit? Would all growers in the 180/400 pay into PP2 and PP5 or just those that receive water from CSIP?
- Page 9-2: *"Therefore, actual costs seen by growers* ***are proportional to individual needs*** *project water."*

9.4.3.6 Preferred Project 5: Maximize Existing SRDF Diversion

9.4.3.6.6 Estimated Cost – SRDF

" The estimated projected yield for the project is 11,600 AF/year. "The yield for this project is the same yield that is identified in Priority Project #2 and a portion of the yield identified in Priority Project #3."

- What does this statement mean, does it mean it is the same water saved (it cannot be double-counted)?
- If this is the case, why is the project yield AF related to CSIP projects listed separately in Table 9-5 if the water saved is the same?
- The 3 CSIP-related projects need to be clarified for the public, growers and land owners to understand
    - How are they interrelated?
    - How many acre-feet exactly result from the separate projects of 2,3 and 5?
    - What is the intention of separating projects vs. combining all into one if they have overlapping water savings?
    - Could these projects be listed as one project to be implemented in phases?

9.4.3.7 Preferred Project 6: Seawater Intrusion Pumping Barrier

Does the cost estimate include environmental review under CEQA? PG&E costs? Where will brackish water go? There are many unanswered questions that require significant analysis before a decision can be made as to whether this project can work. It might be helpful to also compare this project to a desal plant.

"Project yield is 30,000 AFY"

- Does the cost estimate include desalination so it can be used? If not, it is not a "yield" of water for the basin to use. Although the seawater intrusion wells may pump this amount per year, none of this water will be useful for irrigation or domestic purposes. Therefore a reader cannot easily make an "apples to apples" comparison from this to other Preferred Projects, such as PP2,3,4,5. Even PP1, Invasive Species removal, which is of a different category, still has the supposed end result that less water is taken up by evapotranspiration and therefore more water will be left in the river or groundwater basin that could be available to recharge. To the contrary, PP6 takes brackish water out of the basin and discharges it into the ocean, so where is the water savings?

- Whether environmentally and politically possible, the cost-benefit analysis of this proposed project does not seem to be correct. Specifically:
    - <u>If the project yield is 30,000 AFY, why is it stated that it extracts 22,000 AFY in the notes below Table 9-5?</u>
    - <u>If project yield and costs calculation use the denominator 30,000 AFY, why is it listed as a value of only -11,000 AFY in table 9-5? If this is the actual value to the basin, shouldn't the cost be divided by 11,000 AF?</u>
    - If the value is negative 11,000 AFY (and other projects are positive) how exactly does this add up to helping mitigate overdraft? Again, it is hard to compare apples to oranges.
- Why is PP6 the same cost as PP9, when capital costs are $50 million higher and annual O&M is $6Million higher/year? (Again, the 30,000 AF "yield" of PP6 does not increase water in the aquifer – it takes it out, therefore you cannot divide by yield in PP6 similarly to PP9).
    - **PP6 Seawater Intrusion Pumping Barrier: "**Capital cost for the Seawater Intrusion Pumping Barrier project is estimated at $102,389,000. This includes 44,000 LF of 8-inch to 36-inch pipe and rehabilitation of the existing M1W outfall. Annual O&M costs are anticipated to be approximately $9,800,000. The total projected yield for the Seawater Intrusion Pumping Barrier is 30,000 AF/yr. **The cost of water for this project is estimated at $590/AF."**
    - **PP9 SRDF Winter Flow Injection:** "The majority of the costs are for the construction of the injection wells. Capital costs are assumed to be $51,191,000 for construction of an injection well field consisting of 16 wells as well as construction of a 4-mile conveyance pipeline between the SRDF site and the injection well system. Annual O&M costs are estimated at $3,624,000 for the operation of the injection well field. Total annualized cost is $7,629,000. **Based on a project yield of 12,900 AF/yr., the unit cost of water is $590/AF/yr."**

9.4.3.10 Preferred Project 9: SRDF Winter Flow Injection

- This project proposes injection wells, have groundwater recharge basins been considered? This would include a water savings from taking ground out of production (3 af/acre) and no major ongoing O&M/capital costs.
- Why is there 4 miles of pipeline? Could you contact landowners closer to facilities, purchase land, permanently fallow ground closer to region to be served and reduce fee. Compare the cost/mile pipe vs. land costs.

9.6 Mitigation of Overdraft - There is a lack of transparency for reader to understand overall goal.

- The GSP should clearly restate the total acre-feet needed to bring the 180/400 Aquifer Subbasin in balance upfront. Ideally, should be stated at the beginning of the projects section to frame the menu of options to chose from.
    - **What is the current demand in the 180/400 Aquifer Subbasin? What is the sustainable yield for Subbasin? What is the overdraft of the Subbasin?**
        - According to 5.3.4 Total Change in Groundwater Storage, the basin is over drafted by 11,700 AFY.
        - According to 9.6 Mitigation of Overdraft, the historical subbasin overdraft estimated in Chapter 6 is 12,600 AF/yr.
        - If we have to add on to the overdraft as a "buffer" to stop seawater intrusion, what is the target goal? 20,000 AFY?
- What is the cumulative impact of multiple projects? If all projects were put in place, or a certain combination of projects in place, would there be enough water for it?
- Suggestion: combine AF/year in Table 9-5 with Table 9-1.
- Table 9-5 – total in table is -58,201, but this appears to be incorrect, if added the total is 40,800 AF
    - The negative value is somewhat confusing given all of the projects except for seawater intrusion barrier are listed as +.
    - The three CSIP related projects (in red) seem to have overlapping water savings yet they are listed as separate line items. Needs clarification and potential revision.

Table 9-5, Potential Yield AFY

Invasive Species Eradication	6,000
Optimize CSIP	5,500
Modify M1W	1,100
Expand CSIP	9,900
Maximize SRDF	11,600
Seawater Intrusion Barrier	-11,000
SRDF Winter Flow Injection	17,700
SUM	40,800

Chapter 10, Budget concerns - Cost of Management Actions
Our members are sensitive to total costs to implement SGMA, especially for Management Actions that may be lumped into the shared Valley Wide budget. Between the First and Second drafts of Chapter 9 (between July 18 and August 8, 2019, as described in Process section above), the two Management Actions (MAs) have been added and the cost for existing MAs have increased in both years, cost per year and total cost. In total we have calculated that annual costs for these MAs have gone up +$255,000 and assuming MA #2 education lasts 5 years, total costs increase by $1,000,000. On the "Public Comment" document, there is no apparent public comment on these MA changes, most of the comments were around the Water Charges Framework and Projects.[6] Since the release of the August draft and the October draft, there doesn't seem to be substantial changes despite the extensive comments received. **See table below.**

	9.3.2 MA1: Agricultural Land and Pumping Allowance Retirement		9.3.3 MA2: Outreach and Education for Agricultural BMPs*		9.3.4 MA3: Reservoir Reoperation		9.3.5 MA4: Restrict Pumping in CSIP Area		9.3.6 MA5: Restrictions on Additional Wells in the Deep Aquifers		9.3.7 MA6: Seawater Intrusion Working Group	
	D1	D2/3	D1	D2/3	D1	D2/3	D1	D2/3	D1	D2/3	D1	D2/3
# years			N/A	??	2	3	1	2	1	4	N/A	2
$/ year			$0	$100,000	$50,000	$50,000	$20,000	$50,000	$40,000	$40,000	$0	$125,000
Total Cost			$0	$500,000	$100,000	$150,000	$20,000	$100,000	$40,000	$160,000	$0	$250,000
$/AF low	$500	$680										
$/AF high	$1,350	$1,820										
Total Cost increase	4% interest rate, 30 years	6% interest rate, 25 years		**$500,000**		**$50,000**		**$80,000**		**$120,000**		**$250,000**

Assuming MA#2 education may last 5 years, the total cost of increased budget is $1,000,000.

D1: Draft 1: July 18, 2019 draft.

D 2/3: Draft 2 and 3: August 8, 2019 and Oct 5, 2019.

Total Cost	D1	D2/3	**Change**
$/year	$110,000	$365,000	**$255,000**
Total Cost	$160,000	$1,160,000	**$1,000,000**

Questions on the changes in Management Actions:

- Why did MA 1 change from a 4% 30 year mortgage to a 6% 25-year mortgage?
- How many years is MA #2 expected to take?
- Why has the number of years gone up for MA #3, 4, 5?
- Why has the cost per year gone up for MA #4?
- MA6 creating a Seawater Intrusion Working Group (SIWG) was recently added, and while this may be a good idea, it is the most expensive Management Action. It also isn't clear as to the level of inclusion of stakeholders – they need to be included in any working group.
    - Why is there $250,000 on Tale 10-1 for "Seawater Intrusion Working Group" and an additional $200,000 on Table 10-2 for "Coordinate SIWG? If total budget is $250,000+$200,000, why aren't these costs stated in Chapter 9?
    - Table 10-2: We have $1.2 million for Operational Costs, why is SWIG listed as a separate line item whereas other Management Actions are assumed to be included under Operational Costs?
- It states that the SVB GSA is only providing "oversight" for many of the Management Actions and even some Projects. Will these be overseen by other agencies? If so, would SVBGSA have any authority over these actions and projects?
    - If it is just to primarily stay informed and attend meetings, why is the cost to GSA so high (especially MA 3,4,5)?
    - Has SVB-GSA Board of Directors approved expansion to its staffing?
    - If not, will salaries of two existing staff be significantly increasing?

[6] https://svbgsa.org/wp-content/uploads/2019/10/Website-Update-Appendix-11E-Public-Review-Comments.pdf

Table 10-1 and 10-2 – Budgets: Other cost questions

- Are all Management Actions assumed to be included under Table 10-2 Operational Costs ($1.2M)?
    - We have $1.2 million for Operational Costs, why is SWIG listed as a separate line item if other Management Actions are assumed to be included under Operational Costs?
- All 180/400 planning, operational costs and specific actions should be put under table 10-1, not 10-2. This is important because the basin is different both scientifically and in the eyes of the State Water Board. It is considered a high priority basin and therefore has different regulatory time schedule for the implementation of 180/400 projects. Because saltwater intrusion issue it faces is more challenging than other sub-basins, the potential need for complex and multiple projects will also drive up the costs for compliance for this sub-basin. For example,
    - Why is SIWG ($200,000) listed on "Valley-wide" planning cost Table 10-2 when seawater intrusion isn't a valley-wide issue?
    - Why is Refine Projects and Actions ($460,000) on table 10-2 if other basins may have no need for projects, or the projects they may partake in (such as PP#1 Invasive Species Removal) already exist?
    - While the cost/benefit analysis of projects for the 180/400 may have some interaction with other basins such as the Forebay, to put a generic placeholders on table 10-2 and claim that they are "Whole Valley" line items is erroneous.
- There appears to be an addition error in Table 10-2 as the '***Total' of $9,422,600.00 is not correct – but rather it should be $2,921,800.00 according to our addition.*** This is a significant error as it distorts the overall total costs of the projects, and then distorts the average annual cost and hence, the potential costs to be paid by landowners. Table 10-1 also appears to be added incorrectly, calling into question the integrity of the document.

We again thank you for the opportunity to submit comments. We ask that your Board consider these comments for incorporation and revision to 180/400 Aquifer Subbasin GSP.

Thank you for your consideration,

Nancy Isakson, President

The Nature Conservancy
Protecting nature. Preserving life.

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November 25, 2019

Gary Petersen, General Manager
Salinas Valley Basin Groundwater Sustainability Agency
1441 Schilling Place
Salinas, CA 93901

Submitted via email to: *peterseng@svbgsa.org*

Re: 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan (GSP)

Dear Mr. Gary Petersen,

The Nature Conservancy (TNC) appreciates the opportunity to comment on the 180/400-Foot Aquifer Subbasin GSP, within the Salinas Valley Basin, that is being prepared under the Sustainable Groundwater Management Act (SGMA). It is understood that the Salinas Valley-Wide Integrated Groundwater Sustainability Plan (ISP) is intended to be an overarching document for the Salinas Valley Basin, which includes the 180/400-Foot Aquifer Subbasin. Please note that we have previously submitted comments to Chapter 4 of the GSP on February 7, 2019, comments to Chapter 5 of the GSP and Chapters 1 through 4 of the ISP on April 11, 2019, comments to Chapters 7 and 8 of the GSP on June 18, 2019, and comments to Chapter 11 of the GSP on October 11, 2019.

TNC as a Stakeholder Representative for the Environment

TNC is a global, nonprofit organization dedicated to conserving the lands and waters on which all life depends. We seek to achieve our mission through science-based planning and implementation of conservation strategies. For decades, we have dedicated resources to establishing diverse partnerships and developing foundational science products for achieving positive outcomes for people and nature in California. TNC was part of a stakeholder group formed by the Water Foundation in early 2014 to develop recommendations for groundwater reform and actively worked to shape and pass SGMA.

Our reason for engaging is simple: California's freshwater biodiversity is highly imperiled. We have lost more than 90 percent of our native wetland and river habitats, leading to precipitous declines in native plants and the populations of animals that call these places home. These natural resources are intricately connected to California's economy providing direct benefits through industries such as fisheries, timber and hunting, as well as indirect benefits such as clean water supplies. SGMA must be successful for us to achieve a sustainable future, in which people and nature can thrive within the Salinas Valley Groundwater Authority region and California.

We believe that the success of SGMA depends on bringing the best available science to the table, engaging all stakeholders in robust dialog, providing strong incentives for beneficial outcomes and rigorous enforcement by the State of California.

Given our mission, we are particularly concerned about the inclusion of nature, as required, in GSPs. The Nature Conservancy has developed a suite of tools based on best available science to help GSAs, consultants, and stakeholders efficiently incorporate nature into GSPs. These tools and resources are available online at GroundwaterResourceHub.org. The Nature Conservancy's tools and resources are intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

Addressing Nature's Water Needs in GSPs

SGMA requires that all beneficial uses and users, including environmental users of groundwater, be considered in the development and implementation of GSPs (Water Code § 10723.2).

The GSP Regulations include specific requirements to identify and consider groundwater dependent ecosystems (23 CCR §354.16(g)) when determining whether groundwater conditions are having potential effects on beneficial uses and users. GSAs must also assess whether sustainable management criteria may cause adverse impacts to beneficial uses, which include environmental uses, such as plants and animals. In addition, monitoring networks should be designed to detect potential adverse impacts to beneficial uses due to groundwater. Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decision, and using data collected through monitoring to revise decisions in the future. Over time, GSPs should improve as data gaps are reduced and uncertainties addressed.

To help ensure that GSPs adequately address nature as required under SGMA, The Nature Conservancy has prepared a checklist (Attachment A) for GSAs and their consultants to use. The Nature Conservancy believes the following elements are foundational for 2020 GSP submittals. For detailed guidance on how to address the checklist items, please also see our publication, *GDEs under SGMA: Guidance for Preparing GSPs*[1].

1. Environmental Representation

SGMA requires that groundwater sustainability agencies (GSAs) consider the interests of all beneficial uses and users of groundwater. To meet this requirement, we recommend actively engaging environmental stakeholders by including environmental representation on the GSA board, technical advisory group, and/or working groups. This could include local staff from state and federal resource agencies, nonprofit organizations and other environmental interests. By engaging these stakeholders, GSAs will benefit from access to additional data and resources, as well as a more robust and inclusive GSP.

2. Basin GDE and ISW Maps

SGMA requires that groundwater dependent ecosystems (GDEs) and interconnected surface waters (ISWs) be identified in the GSP. We recommend using the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) provided online[2] by the Department of Water Resources (DWR) as a starting point for the GDE map. The NC Dataset was developed through a collaboration between DWR, the Department of Fish and Wildlife and TNC.

[1] GDEs under SGMA: Guidance for Preparing GSPs is available at: https://groundwaterresourcehub.org/public/uploads/pdfs/GWR_Hub_GDE_Guidance_Doc_2-1-18.pdf

[2] The Department of Water Resources' Natural Communities Commonly Associated with Groundwater dataset is available at: https://gis.water.ca.gov/app/NCDatasetViewer/

3. Potential Effects on Environmental Beneficial Users

SGMA requires that potential effects on GDEs and environmental surface water users be described when defining undesirable results. In addition to identifying GDEs in the basin, The Nature Conservancy recommends identifying beneficial users of surface water, which include environmental users. This is a critical step, as it is impossible to define "significant and unreasonable adverse impacts" without knowing *what* is being impacted. For your convenience, we've provided a list of freshwater species within the boundary of the 180/400-Foot Aquifer Subbasin in Attachment C. Our hope is that this information will help your GSA better evaluate the impacts of groundwater management on environmental beneficial users of surface water. We recommend that after identifying which freshwater species exist in your basin, especially federal and state listed species, that you contact staff at the Department of Fish and Wildlife (DFW), United States Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Services (NMFS) to obtain their input on the groundwater and surface water needs of the organisms on the GSA's freshwater species list. Because effects to plants and animals are difficult and sometimes impossible to reverse, we recommend erring on the side of caution to preserve sufficient groundwater conditions to sustain GDEs and ISWs.

4. Biological and Hydrological Monitoring

If sufficient hydrological and biological data in and around GDEs is not available in time for the 2020/2022 plan, data gaps should be identified along with actions to reconcile the gaps in the monitoring network.

TNC has reviewed the status of our previous comments as appearing in Appendix 11E: Public Review Comments, provided online. Where our comments have not been adequately addressed in the current draft of the GSP, they are repeated in this letter. Additionally, we have the following global statements on critical issues that we have found in the responses to our previous comments in Appendix 11E:

- Appendix 11E states (Responses to Comments 7-26, 8-124, 8-132): "*The shallow aquifer is not considered a principal aquifer*." The GSP states (p. 4-17) that some domestic wells draw water from the shallow aquifer, and that groundwater in these sediments is hydraulically connected to the Salinas River. TNC disagrees with the statement that the shallow aquifer is not a principal aquifer; it is indeed a principal aquifer that needs Sustainable Management Criteria established to prevent adverse impacts to GDEs and surface water beneficial users. Additionally, SGMA defines principal aquifers as "aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems" [23 CCR § 351 (aa)].
- Appendix 11E states (Responses to Comments 8-131, 8-133, 8-134): "*The GSP does not protect species; it assesses whether the depletion of surface water due to pumping is significant or unreasonable*." However, the Water Code § 10723.2 states: "The groundwater sustainability agency shall consider the interests of <u>all</u> (emphasis added) beneficial uses and users of groundwater, as well as those responsible for implementing groundwater sustainability plans. These interests include, but are not limited to [..] (e) Environmental users of groundwater; and (f) Surface water users, if there is a hydrologic connection between surface and groundwater bodies. Identifying beneficial users of surface water, which include environmental users, is a critical step in defining "significant and unreasonable adverse impacts". Without this it is impossible

to know what is being impacted. In the GSP, please propose Sustainable Management Criteria that assure protection of GDEs and instream environmental beneficial users.

TNC considers the 180/400-Foot Aquifer Subbasin Draft GSP to be inadequate under SGMA since key environmental beneficial uses and users are not adequately identified and considered. In particular, ISWs and GDEs are not adequately identified and evaluated for ecological importance or adequately considered in the basin's sustainable management criteria. Please present a thorough analysis of the identification and evaluation of ISWs and GDEs in subsequent drafts of the GSP. Once GDEs are identified, they must be considered when defining undesirable results and evaluated for further monitoring needs.

Our comments related to the 180/400-Foot Aquifer Subbasin GSP are provided in detail in Attachment B and are in reference to the numbered items in Attachment A. Attachment D describes six best practices that GSAs and their consultants can apply when using local groundwater data to confirm a connection to groundwater for DWR's Natural Communities Commonly Associated with Groundwater Dataset[2]. Attachment E provides an overview of a new, free online tool that allows GSAs to assess changes in groundwater-dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data.

Thank you for fully considering our comments as you develop your GSP.

Best Regards,

Sandi Matsumoto
Associate Director, California Water Program
The Nature Conservancy

Attachment A
Considering Nature under SGMA: A Checklist

The Nature Conservancy is neither dispensing legal advice nor warranting any outcome that could result from the use of this checklist. Following this checklist does not guarantee approval of a GSP or compliance with SGMA, both of which will be determined by DWR and the State Water Resources Control Board.

GSP Plan Element*		GDE Inclusion in GSPs: Identification and Consideration Elements		Check Box
Admin Info	2.1.5 Notice & Communication *23 CCR §354.10*	Description of the types of environmental beneficial uses of groundwater that exist within GDEs and a description of how environmental stakeholders were engaged throughout the development of the GSP.		1
Planning Framework	2.1.2 to 2.1.4 Description of Plan Area *23 CCR §354.8*	Description of jurisdictional boundaries, existing land use designations, water use management and monitoring programs; general plans and other land use plans relevant to GDEs and their relationship to the GSP.		2
		Description of instream flow requirements, threatened and endangered species habitat, critical habitat, and protected areas.		3
		Summary of process for permitting new or replacement wells for the basin, and how the process incorporates protection of GDEs		4
Basin Setting	2.2.1 Hydrogeologic Conceptual Model *23 CCR §354.14*	Basin Bottom Boundary: Is the bottom of the basin defined as at least as deep as the deepest groundwater extractions?		5
		Principal aquifers and aquitards: Are shallow aquifers adequately described, so that interconnections with surface water and vertical groundwater gradients with other aquifers can be characterized?		6
		Basin cross sections: Do cross-sections illustrate the relationships between GDEs, surface waters and principal aquifers?		7
	2.2.2 Current & Historical Groundwater Conditions *23 CCR §354.16*	Interconnected surface waters:		8
		Interconnected surface water maps for the basin with gaining and losing reaches defined (included as a figure in GSP & submitted as a shapefile on SGMA portal).		9
		Estimates of current and historical surface water depletions for interconnected surface waters quantified and described by reach, season, and water year type.		10
		Basin GDE map included (as figure in text & submitted as a shapefile on SGMA Portal).		11
		If NC Dataset *was* used:	Basin GDE map denotes which polygons were kept, removed, and added from NC Dataset (Worksheet 1, can be attached in GSP section 6.0).	12

			The basin's GDE shapefile, which is submitted via the SGMA Portal, includes two new fields in its attribute table denoting: 1) which polygons were kept/removed/added, and 2) the change reason (e.g., why polygons were removed).	13
			GDEs polygons are consolidated into larger units and named for easier identification throughout GSP.	14
		If NC Dataset *was not* used:	Description of why NC dataset was not used, and how an alternative dataset and/or mapping approach used is best available information.	15
		Description of GDEs included:		16
		Historical and current groundwater conditions and variability are described in each GDE unit.		17
		Historical and current ecological condition and variability are described in each GDE unit and adequate to describe baseline as of 2015.		18
		Each GDE unit has been characterized as having high, moderate, or low ecological value.		19
		Inventory of species, habitats, and protected lands for each GDE unit with ecological importance (Worksheet 2, can be attached in GSP section 6.0).		20
	2.2.3 Water Budget *23 CCR §354.18*	Groundwater inputs and outputs (e.g., evapotranspiration) of native vegetation and managed wetlands are included in the basin's historical and current water budget.		21
		Potential impacts to groundwater conditions due to land use changes, climate change, and population growth to GDEs and aquatic ecosystems are considered in the projected water budget.		22
Sustainable Management Criteria	3.1 Sustainability Goal *23 CCR §354.24*	Environmental stakeholders/representatives were consulted.		23
		Sustainability goal mentions GDEs or species and habitats that are of particular concern or interest.		24
		Sustainability goal mentions whether the intention is to address pre-SGMA impacts, maintain or improve conditions within GDEs or species and habitats that are of particular concern or interest.		25
	3.2 Measurable Objectives *23 CCR §354.30*	Description of how GDEs were considered and whether the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment, beneficial uses and managed areas.		26
	3.3 Minimum Thresholds *23 CCR §354.28*	Description of how GDEs and environmental uses of surface water were considered when setting minimum thresholds for relevant sustainability indicators:		27
		Will adverse impacts to GDEs and/or aquatic ecosystems dependent on interconnected surface waters (beneficial user of surface water) be avoided with the selected minimum thresholds?		28
		Are there any differences between the selected minimum threshold and state, federal, or local standards relevant to the species or habitats residing in GDEs or aquatic ecosystems dependent on interconnected surface waters?		29
	3.4 Undesirable Results *23 CCR §354.26*	For GDEs, hydrological data are compiled and synthesized for each GDE unit:		30
		If hydrological data *are available* within/nearby the GDE	Hydrological datasets are plotted and provided for each GDE unit (Worksheet 3, can be attached in GSP Section 6.0).	31
			Baseline period in the hydrologic data is defined.	32
			GDE unit is classified as having high, moderate, or low susceptibility to changes in groundwater.	33

			Cause-and-effect relationships between groundwater changes and GDEs are explored.	34
		If hydrological data *are not available* within/nearby the GDE	Data gaps/insufficiencies are described.	35
			Plans to reconcile data gaps in the monitoring network are stated.	36
		For GDEs, biological data are compiled and synthesized for each GDE unit:		37
		Biological datasets are plotted and provided for each GDE unit, and provide baseline conditions for assessment of trends and variability.		38
		Data gaps/insufficiencies are described.		39
		Plans to reconcile data gaps in the monitoring network are stated.		40
		Description of potential effects on GDEs, land uses and property interests:		41
		Cause-and-effect relationships between GDE and groundwater conditions are described.		42
		Impacts to GDEs that are considered to be "significant and unreasonable" are described.		43
		Known hydrological thresholds or triggers (e.g., instream flow criteria, groundwater depths, water quality parameters) for significant impacts to relevant species or ecological communities are reported.		44
		Land uses include and consider recreational uses (e.g., fishing/hunting, hiking, boating).		45
		Property interests include and consider privately and publicly protected conservation lands and opens spaces, including wildlife refuges, parks, and natural preserves.		46
Sustainable Management Criteria	3.5 Monitoring Network *23 CCR §354.34*	Description of whether hydrological data are spatially and temporally sufficient to monitor groundwater conditions for each GDE unit.		47
		Description of how hydrological data gaps and insufficiencies will be reconciled in the monitoring network.		48
		Description of how impacts to GDEs and environmental surface water users, as detected by biological responses, will be monitored and which GDE monitoring methods will be used in conjunction with hydrologic data to evaluate cause-and-effect relationships with groundwater conditions.		49
Projects & Mgmt Actions	4.0. Projects & Mgmt Actions to Achieve Sustainability Goal *23 CCR §354.44*	Description of how GDEs will benefit from relevant project or management actions.		50
		Description of how projects and management actions will be evaluated to assess whether adverse impacts to the GDE will be mitigated or prevented.		51

* In reference to DWR's GSP annotated outline guidance document, available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/GD_GSP_Outline_Final_2016-12-23.pdf

Attachment B

TNC Evaluation of the 180/400-Foot Aquifer Subbasin Draft GSP

A complete draft of the 180/400-Foot Aquifer Subbasin GSP has been provided for public review and comment. Please note that we have previously submitted comments to Chapter 4 of the GSP in a letter dated February 7, 2019, comments to Chapter 5 of the GSP and Chapters 1 through 4 of the ISP in a letter dated April 11, 2019, comments to Chapters 7 and 8 of the GSP in a letter dated June 18, 2019, and comments to Chapter 11 of the GSP in a letter dated October 11, 2019. Where our comments have not been adequately addressed in the current draft of the GSP, they are repeated in this letter with the comment number from Appendix 11E highlighted in blue. Comments are provided in the order of the checklist items included as Attachment A.

Checklist Item 1 - Notice & Communication (23 CCR §354.10)

[Chapter 11. Outreach and Communication]

- The Joint Exercise of Powers Agreement (Appendix 11D) lists the Board of Directors that includes a Director representing environmental users and interests. This is the only mention of environmental users in Chapter 11. No details are given as to the types and locations of environmental uses and habitats supported, or the designated beneficial environmental uses of surface waters that may be affected by groundwater extraction in the Subbasin. To identify environmental users, please refer to the following:
    - Natural Communities Commonly Associated with Groundwater dataset (NC Dataset) – (https://gis.water.ca.gov/app/NCDatasetViewer/) which identifies the potential presence of groundwater dependent ecosystems in this basin.
    - The list of freshwater species located in the 180/400-Foot Aquifer Subbasin in Attachment C of this letter. Please take particular note of the species with protected status.
    - Lands that are protected as open space preserves, habitat reserves, fisheries, wildlife refuges, conservation areas or other lands protected in perpetuity and supported by groundwater or ISWs should be identified and acknowledged.
- Please refer to the Critical Species Lookbook[3] to review and discuss the potential groundwater reliance of critical species in the basin. Please include a discussion regarding the management of critical habitat for these aquatic species and its relationship to the GSP.

Checklist Items 2 to 4 - Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8)

[Section 3.10 Land Use Plans (p. 3-39 to 3-50)]

[3] Available online at: https://groundwaterresourcehub.org/sgma-tools/the-critical-species-lookbook/

- This section discusses the city (Salinas, Gonzales, and Marina) and county (Monterey) general plans covering areas within the Subbasin. Please include a discussion of how implementation of the GSP may affect and be coordinated with General Plan policies and procedures regarding the protection of wetlands, aquatic resources and other GDEs and ISWs.
- This section should identify Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) within the Subbasin and if they are associated with critical, GDE or ISW habitats. Please identify all relevant HCPs and NCCPs within the Subbasin and address how GSP implementation will coordinate with the goals of these HCPs or NCCPs.
- Please refer to the Critical Species Lookbook[4] to review and discuss the potential groundwater reliance of critical species in the basin. Please include a discussion regarding the management of critical habitat for these aquatic species and its relationship to the GSP.

[Section 3.3 Jurisdictional Areas (p. 3-13 to 3-15)]

- The GSP describes several wildlife refuges, reserves, and conservation areas under Federal and State Jurisdiction, however there is no discussion of any in-stream flow requirements or other protections in place for species in these critical areas. Please include a discussion regarding the management of critical habitat for aquatic species and its relationship to the GSP, including discussion of any in-stream flow requirements.

[Section 3.10.5 Well Permitting (p. 3-47)]

- The GSP includes a brief discussion of well permitting policies governed by Monterey County. Please include a discussion of how future well permitting will be coordinated with the GSP to assure achievement of the Plan's sustainability goals.
- The State Third Appellate District recently found that counties have a responsibility to consider the potential impacts of groundwater withdrawals on public trust resources when permitting new wells near streams with public trust uses (ELF v. SWRCB and Siskiyou County, No. C083239). Compliance of well permitting programs with this requirement should be stated in the GSP.

<u>Checklist Items 5, 6, and 7 – Hydrogeologic Conceptual Model (23 CCR §354.14)</u>

[Section 4.3.2 Vertical Subbasin Boundaries (p. 4-10)]

- [Comment 4-14: GSP text changed but theme of original comment still holds; response does not adequately address the comment.] The SVBGSA has adopted the base of the aquifer defined by the USGS (Durbin et al., 1978). However, as noted on page 9 in DWR's Hydrogeologic Conceptual Model BMP[5] "the definable bottom of the

[4] Available online at: https://groundwaterresourcehub.org/sgma-tools/the-critical-species-lookbook/
[5] Available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_HCM_Final_2016-12-23.pdf, accessed Feb 6, 2019.

basin should be at least as deep as the deepest groundwater extractions". Thus, groundwater extraction well depth data, as part of the best available data available to the GSA, should also be included in the determination of the basin bottom. This will prevent extractors with wells deeper than the basin boundary from claiming exemption of SGMA due to their well residing outside the vertical extent of the basin boundary.

[Section 4.4 Subbasin Hydrogeology (p. 4-13)]

- Regional basin-wide geologic cross sections are provided in Figures 4-6 through 4-8 (p. 4-14 to 4-16). These cross-sections do not include a graphical representation of the manner in which the shallow aquifer may interact with ISWs or GDEs that would allow the reader to understand this topic. Please include example near-surface cross section details that depict the conceptual understanding of shallow groundwater and stream interactions at different locations.

[Section 4.4.1 Principal Aquifers and Aquitards (p. 4-17)]

- SGMA defines principal aquifers as "aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems" [23 CCR § 351 (aa)]. The GSP states (p. 4-17): "The shallowest water-bearing sediments are thin, laterally discontinuous, and do not constitute a significant source of water for the Subbasin. These shallow sediments are therefore not considered a principal aquifer." The text goes on to state that some domestic wells draw water from this zone, and that groundwater in these sediments is hydraulically connected to the Salinas River, both statements further support the claim that the shallow aquifer is a principal aquifer. TNC disagrees with the statement that the shallow aquifer is not a principal aquifer; it is indeed a principal aquifer that needs Sustainable Management Criteria established to prevent adverse impacts to GDEs and surface water beneficial users.

<u>Checklist Items 8, 9, and 10 – Interconnected Surface Waters (ISW) (23 CCR §354.16)</u>

[5.6.1 Data Sources for Interconnected Surface Water (5-54)]

- [Comment 5-36: Response does not adequately address the comment; no changes to GSP text were made.] While groundwater in the 180- and 400-foot Aquifers is generally not considered to be hydraulically connected to the Salinas River or its tributaries, the Shallow Aquifer (which resides above the Salinas Valley Aquitard) likely does. To address this, interconnections of surface water with groundwater in the Shallow Aquifer should be evaluated in this section of the GSP, since the Shallow Aquifer is within the 180/400-Foot Aquifer Subbasin. Where data gaps exist, cite them here or refer to a subsequent section of the GSP. Cite cross-sections that relay the conceptual understanding of the shallow aquifer interaction with surface water. Groundwater in the shallow aquifer is also likely to be supporting groundwater dependent ecosystems and interacting with the Salinas River in this part of the

basin. Basins with a stacked series of aquifers may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. If pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, that can support springs, surface water, and groundwater dependent ecosystems. This is because the goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits, and while groundwater pumping may not be currently occurring in a shallow aquifer, it could be in the future.

[Section 5.6.2 Analysis of Surface Water and Groundwater Interconnection (p. 5-56)]

- [Comment 5-37: Response does not adequately address the comment; no changes to GSP text were made.] The 180-Foot Aquifer and the 400-Foot Aquifers are confined units, thus comparing groundwater levels of <20 feet below the ground surface with wells screened within a confined aquifer is an incorrect comparison. This is because the potentiometric surface of a confined aquifer cannot reflect the position of the true water table. Comparing groundwater levels from the shallow (unconfined) aquifer (that exists above the Salinas Valley Aquitard) with the ground surface is a more appropriate approach for identifying ISWs in the basin.
- [Comment 5-38 and Comment 5-39: Groundwater model noted in GSP text; data gaps not cited.] Mapping ISW locations would be best done using contours of depth to groundwater measured from multiple points in time (different seasons and water year types) rather than only from Fall 2013. Groundwater conditions evaluated across the range of seasonal and interannual time frames provides a more representative view of ISWs. Relying solely on any single point in time (in this case Fall 2013) to characterize groundwater conditions (e.g., depth to groundwater) is incomplete because data from one time point fails to capture the seasonal and interannual variability (i.e., wet, average, dry, and drought years) that is characteristic of California's climate. If data gaps exist in groundwater level contour data over time, these data gaps should be discussed in the ISP Section 5.5 (Salinas Valley Basin ISP) and GSP Section 5.6 (180/400-Foot Aquifer GSP Draft) and reconciled in the Monitoring Network section, so that ISW maps can be improved in future GSPs.
- [Comment 5-40: Response does not adequately address the comment and no changes to GSP text made.] The groundwater levels shown on Figure 5-35 are irrelevant to the discussion of ISWs since they do not map the shallow water table. The use of piezometric head from confined aquifers should be eliminated from these ISW mapping efforts, since they do not adequately reflect the position of the true water table (see last paragraph on p. 38 of Salinas Valley Basin ISP).
- [Comment 5-41: Response does not adequately address the comment and no changes to GSP text made.] It is unclear on Figure 5-35 whether missing groundwater levels along certain reaches of the Salinas River are due to groundwater levels >20 feet bgs or due to data gaps in groundwater levels. Mapping the position of wells used for the interpolation of groundwater elevation data used to map

groundwater level contours near surface water would help provide further clarification.

- [Comment 5-42: Response does not adequately address the comment and no changes to GSP text made.] Please elaborate on how depth to groundwater contours were developed for Figure 5-19 of the Salinas Valley Basin ISP and on Figure 5-35 of the GSP. More accurate depth to groundwater maps around surface water features can be obtained by first interpolating groundwater elevations around surface water features and then subtracting groundwater elevations from land surface elevation data (obtained via digital elevation maps (DEM)[6]) for more accurate ISW mapping.
- [Comment 5-43: Response does not adequately address the comment and no changes to GSP text made.] We recommend mapping the gaining and losing reaches onto Figure 5-19 (Salinas Valley Basin ISP) using the data from Figure 5-23 (Salinas Valley Basin ISP). If this is not possible due to insufficient data, then as with the first bullet above, the data gaps would be best addressed by the Monitoring Network.

<u>Checklist Items 11 to 15, Identifying and Mapping GDEs (23 CCR §354.16)</u>

[4.4.4 Natural Discharge Areas (p. 4-23)]
[Appendix 4A Methodology for Identifying Potential Groundwater Dependent Ecosystems]

- Please present or refer to a depth to groundwater map in this section. Refer to our comments on Section 5.6 Interconnected Surface Water above. Please ensure that only wells screened in the shallow unconfined aquifer are used to develop the depth to groundwater maps. Using "depth to groundwater" measurements from confined aquifers is mapping piezometric head of the confined aquifer and not detecting groundwater conditions in the unconfined aquifer that is supporting the ecosystem. The GSP refers to data gaps in water levels in the shallow unconfined aquifer. If there are insufficient groundwater level data in the shallow aquifer, then the GDE polygons in these areas should be included as GDEs in the GSP ***<u>until</u>*** data gaps are reconciled in the monitoring network.
- Please note the following best practices for depth to groundwater contour maps:
    - Are the wells used for interpolating depth to groundwater sufficiently close (<5km) to NC Dataset polygons to reflect local conditions relevant to ecosystems?
    - Are the wells used for interpolating depth to groundwater screened within the surficial unconfined aquifer and capable of measuring the true water table (see comment b above)?
    - Is depth to groundwater contoured using groundwater elevations at monitoring wells to get groundwater elevation contours across the landscape? This layer can then be subtracted from land surface elevations from a Digital Elevation Model (DEM) to estimate depth-to-groundwater contours across the

[6] Available at: https://catalog.data.gov/dataset/usgs-national-elevation-dataset-ned-1-meter-downloadable-data-collection-from-the-national-map-

landscape. This will provide much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found. Depth to groundwater contours developed from depth to groundwater measurements at wells assumes that the land surface is constant, which is a poor assumption to make. It is better to assume that water surface elevations are constant in between wells, and then calculate depth to groundwater using a DEM of the land surface to contour depth to groundwater.

- Please clarify how the light blue shaded area shown in Figure 4A-3 (depth to water < 30 ft south of Chualar) is used for the GDE analysis. The figure implies an incorrect interpretation of the GDE Guidance. Were GDEs in the Subbasin identified only in the overlap of areas south of Chualar *and* areas with depth to water < 30 ft? As the GSP states correctly (Appendix 4A p. 3), if any of the three criteria from the GDE Guidance Document are true, then you likely have a GDE. The figure implies that potential GDEs were only identified in the Quaternary Alluvium south of Chualar, disregarding potential GDEs in the rest of the Subbasin (in other words, the figure implies that GDEs were identified in areas where Criteria 1 AND 2 hold true, not where Criteria 1 OR 2 hold true). This is an incorrect interpretation of the GDE Guidance. As stated above, if any of the three criteria from the GDE Guidance Document are true, then you likely have a GDE.
- Please use care when considering rooting depths of vegetation. Please list the species in each GDE, and whether the GDE was eliminated or retained based on the 30-foot standard, and provide evidence for the decision. While Valley Oak (Quercus lobata) have been observed to have a max rooting depth of ~24 feet (https://groundwaterresourcehub.org/gde-tools/gde-rooting-depths-database-for-gdes/), rooting depths are likely to spatially vary based on the local hydrologic conditions available to the plant. Also, max rooting depths do not take capillary action into consideration, which will vary with soil type and is an important consideration since woody phreatophytes generally do not prefer to have their roots submerged in groundwater for extended periods of time, and hence can access groundwater at deeper depths.
- While depth to groundwater levels within 30 feet are generally accepted as being a proxy for confirming that polygons in the NC dataset are connected to groundwater, it is highly advised that seasonal and interannual groundwater fluctuations in the groundwater regime are taken into consideration. Utilizing groundwater data from one point in time (e.g., Fall 2013) can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Based on a study we recently submitted to Frontiers in Environmental Science Journal, we've observed riparian forests along the Cosumnes River to experience a range in groundwater levels between 1.5 and 75 feet over seasonal and interannual timescales. Seasonal fluctuations in the regional water table can support perched groundwater near an intermittent river that seasonally runs dry due to large seasonal fluctuations in the regional water table. While perched groundwater itself cannot directly be managed due to its position in the vadose zone, the water table position within the regional aquifer (via pumping rate restrictions, restricted pumping at certain depths, restricted pumping around GDEs, well density rules) and its interactions with surface

water (e.g., timing and duration) can be managed to prevent adverse impacts to ecosystems due to changes in groundwater quality and quantity under SGMA. We highly recommend using depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. Please refer to Attachment D of this letter for best practices for using local groundwater data to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer. If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP ***until*** data gaps are reconciled in the monitoring network.

- Decisions to remove, keep, or add polygons from the NC dataset into a basin GDE map should be based on best available science in a manner that promotes transparency and accountability with stakeholders. Any polygons that are removed, added, or kept should be inventoried in the submitted shapefile to DWR, and mapped in the plan. We recommend revising Figure 4-10 to reflect this change.

Checklist Items 16 to 20, Describing GDEs (23 CCR §354.16)

- [Comment 4-13: The response states that assessment of potential GDEs followed the approach developed by TNC; this is not the case.] Not all GDEs are created equal. Some GDEs may contain legally protected species or ecologically rich communities, whereas other GDEs may be highly degraded with little conservation value. Identifying an ecological value of each GDE can help prioritize limited resources when considering GDEs as well as prioritizing legally protected species or habitat that may need special consideration when setting sustainable management criteria. Please include a description of the types of species (protected status, native versus non-native), habitat, and environmental beneficial uses (see Worksheet 2, p.74 of GDE Guidance Document) and assign an ecological value to the GDEs.
- Are any of the wells from the MCWRA program (described in Section 5.1.1 of the Salinas Valley Basin ISP) close enough (<1 km) to GDEs and screened in the shallow portions of the aquifer to characterize historical and current groundwater conditions for each GDE? If data gaps exist, they should be discussed in Chapter 5.
- The GDE Pulse web application developed by The Nature Conservancy provides easy access to 35 years of satellite data to view trends of vegetation metrics, groundwater depth (where available), and precipitation data. This satellite imagery can be used to observe trends for NC dataset polygons within the 180-400 Foot Aquifer area (Figure 1). Over the past 10 years (2009-2018), NC dataset vegetation polygons have experienced adverse impacts to vegetation growth and moisture which are correlated to declines in groundwater levels (e.g., as indicated by wells GZWA21202, CHEA21208).

Figure 1. GDE Pulse web viewer screenshots of satellite-based trends of vegetation growth (NDVI), moisture (NDMI), shallow groundwater levels, and precipitation for selected vegetation from the NC dataset in the 180-400 Foot Aquifer area.

<u>Checklist Items 23 to 25 – Sustainability Goal (23 CCR §354.24)</u>

[Section 8.2 Sustainability Goal (p. 8-3)]

- [Comment 8-122: Response does not adequately address the comment and no changes to GSP text made.] In a future draft of the document, please provide more details on how the needs of environmental beneficial users (GDE and ISW ecosystems) will be balanced with other water users in the basin. The sustainability goal should describe how projects and actions will balance environmental water needs and avoid adverse impacts to GDEs and ISWs, how the basin will be operated to maintain or improve these aquatic ecosystems, and an explanation of how the sustainability goal will be achieved within 20 years of implementation of the GSP. For more case studies on how to incorporate environmental benefits into groundwater projects, please visit our website: https://groundwaterresourcehub.org/case-studies/recharge-case-studies/

[Section 8.3 General Process for Establishing Sustainable Management Criteria (p. 8-5)]

- [Comment 8-123: Response does not adequately address the comment and no changes to GSP text made.] This section broadly lists how the chapter was developed, but "publicly available information" and specific stakeholders are not clearly defined or cross referenced to other sections. Please provide or cross-reference this information, including reference to publicly available

information regarding GDEs that was researched and how environmental stakeholders were engaged.

Checklist Item 26 – Measurable Objectives (23 CCR §354.30), and Checklist Items 27-29 – Minimum Thresholds (23 CCR §354.28)

[Section 8.11 Depletion of Interconnected Surface Water SMC (p. 8-61)]

- This section states that …"*shallow sediments above the confined 180-Foot aquifer … are connected to the surface water system. However, there almost no groundwater pumping in this area and it is not identified as a defined aquifer. The Salinas River tends to be a losing river where surface water infiltrates into the unconfined zone above the 180-Foot Aquifer. This occurs primarily in the dry season, and the Salinas River is largely dependent on the San Antonio and Nacimiento Reservoir releases for its continuous flow rate.*" Groundwater extraction from the 180-400 Foot Aquifer System has the potential to locally affect conditions in the overlying Shallow Aquifer and deplete interconnected surface water, potentially causing adverse impacts to the environmental beneficial users in the basin. Please integrate the following information into this section of the GSP to appropriately establish SMC for ISWs in a way that achieves the basin's sustainability goal to balance *all* beneficial users of the basin:
    - [Comment 8-124: Response does not adequately address the comment and no changes to GSP text made. See global comment on principal aquifer.] The shallow aquifer is indeed a principal aquifer that needs SMC established to prevent adverse impacts to surface water beneficial users. SGMA defines principal aquifers as "aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems" [23 CCR § 351 (aa)]. In addition, more nested/clustered wells are needed in the 180-400 Foot Aquifer area to determine vertical groundwater gradients and whether pumping in the deeper aquifers are causing groundwater levels to lower in the shallow aquifer and deplete surface water.
    - [Comment 8-125: Response does not adequately address the comment and no changes to GSP text made.] As previously mentioned in our April 11 letter regarding Chapter 5 of the Draft GSP, the shallow aquifer in the 180/400 Foot Aquifer and Monterey Subbasins are likely to be supporting GDEs and interconnecting with the Salinas River. Thus, pumping in *deeper aquifers* can still cause adverse impacts to environmental beneficial users reliant on shallow groundwater. Even if pumping is not occurring in shallow groundwater aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, especially those that support springs, surface water and GDEs for current and future uses.
    - [Comment 8-126: Response does not adequately address the comment and no changes to GSP text made.] Several published references indicate that the 180-Foot aquifer is in direct hydraulic communication with the overlying Dune Sand Aquifer or Shallow Alluvial Aquifer where the Salinas Valley Aquitard is

thin or absent.[7] These same references indicate aquitards within the 180/400 Foot aquifer system are known to be locally discontinuous. In addition, the fact that the Salinas is a losing stream and that 67,000 acre feet are recharged from the stream to the groundwater basin in an average year strongly suggests that the shallow aquifer is hydraulically connected to the underlying pumped aquifer systems.

[Section 8.10.2 Minimum Thresholds; Section 8.11.1 Locally Defined Significant and Unreasonable Conditions; and 8.11.2.1 Information and Methodology for Establishing Depletion of Interconnected Surface Minimum Thresholds (p. 8-56 to 8-64)]

- [Comment 8-128: Response states that the list of freshwater species will be included. TNC comment retained for completeness.] These sections explain that the definition of Significant and Unreasonable Conditions, and establishment of Minimum Thresholds and Measurable Objectives is based on considerations related to flows in the Salinas River and specifically the maintenance of minimum flows for the protection of aquatic species and water rights. Steelhead are not the only environmental user that need consideration. A list of freshwater aquatic species identified in the 180-/400-Foot Aquifer Subbasin is included for your reference as Attachment C. It appears that GDEs have been omitted, as they are not mentioned or considered. We believe this to be a deficiency, as the Department of Water Resource's NC Dataset Viewer indicates a variety of potential GDE habitats are located in the subbasin along the Salinas River and its tributaries, and not just within the stream. Furthermore, TNC's GDE Pulse Tool (Attachment E) shows declining ecosystem conditions along the Salinas River between 2014 and 2018, including the period *after* the recent drought (and *after* the baseline period specified in SGMA). NDVI (which represents vegetation growth) and NDMI (which represents vegetation moisture) coincide with a decline in groundwater levels for NC dataset polygons along the Salinas River west of Salinas (Figure 1). Please include a discussion of how baseline conditions, current trends and potential adverse impacts to GDEs were considered in the definition of significant and unreasonable conditions and establishment of Minimum Thresholds and Measurable Objectives. A discussion of applicable state, federal and local standards, policies and guidelines applicable to the GDE species and habitats identified should also be provided. The section should explain how, in light of the nature and condition of the GDEs, these Sustainable Management Criteria will prevent undesirable results related to damage to GDE resources. Any data gaps and the means to address them should be identified.

[Section 8.11.2.4 Effects on Beneficial Uses and Users (p. 8-67)]

- [Comment 8-129: Response does not adequately address the comment and no changes to GSP text made.] The listing of beneficial uses of interconnected surface

[7] See for example "Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA," by Knight et al., dated 15 March 2018, and Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, Special Reports Series 17-01," by Monterey County Water Resources Agency, dated October 2017.

water is limited to instream resources of the Salinas River alone. Please expand the listing of beneficial uses and users to address GDEs and ecosystems that are located adjacent to the river and its tributaries. A list of fresh water aquatic species identified in the 180-/400-Foot Aquifer Subbasin is included for your reference as Attachment C. The relationships between GDEs and ecosystems adjacent to the river and its tributaries, and their dependence on interactions with ISW and groundwater, are key to understanding the appropriateness of the subbasin-wide Minimum Threshold for interconnected surface water depletion being proposed for all ISWs. GDEs adjacent to the river should also be considered when establishing the SMC for Chronic Lowering of Groundwater levels. Adjacent or nearby GDEs could be significantly affected by small depletions depending on the depletion rate, their location and the existing surface and groundwater hydraulic gradients. However, even if they are not, these GDEs could still be affected by relatively modest groundwater level declines and likely still need to be considered separately according to groundwater levels under the Chronic Lowering of Groundwater SMC. The discussion of ecological land uses and users should include GDEs and ecosystems adjacent to the river and its tributaries, and their dependence on interactions with ISW and groundwater.

[Section 8.11.2.5 Relation to State, Federal, or Local Standards (p. 8-68)]

- [Comment 8-130: No change to GSP text; response says no need to list flow requirements in this document. TNC comment retained for completeness.] We recommend the streamflow requirements set by the NMFS should be explicitly stated or referenced in the GSP. In addition, any other state, federal or local standards, requirements and guidelines pertaining to the GDE habitats and species identified in the NC dataset or the list of species included in Attachment C should also be discussed or referenced.

[Section 8.11.2.6 Method for Quantitative Measurement of Minimum Threshold (p. 8-68)]

- [Comment 8-131: Response does not adequately address the comment and no significant changes to GSP text made. See global comment on GSP does not protect species.] Modeling/calculation of surface water depletion is the only proposed means to measure the minimum threshold for depletion of ISWs. Ecosystems sensitive to declines in groundwater levels and depletion of interconnected surface waters can experience significant declines in a short period of time depending on their hydraulic function, structure and the species involved. Use of a single calculated value in lieu of measured field data and linkages to other measured hydrogeologic data (such as groundwater levels) leaves a significant data gap that must be filled to assure protection of these resources. Model estimates should be monitored more closely than every five years in order to detect potentially significant effects in a time frame that allows for rapid response and alleviation of ecosystem decline. As discussed, the TNC's GDE Pulse Tool (Attachment E) already shows declining ecosystem conditions along the Salinas River between 2014 and 2018, including the period *after* the recent drought (and *after* the baseline period specified in the SGMA). Please discuss how the minimum threshold will be measured in

a way that assures protection of GDEs and instream environmental beneficial users.

[Section 8.6.2.1 Information and Methodology Used to Establish Minimum Thresholds and Measurable Objectives (p. 8-8 to 8-16)]

- [Comment 8-132: Response does not adequately address the comment and no changes to GSP text made. See global comment on principal aquifer.] This section describes the methodology used to establish Minimum Thresholds and Measurable Objectives for Chronic Groundwater Level Decline. Subbasin-wide groundwater levels experienced in 2015 are defined as the Minimum Threshold, and the Measurable Objective was established the subbasin-wide groundwater levels experienced in 1992, which were approximately 1 foot higher. Table 8-2 (p. 8-15) lists "Representative Monitoring Sites" or wells where groundwater levels will be measured and compared to the Measurable Objectives to assess compliance with the plan. It is noteworthy that the table does not include a *single* well completed in the Shallow Alluvial or Dune Sand Aquifer. Please identify the lack of shallow aquifer monitoring wells as a data gap, and cross reference your plans discussed in Chapter 7 to install a sufficient number of shallow monitoring wells to assess potential undesirable results to GDEs.

[Sections 8.6.2.3 Relationship between Individual Minimum Thresholds (p. 8-16 to 8-18) and Section 8.7.2.2 Relationship to Other Sustainability Indicators and (p. 8-28 to 8-29)]

- [Comment 8-133: Response does not adequately address the comment and no significant changes to GSP text made. See global comment on GSP does not protect species.] When groundwater levels are used as an objective, their relationship to other Sustainability Indicators must be discussed. These sections describe the relationship of chronic groundwater level declines and change in groundwater storage, which are measured using groundwater levels, to depletion of interconnected surface waters. The discussion is limited to the potential effect of groundwater levels on stream flows, and the potential effect of groundwater level declines on GDEs is not mentioned. The statement that *"minimum thresholds for reduction in groundwater storage is a single value for the entire Basin. Therefore, the concept of potential conflict between minimum thresholds is not applicable"* does not recognize the potential presence of ecosystems and GDEs that could be sensitive to relatively minor or localized declines in groundwater levels. The potential effect of groundwater level declines on GDEs depends on multiple conditions including the type of vegetation present and its ability to adapt to changing groundwater levels, the local interaction between surface and groundwater, and the nature of regional and local pumping stresses. Specification of a single groundwater level is likely insufficient to assure protection of GDEs in the absence of a monitoring program that encompasses both groundwater levels *and* related surface conditions (23 CCR §354.34 (a) and (b)), e.g., the health of the GDEs, for example, by using a tool similar to GDE Pulse. Please revise these sections to include a discussion regarding the effects of potential groundwater level declines on GDEs and

limitations of groundwater level monitoring alone to assess potential undesirable results to GDEs.

[Sections 8.6.2.5 Effects on Beneficial Users and Land Uses (p. 8-19 to 8-20) and 8.7.2.4 Effects on Beneficial Uses and Users (p. 8-30)]

- [Comment 8-134: Response does not adequately address the comment and no changes to GSP text made. See global comment on GSP does not protect species.] The discussion on ecological land uses and users does not include a discussion on GDEs, ISWs, or other uses that benefit aquatic and terrestrial wildlife, ecosystem processes or recreation. A list of fresh water aquatic species identified in the 180-/400-Foot Aquifer Subbasin is included for your reference as Attachment C. These sections imply that ecological land uses *may* benefit secondarily from the potential curtailment of agricultural and domestic land uses, but does not clearly state how these specialized aquatic ecosystems and related beneficial groundwater users would benefit or be protected from further decline or future damage. Please include a discussion explaining how GDEs, ISWs and recreational uses may benefit or be protected by implementation of the proposed Minimum Thresholds and Measurable Objectives. A list of freshwater aquatic species identified in the 180-/400-Foot Aquifer Subbasin is included for your reference as Attachment C.

[Section 8.6.4.3 Effects on Beneficial Users and Land Uses (p. 8-26)]

- [Comment 8-135: Comment noted but no change in GSP text.] This section discusses the effects on beneficial users and land uses of criteria used to define undesirable results related to chronic groundwater level decline. Fifteen percent of exceedances is considered reasonable if the wells are widespread through the subbasin. The section acknowledges that significant unreasonable effects could occur in a smaller clustered area due to localized pumping, but does not describe specifically how the proposed regional compliance strategy will identify or address a more localized occurrence. TNC's GDE Pulse Tool (Attachment E) shows declining ecosystem conditions along the Salinas River west of Salinas between 2014 and 2018. This section should be revised to use these data as a basis for addressing how the proposed compliance strategy will address significant and undesirable decline of GDEs at the spatial scale already observed in the GDE Pulse data.

Checklist Item 47-49 – Monitoring Network (23 CCR §352.34)

[Table 7.2 Existing 180/400-Foot Aquifer CASGEM Well Network (p. 7-4)]

- [Comment 7-26: Response does not adequately address the comment. See global comment on principal aquifer.]
  The wells listed in the table and proposed for monitoring do not include any wells completed in the Shallow Alluvial or Dune Sand Aquifers. As such, the proposed monitoring well network is inadequate to assess the potential effects of groundwater pumping and management on ISWs and GDEs. This fact should be

acknowledged with a cross reference to Section 7.2.4 which describes the proposed actions to remedy this situation.

[Section 7.7 Interconnected Surface Water Monitoring Network (p. 7-29)]

- [Comment 7-27: Response does not adequately address the comment.] This section states that *"… there is little to no interconnection between the 180-Foot, 400-Foot or Deep Aquifer and surface water in the 180/400-Foot Aquifer Subbasin."* However, the section further states that "the Salinas River is potentially in connection with groundwater in the shallow water bearing sediments" and Section 8.11.2 states that the average annual surface water depletion of the Salinas River is 67,000 acre feet. The GSP should explain how this amount of recharge can be redistributed through the aquifer system without any significant interconnection between the shallow and deeper aquifer systems. Furthermore, it is our understanding that the rate of surface water depletion from the Salinas River is in fact correlated historical groundwater level declines in the shallow and 180-Foot aquifer systems which have also resulted in seawater intrusion into the subbasin. The installation of two groundwater monitoring wells is insufficient to characterize surface-groundwater interactions across the entire subbasin. The BMP cited in section 7.2 instructs GSAs to "*Monitor surface water and groundwater … to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions."* Per the BMP, 13 to 14 monitoring wells would be more adequate to achieve this objective. Please revise this section to (1) reflect what is known and published regarding potential surface-groundwater interactions in the subbasin and related groundwater level and budget trends, (2) identify the existing data gaps, and (3) provide recommendations for an adequate number of monitoring wells to assess surface-groundwater interaction and shallow groundwater level trends.
- [Comment 7-28: Response does not adequately address the comment.] The GSP Regulations (23 CCR §354.34 (a) and (b)) require that monitoring must address trends in groundwater *and related surface conditions* (emphasis added). This includes "the tools and methods necessary to calculate depletions" and "[o]ther factors that may be necessary to identify adverse impacts on beneficial uses of the surface water," including impacts to GDEs. Please specify what other monitoring data and methods will be implemented to inform a determination whether significant and unreasonable impacts to GDEs are occurring, and explain how they will adequately meet the requirements of 23 CCR §354.34(c)(6) relative to GDEs and ISWs.

[Appendix 7B Monitoring Procedures]

- [Comment 7-29: Response states this will be added in a later version. TNC comment retained for completeness.] In Appendix 7B, please include monitoring protocols that meet the requirements of 23 CCR §354.34(c)(6) relative to GDEs and ISWs.

Checklist Items 50 and 51 – Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)

[Section 9.1 Introduction (p. 9-1)]

- The 180/400-Foot Aquifer Subbasin includes GDEs and ISWs that are beneficial uses and users of groundwater and may include potentially sensitive resources and protected lands. Environmental beneficial users and uses should be considered in establishing project priorities. In addition, consistent with existing grant and funding guidelines for SGMA-related work, consideration should be given to multi-benefit projects that can address water quantity as well as providing environmental benefits or benefits to disadvantaged communities. Please include environmental benefits and multiple benefits as criteria for assessing project priorities.

[Section 9.3 Management Actions (p. 9-9 to 9-21)]

- The 180/400-Foot Aquifer Subbasin GSP lists all Management Actions considered for the Subbasin in Appenidix 9A. Please consider adding Management Actions which include education and outreach for protection of GDEs and ISWs as well as specific management of these ecosystems and the species they provide for.

[Section 9.4 Projects (p. 9-21 to 9-84)]

- Section 9.4.1 lists "Direct Recharge through recharge basins or wells" as one of the four major types of projects that can be developed to supplement the 180/400-Foot Aquifer Subbasin's groundwater supplies or limit seawater intrusion. However, only one of this project type is presented, as an Alternative Project. The description of Measurable Objectives for Alternate Project 2 (Recharge Local Runoff from Eastside Range) only identifies benefits to groundwater elevation, groundwater storage, land subsidence, and groundwater quality. Because maintenance or recovery of groundwater levels or construction of recharge facilities may have potential environmental benefits, it would be advantageous to demonstrate multiple benefits from a funding and prioritization perspective. For Alternate Project 2, please consider stating how ISWs and GDEs will benefit or be protected, or what other environmental benefits will accrue.
- If ISWs and GDEs will not be adequately protected by the projects listed, please include and describe additional management actions and projects targeted for protecting ISWs and GDEs.
- Recharge basins, reservoirs and facilities for managed stormwater recharge projects can be designed as multi-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. In some cases, such multi-benefit projects and facilities have been incorporated into local Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs), more fully recognizing the value of the habitat that they provide and the species they support. For projects that construct recharge basins, please consider identifying if there is habitat value incorporated into the design and how the recharge basins will be managed to benefit environmental users. Grant and funding considerations for SGMA-related work may be given to multi-benefit

projects that can address water quantity as well as provide environmental benefits. Therefore, please include environmental benefits and multiple benefits as criteria for assessing project priorities.

- For examples of case studies on how to incorporate environmental benefits into groundwater projects, please visit our website: https://groundwaterresourcehub.org/case-studies/recharge-case-studies/

Attachment C

Freshwater Species Located in the 180/400-Foot Aquifer Subbasin

To assist in identifying the beneficial users of surface water necessary to assess the undesirable result "depletion of interconnected surface waters", Attachment C provides a list of freshwater species located in the 180/400-Foot Aquifer Subbasin in the Salinas Valley. To produce the freshwater species list, we used ArcGIS to select features within the California Freshwater Species Database version 2.0.9 within the GSA's boundary. This database contains information on ~4,000 vertebrates, macroinvertebrates and vascular plants that depend on fresh water for at least one stage of their life cycle. The methods used to compile the California Freshwater Species Database can be found in Howard et al. 2015[8]. The spatial database contains locality observations and/or distribution information from ~400 data sources. The database is housed in the California Department of Fish and Wildlife's BIOS[9] as well as on The Nature Conservancy's science website[10].

Scientific Name	Common Name	Legal Protected Status		
		Federal	State	Other
BIRDS				
Actitis macularius	Spotted Sandpiper			
Aechmophorus clarkii	Clark's Grebe			
Aechmophorus occidentalis	Western Grebe			
Agelaius tricolor	Tricolored Blackbird	Bird of Conservation Concern	Special Concern	BSSC - First priority
Aix sponsa	Wood Duck			
Anas acuta	Northern Pintail			
Anas americana	American Wigeon			
Anas clypeata	Northern Shoveler			
Anas crecca	Green-winged Teal			
Anas cyanoptera	Cinnamon Teal			
Anas discors	Blue-winged Teal			
Anas platyrhynchos	Mallard			
Anas strepera	Gadwall			
Anser albifrons	Greater White-fronted Goose			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Aythya affinis	Lesser Scaup			
Aythya americana	Redhead		Special Concern	BSSC - Third priority
Aythya collaris	Ring-necked Duck			
Aythya marila	Greater Scaup			
Aythya valisineria	Canvasback		Special	
Botaurus lentiginosus	American Bittern			

[8] Howard, J.K. et al. 2015. Patterns of Freshwater Species Richness, Endemism, and Vulnerability in California. PLoSONE, 11(7). Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0130710
[9] California Department of Fish and Wildlife BIOS: https://www.wildlife.ca.gov/data/BIOS
[10] Science for Conservation: https://www.scienceforconservation.org/products/california-freshwater-species-database

Bucephala albeola	Bufflehead			
Bucephala clangula	Common Goldeneye			
Butorides virescens	Green Heron			
Calidris alpina	Dunlin			
Calidris mauri	Western Sandpiper			
Calidris minutilla	Least Sandpiper			
Chen caerulescens	Snow Goose			
Chen rossii	Ross's Goose			
Chlidonias niger	Black Tern		Special Concern	BSSC - Second priority
Chroicocephalus philadelphia	Bonaparte's Gull			
Cistothorus palustris palustris	Marsh Wren			
Cygnus columbianus	Tundra Swan			
Egretta thula	Snowy Egret			
Empidonax traillii	Willow Flycatcher	Bird of Conservation Concern	Endangered	
Fulica americana	American Coot			
Gallinago delicata	Wilson's Snipe			
Geothlypis trichas trichas	Common Yellowthroat			
Grus canadensis	Sandhill Crane			
Haliaeetus leucocephalus	Bald Eagle	Bird of Conservation Concern	Endangered	
Himantopus mexicanus	Black-necked Stilt			
Histrionicus histrionicus	Harlequin Duck		Special Concern	BSSC - Second priority
Icteria virens	Yellow-breasted Chat		Special Concern	BSSC - Third priority
Limnodromus scolopaceus	Long-billed Dowitcher			
Lophodytes cucullatus	Hooded Merganser			
Megaceryle alcyon	Belted Kingfisher			
Mergus merganser	Common Merganser			
Mergus serrator	Red-breasted Merganser			
Numenius americanus	Long-billed Curlew			
Numenius phaeopus	Whimbrel			
Nycticorax nycticorax	Black-crowned Night-Heron			
Oxyura jamaicensis	Ruddy Duck			
Pelecanus erythrorhynchos	American White Pelican		Special Concern	BSSC - First priority

Phalacrocorax auritus	Double-crested Cormorant			
Phalaropus tricolor	Wilson's Phalarope			
Plegadis chihi	White-faced Ibis		Watch list	
Pluvialis squatarola	Black-bellied Plover			
Podiceps nigricollis	Eared Grebe			
Podilymbus podiceps	Pied-billed Grebe			
Porzana carolina	Sora			
Rallus limicola	Virginia Rail			
Recurvirostra americana	American Avocet			
Riparia riparia	Bank Swallow		Threatened	
Rynchops niger	Black Skimmer			
Setophaga petechia	Yellow Warbler			BSSC - Second priority
Tachycineta bicolor	Tree Swallow			
Tringa melanoleuca	Greater Yellowlegs			
Tringa semipalmata	Willet			
Tringa solitaria	Solitary Sandpiper			
Xanthocephalus xanthocephalus	Yellow-headed Blackbird		Special Concern	BSSC - Third priority
CRUSTACEANS				
Americorophium spp.	Americorophium spp.			
Cambaridae fam.	Cambaridae fam.			
Cyprididae fam.	Cyprididae fam.			
Gammarus spp.	Gammarus spp.			
Gnorimosphaeroma spp.	Gnorimosphaeroma spp.			
Hyalella spp.	Hyalella spp.			
Neomysis mercedis				Not on any status lists
FISH				
Eucyclogobius newberryi	Tidewater goby	Endangered	Special Concern	Vulnerable - Moyle 2013
Oncorhynchus mykiss - SCCC	South Central California coast steelhead	Threatened	Special Concern	Vulnerable - Moyle 2013
Spirinchus thaleichthys	Longfin smelt	Candidate	Threatened	Vulnerable - Moyle 2013
Catostomus occidentalis mnioltiltus	Monterey sucker			Least Concern - Moyle 2013
Cottus aleuticus	Coastrange sculpin			Least Concern - Moyle 2013
Cottus asper ssp. 1	Prickly sculpin			Least Concern - Moyle 2013
Entosphenus tridentata ssp. 1	Pacific lamprey		Special	Near-Threatened - Moyle 2013

Eucyclogobius newberryi	Tidewater goby	Endangered	Special Concern	Vulnerable - Moyle 2013
Gasterosteus aculeatus aculeatus	Coastal threespine stickleback			Least Concern - Moyle 2013
Gasterosteus aculeatus microcephalus	Inland threespine stickleback		Special	Least Concern - Moyle 2013
Lavinia exilicauda harengeus	Monterey hitch		Special	Vulnerable - Moyle 2013
Lavinia symmetricus subditus	Monterey roach		Special Concern	Near-Threatened - Moyle 2013
Oncorhynchus gorbuscha	Pink salmon		Special Concern	Endangered - Moyle 2013
Oncorhynchus mykiss - SCCC	South Central California coast steelhead	Threatened	Special Concern	Vulnerable - Moyle 2013
Oncorhynchus mykiss irideus	Coastal rainbow trout			Least Concern - Moyle 2013
Orthodon microlepidotus	Sacramento blackfish			Least Concern - Moyle 2013
Ptychocheilus grandis	Sacramento pikeminnow			Least Concern - Moyle 2013
Rhinichthys osculus ssp. 1	Sacramento speckled dace			Least Concern - Moyle 2013
HERPS				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Ambystoma californiense californiense	California Tiger Salamander	Threatened	Threatened	ARSSC
Ambystoma macrodactylum	Long-toed salamander			
Ambystoma macrodactylum croceum	Santa Cruz Long-toed Salamander	Endangered	Endangered	
Anaxyrus boreas boreas	Boreal Toad			
Anaxyrus boreas halophilus	California Toad			ARSSC
Pseudacris regilla	Northern Pacific Chorus Frog			
Pseudacris sierra	Sierran Treefrog			
Rana boylii	Foothill Yellow-legged Frog	Under Review in the Candidate or Petition Process	Special Concern	ARSSC

Rana draytonii	California Red-legged Frog	Threatened	Special Concern	ARSSC
Spea hammondii	Western Spadefoot	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
Taricha torosa	Coast Range Newt		Special Concern	ARSSC
Thamnophis elegans elegans	Mountain Gartersnake			Not on any status lists
Thamnophis elegans terrestris	Coast Gartersnake			Not on any status lists
Thamnophis hammondii hammondii	Two-striped Gartersnake		Special Concern	ARSSC
Thamnophis sirtalis infernalis	California Red-sided Gartersnake			Not on any status lists
Thamnophis sirtalis sirtalis	Common Gartersnake			
INSECTS AND OTHER INVERTEBRATES				
Abedus spp.	Abedus spp.			
Ablabesmyia spp.	Ablabesmyia spp.			
Acentrella spp.	Acentrella spp.			
Aeshna interrupta interna				
Aeshna palmata	Paddle-tailed Darner			
Aeshnidae fam.	Aeshnidae fam.			
Agabus spp.	Agabus spp.			
Ameletus spp.	Ameletus spp.			
Argia spp.	Argia spp.			
Baetidae fam.	Baetidae fam.			
Baetis spp.	Baetis spp.			
Belostomatidae fam.	Belostomatidae fam.			
Berosus spp.	Berosus spp.			
Bisancora spp.	Bisancora spp.			
Brachycentrus spp.	Brachycentrus spp.			
Brillia spp.	Brillia spp.			
Calineuria californica	Western Stone			
Callibaetis spp.	Callibaetis spp.			
Centroptilum spp.	Centroptilum spp.			
Chaetocladius spp.	Chaetocladius spp.			
Cheumatopsyche spp.	Cheumatopsyche spp.			
Chironomidae fam.	Chironomidae fam.			
Chironomus spp.	Chironomus spp.			
Chloroperlidae fam.	Chloroperlidae fam.			
Choroterpes spp.	Choroterpes spp.			
Cladotanytarsus spp.	Cladotanytarsus spp.			
Coenagrionidae fam.	Coenagrionidae fam.			

Corisella decolor				Not on any status lists
Corisella spp.	Corisella spp.			
Corixidae fam.	Corixidae fam.			
Cricotopus spp.	Cricotopus spp.			
Cryptotendipes spp.	Cryptotendipes spp.			
Cymbiodyta spp.	Cymbiodyta spp.			
Dicrotendipes spp.	Dicrotendipes spp.			
Diphetor hageni	Hagen's Small Minnow Mayfly			
Drunella spp.	Drunella spp.			
Dytiscidae fam.	Dytiscidae fam.			
Enallagma carunculatum	Tule Bluet			
Enallagma spp.	Enallagma spp.			
Epeorus spp.	Epeorus spp.			
Ephydridae fam.	Ephydridae fam.			
Fallceon quilleri	A Mayfly			
Fallceon spp.	Fallceon spp.			
Gomphidae fam.	Gomphidae fam.			
Gumaga spp.	Gumaga spp.			
Gyrinus spp.	Gyrinus spp.			
Heptageniidae fam.	Heptageniidae fam.			
Hydrophilidae fam.	Hydrophilidae fam.			
Hydroporus spp.	Hydroporus spp.			
Hydropsyche spp.	Hydropsyche spp.			
Hydroptila spp.	Hydroptila spp.			
Hydroptilidae fam.	Hydroptilidae fam.			
Ischnura spp.	Ischnura spp.			
Isoperla spp.	Isoperla spp.			
Laccobius spp.	Laccobius spp.			
Laccophilus spp.	Laccophilus spp.			
Lepidostoma spp.	Lepidostoma spp.			
Leptoceridae fam.	Leptoceridae fam.			
Leucrocuta spp.	Leucrocuta spp.			
Limnophyes spp.	Limnophyes spp.			
Liodessus obscurellus				Not on any status lists
Malenka spp.	Malenka spp.			
Micropsectra spp.	Micropsectra spp.			
Microtendipes spp.	Microtendipes spp.			
Mystacides spp.	Mystacides spp.			
Nanocladius spp.	Nanocladius spp.			
Nectopsyche spp.	Nectopsyche spp.			
Ochthebius spp.	Ochthebius spp.			
Onocosmoecus spp.	Onocosmoecus spp.			
Optioservus spp.	Optioservus spp.			
Oreodytes spp.	Oreodytes spp.			
Pantala hymenaea	Spot-winged Glider			

Paracladopelma spp.	Paracladopelma spp.			
Paracymus spp.	Paracymus spp.			
Parakiefferiella spp.	Parakiefferiella spp.			
Paraleptophlebia spp.	Paraleptophlebia spp.			
Paratanytarsus spp.	Paratanytarsus spp.			
Paratendipes spp.	Paratendipes spp.			
Peltodytes spp.	Peltodytes spp.			
Phaenopsectra spp.	Phaenopsectra spp.			
Polypedilum spp.	Polypedilum spp.			
Procladius spp.	Procladius spp.			
Psephenus falli				Not on any status lists
Pseudosmittia spp.	Pseudosmittia spp.			
Psychodidae fam.	Psychodidae fam.			
Rhagovelia distincta				Not on any status lists
Rhagovelia spp.	Rhagovelia spp.			
Rheotanytarsus spp.	Rheotanytarsus spp.			
Rhionaeschna multicolor	Blue-eyed Darner			
Rhionaeshna spp.	Rhionaeshna spp.			
Rhithrogena spp.	Rhithrogena spp.			
Rhyacophila spp.	Rhyacophila spp.			
Serratella spp.	Serratella spp.			
Sigara spp.	Sigara spp.			
Simulium spp.	Simulium spp.			
Sperchon spp.	Sperchon spp.			
Sperchontidae fam.	Sperchontidae fam.			
Stylurus spp.	Stylurus spp.			
Sweltsa spp.	Sweltsa spp.			
Sympetrum corruptum	Variegated Meadowhawk			
Tanytarsus spp.	Tanytarsus spp.			
Tipulidae fam.	Tipulidae fam.			
Trichocorixa calva				Not on any status lists
Trichocorixa spp.	Trichocorixa spp.			
Tricorythodes spp.	Tricorythodes spp.			
Tropisternus spp.	Tropisternus spp.			
Uvarus subtilis				Not on any status lists
Zaitzevia spp.	Zaitzevia spp.			
MAMMALS				
Lontra canadensis canadensis	North American River Otter			Not on any status lists
MOLLUSKS				
Anodonta californiensis	California Floater		Special	
Ferrissia rivularis	Creeping Ancylid			CS

Ferrissia spp.	Ferrissia spp.			
Helisoma spp.	Helisoma spp.			
Hydrobiidae fam.	Hydrobiidae fam.			
Lymnaea spp.	Lymnaea spp.			
Menetus opercularis	Button Sprite			CS
Physa spp.	Physa spp.			
Pisidium spp.	Pisidium spp.			
Planorbidae fam.	Planorbidae fam.			
Pomatiopsis spp.	Pomatiopsis spp.			
Sphaeriidae fam.	Sphaeriidae fam.			
PLANTS				
Arundo donax	NA			
Azolla filiculoides	NA			
Calochortus uniflorus	Shortstem Mariposa Lily		Special	CRPR - 4.2
Carex densa	Dense Sedge			
Carex harfordii	Harford's Sedge			
Carex obnupta	Slough Sedge			
Cotula coronopifolia	NA			
Eleocharis macrostachya	Creeping Spikerush			
Euthamia occidentalis	Western Fragrant Goldenrod			
Helenium puberulum	Rosilla			
Hypericum anagalloides	Tinker's-penny			
Jaumea carnosa	Fleshy Jaumea			
Juncus effusus pacificus				
Juncus phaeocephalus phaeocephalus	Brown-head Rush			
Juncus xiphioides	Iris-leaf Rush			
Lemna minor	Lesser Duckweed			
Lepidium oxycarpum	Sharp-pod Pepper-grass			
Limonium californicum	California Sea-lavender			
Mimulus guttatus	Common Large Monkeyflower			
Navarretia intertexta	Needleleaf Navarretia			
Oenanthe sarmentosa	Water-parsley			
Perideridia gairdneri gairdneri	Gairdner's Yampah		Special	CRPR - 4.2
Phacelia distans	NA			
Phragmites australis australis	Common Reed			
Plantago elongata elongata	Slender Plantain			
Populus trichocarpa	NA			Not on any status lists

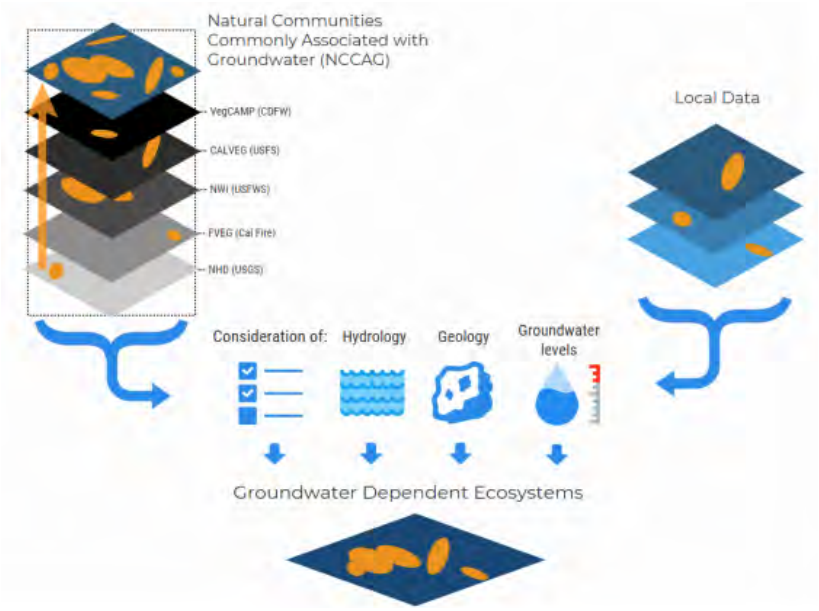
Potentilla anserina pacifica				Not on any status lists
Psilocarphus tenellus	NA			
Rorippa curvisiliqua curvisiliqua	Curve-pod Yellowcress			
Rumex conglomeratus	NA			
Rumex occidentalis				Not on any status lists
Rumex salicifolius salicifolius	Willow Dock			
Rumex stenophyllus	NA			
Salix babylonica	NA			
Salix exigua exigua	Narrowleaf Willow			
Salix laevigata	Polished Willow			
Salix lasiandra lasiandra				Not on any status lists
Salix lasiolepis lasiolepis	Arroyo Willow			
Sequoia sempervirens				
Sparganium eurycarpum eurycarpum				
Stachys ajugoides	Bugle Hedge-nettle			
Stachys chamissonis chamissonis	Coast Hedge-nettle			
Stellaria littoralis	Beach Starwort		Special	CRPR - 4.2
Triglochin maritima	Common Bog Arrow-grass			
Typha latifolia	Broadleaf Cattail			
Veronica anagallis-aquatica	NA			

Attachment D

July 2019

IDENTIFYING GDEs UNDER SGMA
Best Practices for using the NC Dataset

The Sustainable Groundwater Management Act (SGMA) requires that groundwater dependent ecosystems (GDEs) be identified in Groundwater Sustainability Plans (GSPs). As a starting point, the Department of Water Resources (DWR) is providing the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) online[11] to help Groundwater Sustainability Agencies (GSAs), consultants, and stakeholders identify GDEs within individual groundwater basins. To apply information from the NC Dataset to local areas, GSAs should combine it with the best available science on local hydrology, geology, and groundwater levels to verify whether polygons in the NC dataset are likely supported by groundwater in an aquifer (Figure 1)[12]. This document highlights six best practices for using local groundwater data to confirm whether mapped features in the NC dataset are supported by groundwater.



[11] NC Dataset Online Viewer: https://gis.water.ca.gov/app/NCDatasetViewer/
[12] California Department of Water Resources (DWR). 2018. Summary of the "Natural Communities Commonly Associated with Groundwater" Dataset and Online Web Viewer. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Statewide-Reports/Natural-Communities-Dataset-Summary-Document.pdf

The NC Dataset identifies vegetation and wetland features that are good indicators of a GDE. The dataset is comprised of 48 publicly available state and federal datasets that map vegetation, wetlands, springs, and seeps commonly associated with groundwater in California[13]. It was developed through a collaboration between DWR, the Department of Fish and Wildlife, and The Nature Conservancy (TNC). TNC has also provided detailed guidance on identifying GDEs from the NC dataset[14] on the Groundwater Resource Hub[15], a website dedicated to GDEs.

BEST PRACTICE #1. Establishing a Connection to Groundwater

Groundwater basins can be comprised of one continuous aquifer (Figure 2a) or multiple aquifers stacked on top of each other (Figure 2b). In unconfined aquifers (Figure 2a), using the depth-to-groundwater and the rooting depth of the vegetation is a reasonable method to infer groundwater dependence for GDEs. If groundwater is well below the rooting (and capillary) zone of the plants and any wetland features, the ecosystem is considered disconnected and groundwater management is not likely to affect the ecosystem (Figure 2d). However, it is important to consider local conditions (e.g., soil type, groundwater flow gradients, and aquifer parameters) and to review groundwater depth data from multiple seasons and water year types (wet and dry) because intermittent periods of high groundwater levels can replenish perched clay lenses that serve as the water source for GDEs (Figure 2c). Maintaining these natural groundwater fluctuations are important to sustaining GDE health.

Basins with a stacked series of aquifers (Figure 2b) may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. If pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, such as perched aquifers, that support springs, surface water, domestic wells, and GDEs (Figure 2). This is because vertical groundwater gradients across aquifers may result in pumping from deeper aquifers to cause adverse impacts onto beneficial users reliant on shallow aquifers or interconnected surface water. The goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits. While groundwater pumping may not be currently occurring in a shallower aquifer, use of this water may become more appealing and economically viable in future years as pumping restrictions are placed on the deeper production aquifers in the basin to meet the sustainable yield and criteria. Thus, identifying GDEs in the basin should done irrespective to the amount of current pumping occurring in a particular aquifer, so that future impacts on GDEs due to new production can be avoided. A good rule of thumb to follow is: *if groundwater can be pumped from a well - it's an aquifer*.

[13] For more details on the mapping methods, refer to: Klausmeyer, K., J. Howard, T. Keeler-Wolf, K. Davis-Fadtke, R. Hull, A. Lyons. 2018. Mapping Indicators of Groundwater Dependent Ecosystems in California: Methods Report. San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE_data_paper_20180423.pdf

[14] "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans" is available at: https://groundwaterresourcehub.org/gde-tools/gsp-guidance-document/

[15] The Groundwater Resource Hub: www.GroundwaterResourceHub.org

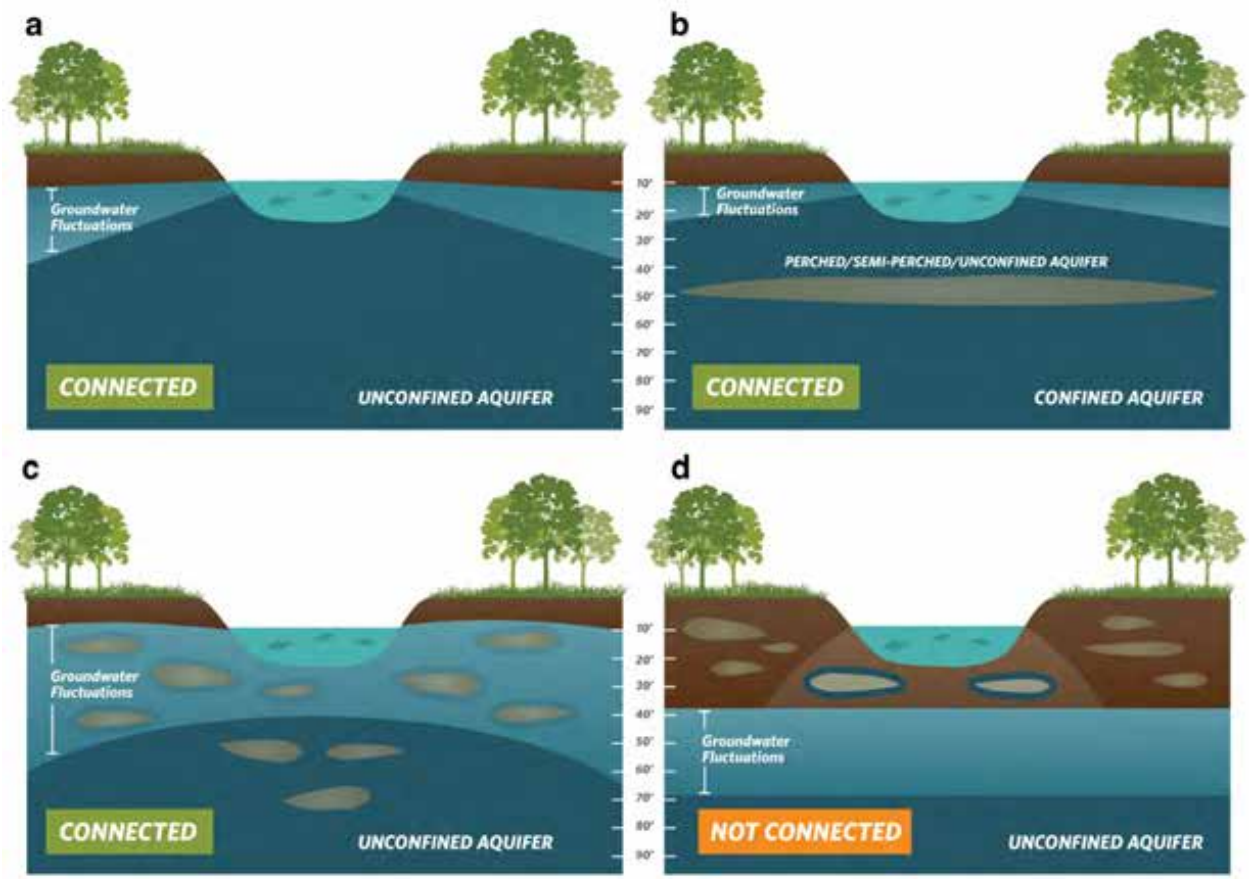


Figure 2. Confirming whether an ecosystem is connected to groundwater. Top: (a) Under the ecosystem is an unconfined aquifer with depth-to-groundwater fluctuating seasonally and interannually within 30 feet from land surface. (b) Depth-to-groundwater in the shallow aquifer is connected to overlying ecosystem. Pumping predominately occurs in the confined aquifer, but pumping is possible in the shallow aquifer. Bottom: (c) Depth-to-groundwater fluctuations are seasonally and interannually large, however, clay layers in the near surface prolong the ecosystem's connection to groundwater. (d) Groundwater is disconnected from surface water, and any water in the vadose (unsaturated) zone is due to direct recharge from precipitation and indirect recharge under the surface water feature. These areas are not connected to groundwater and typically support species that do not require access to groundwater to survive.

BEST PRACTICE #2. Characterize Seasonal and Interannual Groundwater Conditions

SGMA requires GSAs to describe current and historical groundwater conditions when identifying GDEs [23 CCR §354.16(g)]. Relying solely on the SGMA benchmark date (January 1, 2015) or any other single point in time to characterize groundwater conditions (e.g., depth-to-groundwater) is inadequate because managing groundwater conditions with data from one time point fails to capture the seasonal and interannual variability typical of California's climate. DWR's Best Management Practices document on water budgets[16] recommends using 10 years of water supply and water budget information to describe how historical conditions have impacted the operation of the basin within sustainable yield, implying that a baseline[17] could be determined based on data between 2005 and 2015. Using this or a similar time period, depending on data availability, is recommended for determining the depth-to-groundwater.

GDEs depend on groundwater levels being close enough to the land surface to interconnect with surface water systems or plant rooting networks. The most practical approach[18] for a GSA to assess whether polygons in the NC dataset are connected to groundwater is to rely on groundwater elevation data. As detailed in TNC's GDE guidance document[4], one of the key factors to consider when mapping GDEs is to contour depth-to-groundwater in the aquifer that is supporting the ecosystem (see Best Practice #5).

Groundwater levels fluctuate over time and space due to California's Mediterranean climate (dry summers and wet winters), climate change (flood and drought years), and subsurface heterogeneity in the subsurface (Figure 3). Many of California's GDEs have adapted to dealing with intermittent periods of water stress, however if these groundwater conditions are prolonged, adverse impacts to GDEs can result. While depth-to-groundwater levels within 30 feet[4] of the land surface are generally accepted as being a proxy for confirming that polygons in the NC dataset are supported by groundwater, it is highly advised that fluctuations in the groundwater regime be characterized to understand the seasonal and interannual groundwater variability in GDEs. Utilizing groundwater data from one point in time can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Time series data on groundwater elevations and depths are available on the SGMA Data Viewer[19]. However, if insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network (see Best Practice #6).

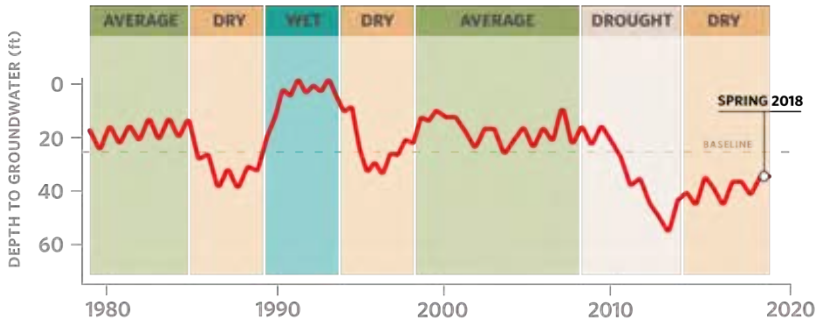


Figure 3. Example seasonality and interannual variability in depth-to-groundwater over time. Selecting one point in time, such as Spring 2018, to characterize groundwater conditions in GDEs fails to capture what groundwater conditions are necessary to maintain the ecosystem status into the future so adverse impacts are avoided.

[16] DWR. 2016. Water Budget Best Management Practice. Available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_Water_Budget_Final_2016-12-23.pdf

[17] *Baseline is defined under the GSP regulations as "historic information used to project future conditions for hydrology, water demand, and availability of surface water and to evaluate potential sustainable management practices of a basin." [23 CCR §351(e)]*

[18] Groundwater reliance can also be confirmed via stable isotope analysis and geophysical surveys. For more information see The GDE Assessment Toolbox (Appendix IV, GDE Guidance Document for GSPs[4]).

[19] *SGMA Data Viewer: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer*

BEST PRACTICE #3. Ecosystems Often Rely on Both Groundwater and Surface Water

GDEs are plants and animals that rely on groundwater for all or some of its water needs, and thus can be supported by multiple water sources. The presence of non-groundwater sources (e.g., surface water, soil moisture in the vadose zone, applied water, treated wastewater effluent, urban stormwater, irrigated return flow) within and around a GDE does not preclude the possibility that it is supported by groundwater, too. SGMA defines GDEs as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" [23 CCR §351(m)]. Hence, depth-to-groundwater data should be used to identify whether NC polygons are supported by groundwater and should be considered GDEs. In addition, SGMA requires that significant and undesirable adverse impacts to beneficial users of surface water be avoided. Beneficial users of surface water include environmental users such as plants or animals[20], which therefore must be considered when developing minimum thresholds for depletions of interconnected surface water.

GSAs are only responsible for impacts to GDEs resulting from groundwater conditions in the basin, so if adverse impacts to GDEs result from the diversion of applied water, treated wastewater, or irrigation return flow away from the GDE, then those impacts will be evaluated by other permitting requirements (e.g., CEQA) and may not be the responsibility of the GSA. However, if adverse impacts occur to the GDE due to changing groundwater conditions resulting from pumping or groundwater management activities, then the GSA would be responsible (Figure 4).

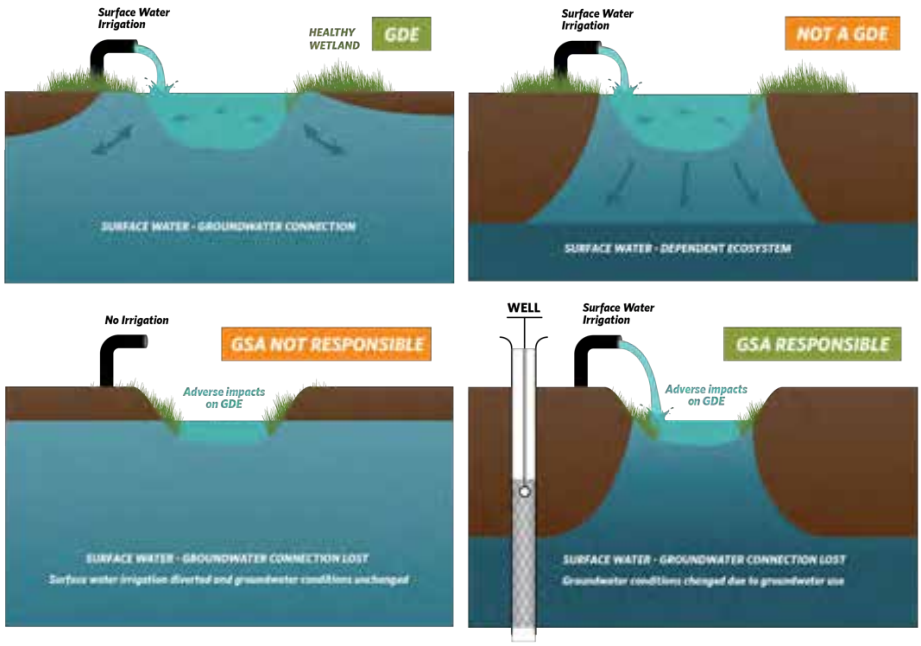


Figure 4. Ecosystems often depend on multiple sources of water. Top: (Left) Surface water and groundwater are interconnected, meaning that the GDE is supported by both groundwater and surface water. (Right) Ecosystems that are only reliant on non-groundwater sources are not groundwater-dependent. Bottom: (Left) An ecosystem that was once dependent on an interconnected surface water, but loses access to groundwater solely due to surface water diversions may not be the GSA's responsibility. (Right) Groundwater dependent ecosystems once dependent on an interconnected surface water system, but loses that access due to groundwater pumping is the GSA's responsibility.

[20] *For a list of environmental beneficial users of surface water by basin, visit: https://groundwaterresourcehub.org/gde-tools/environmental-surface-water-beneficiaries/*

BEST PRACTICE #4. Select Representative Groundwater Wells

Identifying GDEs in a basin requires that groundwater conditions are characterized to confirm whether polygons in the NC dataset are supported by the underlying aquifer. To do this, proximate groundwater wells should be identified to characterize groundwater conditions (Figure 5). When selecting representative wells, it is particularly important to consider the subsurface heterogeneity around NC polygons, especially near surface water features where groundwater and surface water interactions occur around heterogeneous stratigraphic units or aquitards formed by fluvial deposits. The following selection criteria can help ensure groundwater levels are representative of conditions within the GDE area:

- Choose wells that are within 5 kilometers (3.1 miles) of each NC Dataset polygons because they are more likely to reflect the local conditions relevant to the ecosystem. If there are no wells within 5km of the center of a NC dataset polygon, then there is insufficient information to remove the polygon based on groundwater depth. Instead, it should be retained as a potential GDE until there are sufficient data to determine whether or not the NC Dataset polygon is supported by groundwater.

- Choose wells that are screened within the surficial unconfined aquifer and capable of measuring the true water table.

- Avoid relying on wells that have insufficient information on the screened well depth interval for excluding GDEs because they could be providing data on the wrong aquifer. This type of well data should not be used to remove any NC polygons.

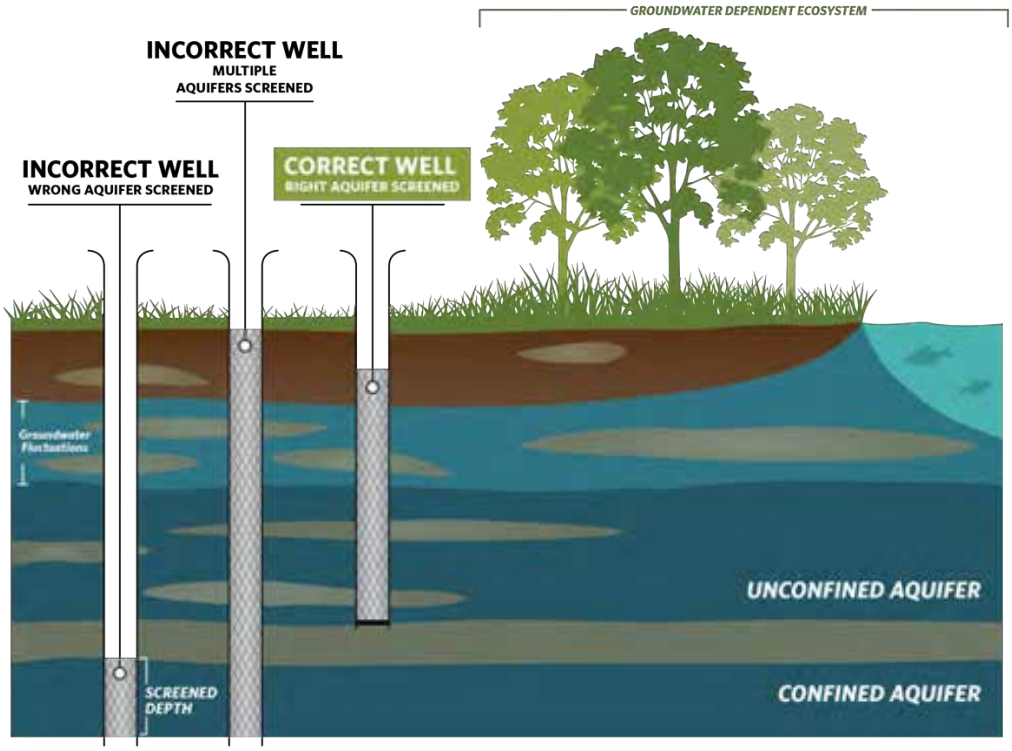


Figure 5. Selecting representative wells to characterize groundwater conditions near GDEs.

BEST PRACTICE #5. Contouring Groundwater Elevations

The common practice to contour depth-to-groundwater over a large area by interpolating measurements at monitoring wells is unsuitable for assessing whether an ecosystem is supported by groundwater. This practice causes errors when the land surface contains features like stream and wetland depressions because it assumes the land surface is constant across the landscape and depth-to-groundwater is constant below these low-lying areas (Figure 6a). A more accurate approach is to interpolate groundwater elevations at monitoring wells to get groundwater elevation contours across the landscape. This layer can then be subtracted from land surface elevations from a Digital Elevation Model (DEM)[21] to estimate depth-to-groundwater contours across the landscape (Figure b; Figure 7). This will provide a much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found.

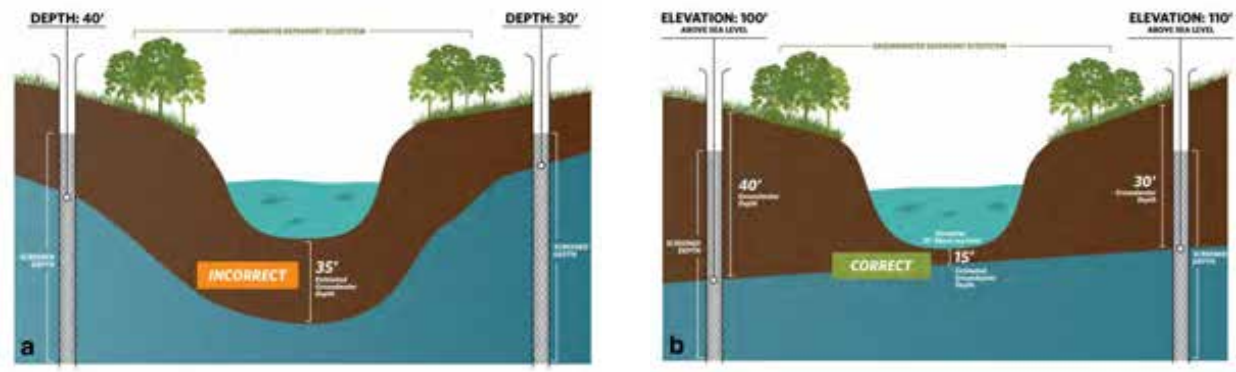


Figure 6. Contouring depth-to-groundwater around surface water features and GDEs. (a) Groundwater level interpolation using depth-to-groundwater data from monitoring wells. (b) Groundwater level interpolation using groundwater elevation data from monitoring wells and DEM data.

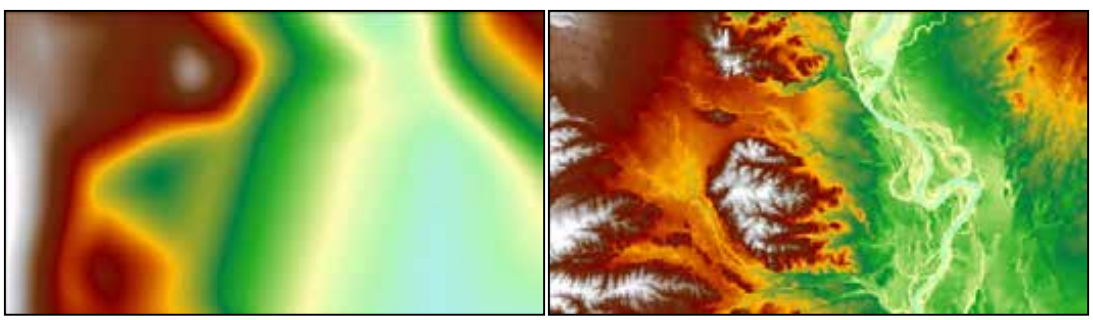


Figure 7. Depth-to-groundwater contours in Northern California. (Left) Contours were interpolated using depth-to-groundwater measurements determined at each well. (Right) Contours were determined by interpolating groundwater elevation measurements at each well and superimposing ground surface elevation from DEM spatial data to generate depth-to-groundwater contours. The image on the right shows a more accurate depth-to-groundwater estimate because it takes the local topography and elevation changes into account.

[21] USGS Digital Elevation Model data products are described at: https://www.usgs.gov/core-science-systems/ngp/3dep/about-3dep-products-services and can be downloaded at: https://iewer.nationalmap.gov/basic/

BEST PRACTICE #6. Best Available Science

Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decisions, and using the data collected through monitoring programs to revise decisions in the future. In many situations, the hydrologic connection of NC dataset polygons will not initially be clearly understood if site-specific groundwater monitoring data are not available. If sufficient data are not available in time for the 2020/2022 plan, The Nature Conservancy strongly advises that questionable polygons from the NC dataset be included in the GSP until data gaps are reconciled in the monitoring network. Erring on the side of caution will help minimize inadvertent impacts to GDEs as a result of groundwater use and management actions during SGMA implementation.

KEY DEFINITIONS

Groundwater basin is an aquifer or stacked series of aquifers with reasonably well-defined boundaries in a lateral direction, based on features that significantly impede groundwater flow, and a definable bottom. *23 CCR §341(g)(1)*

Groundwater dependent ecosystem (GDE) are ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. *23 CCR §351(m)*

Interconnected surface water (ISW) surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted. *23 CCR §351(o)*

Principal aquifers are aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems. *23 CCR §351(aa)*

ABOUT US

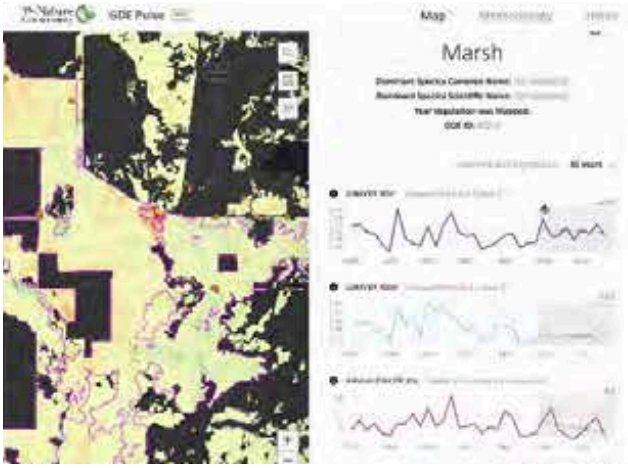
The Nature Conservancy is a science-based nonprofit organization whose mission is *to conserve the lands and waters on which all life depends*. To support successful SGMA implementation that meets the future needs of people, the economy, and the environment, TNC has developed tools and resources (www.groundwaterresourcehub.org) intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

Attachment E

GDE Pulse

A new, free online tool that allows Groundwater Sustainability Agencies to assess changes in groundwater dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data.

Visit
https://gde.codefornature.org/



Remote sensing data from satellites has been used to monitor the health of vegetation all over the planet. GDE pulse has compiled 35 years of satellite imagery from NASA's Landsat mission for every polygon in the Natural Communities Commonly Associated with Groundwater Dataset[22]. The following datasets are included:

Normalized Difference Vegetation Index (NDVI) is a satellite-derived index that represents the greenness of vegetation. Healthy green vegetation tends to have a higher NDVI, while dead leaves have a lower NDVI. We calculated the average NDVI during the driest part of the year (July - Sept) to estimate vegetation health when the plants are most likely dependent on groundwater.

Normalized Difference Moisture Index (NDMI) is a satellite-derived index that represents water content in vegetation. NDMI is derived from the Near-Infrared (NIR) and Short-Wave Infrared (SWIR) channels. Vegetation with adequate access to water tends to have higher NDMI, while vegetation that is water stressed tends to have lower NDMI. We calculated the average NDVI during the driest part of the year (July–September) to estimate vegetation health when the plants are most likely dependent on groundwater.

Annual Precipitation is the total precipitation for the water year (October 1st – September 30th) from the PRISM dataset[23]. The amount of local precipitation can affect vegetation with more precipitation generally leading to higher NDVI and NDMI.

Depth to Groundwater measurements provide an indication of the groundwater levels and changes over time for the surrounding area. We used groundwater well measurements from nearby (<1km) wells to estimate the depth to groundwater below the GDE based on the average elevation of the GDE (using a digital elevation model) minus the measured groundwater surface elevation.

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[22] *The Natural Communities Commonly Associated with Groundwater Dataset is hosted on the California Department of Water Resources' website: https://gis.water.ca.gov/app/NCDatasetViewer/#*

[23] The PRISM dataset is hosted on Oregon State University's website: http://www.prism.oregonstate.edu/

The Otter Project
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November 25, 2019

Mr. Gary Petersen, General Manager
SVBGSA
c/o Government Services
P.O. Box 1350
Carmel Valley, CA 93924

Submitted via email: peterseng@svbgsa.org

Re: Comments on the DRAFT 180/400 Foot Aquifer Subbasin GSP

Dear Mr. Petersen,

Thank you for the opportunity to submit comments. The following comments are offered on behalf of The Otter Project / Monterey Coastkeeper (Monterey Coastkeeper is the water quality program of The Otter Project), our board of directors, and our 1000 members. The 180/400 foot aquifer GSP (Draft Plan or Draft GSP) is a terrific start, thanks to the determination of the SVBGSA staff, but, unfortunately, will fail to curb extractions and/or restore our most important aquifers.

Before critiquing the details of the Draft GSP, we must comment on the systemic flaw that underlies the Draft Plan's creation and will plague the Draft GSP's implementation: the structural over-representation of agricultural interests. Four seats of the eleven-seat board are allocated to agricultural interests and it is an open secret that several of the other seats were, by plan, aligned with agriculture.

Agricultural interests sponsored the first steps to form the groundwater sustainability agency (GSA). The "Consensus Building institute" started the process by interviewing a broad range of stakeholders and the first deliverable was a report that included a list of 20 stakeholder interests that must be represented on the initial organizing committee, and the report suggested a cap of 20 members for the organizing committee. The Grower-Shipper Association immediately demanded – and was given -- seven agricultural seats on the committee, effectively displacing other interests. That organizing committee recommended the structure of the GSA board and agricultural stakeholders then demanded four seats on the GSA board.

Critically, as it directly relates to the Draft GSA, the governing documents include a voting provision:

> "Each Director has one vote, and the Board requires a simple majority (six Directors) for routine business, a super majority (eight Directors) for approving the Groundwater Sustainability Plan, budgets, and member termination, and **a super majority plus (eight Directors, <u>including three of the Agricultural Directors</u>) for imposing fees and or pumping limits."** emphasis added

The Central Coast Hydrologic Region, dominated by the Salinas Watershed, relies on groundwater more than any other region in California; 84% of our water comes from groundwater (the next closest region

is the South Lahonton that uses very little water in total, but 70% comes out of the ground)[1]. Bringing the Salinas Basin to a sustainable groundwater balance will require money and sacrifice. Approximately 91-percent of all water use in Monterey County is for agriculture[2] and agriculture effectively has veto power over fees and pumping limits, a fatal flaw.

Comment One: The Plan is a plan to create a plan at a later date. The SGMA was passed by the California legislature in 2014 and GSAs have had five years to form and create plans for priority watersheds. The Draft GSA is incomplete. Over and over again the Draft Plan uses "Details to be Developed Later." This is unacceptable at this late date.

Instead of using best available data and modeling, the Draft GSP proposes to wait for a USGS model that has been promised for -- literally -- years. Instead of making a good effort to create a plan around the two existing models that call for reduction of extraction of 22 and 45 percent (in addition, see comment two below), the SVBGSA proposes to wait for a model that they hope will be more generous.

As noted, the Central Coast is the region most reliant on groundwater, critically over-drafted, and as noted by numerous studies of nitrate contamination,[3] perhaps one of the most contaminated in the state. Waiting is not an option.

Comment Two: The amount of "Usable Storage" is over-estimated by 21 to 32 percent. As stated in section 5.3, the definition of usable storage is:

> "[T]he annual average increase or decrease in groundwater that can be safely used for municipal, industrial, or agricultural purposes."

But the same paragraph goes on to state:

> "Change in usable groundwater storage is the sum of change in storage due to groundwater level changes and the change in storage due to seawater intrusion."

"Usable" does not mean, just for agriculture. Just as saltwater is not available for agricultural use, nitrate contaminated groundwater is not available for municipal use. As outlined in the executive summary, three different studies have shown the lower Salinas basin groundwater to be heavily contaminated with nitrates.

Agricultural fields require the application of literally hundreds of pounds of chemicals per acre.[4] The impact of not considering nitrate laden groundwater is to allow pumping far above the seven-percent reduction mentioned is the Draft GSP. This pumped groundwater will then percolate through the chemical laden soils and further contaminate groundwater. The actions or inactions of the SVBGSA will directly impact water quality; by allowing excessive pumping water quality will be degraded, an action considered an "undesirable result" not allowed under the SGMA. This SVBGSA action or inaction could

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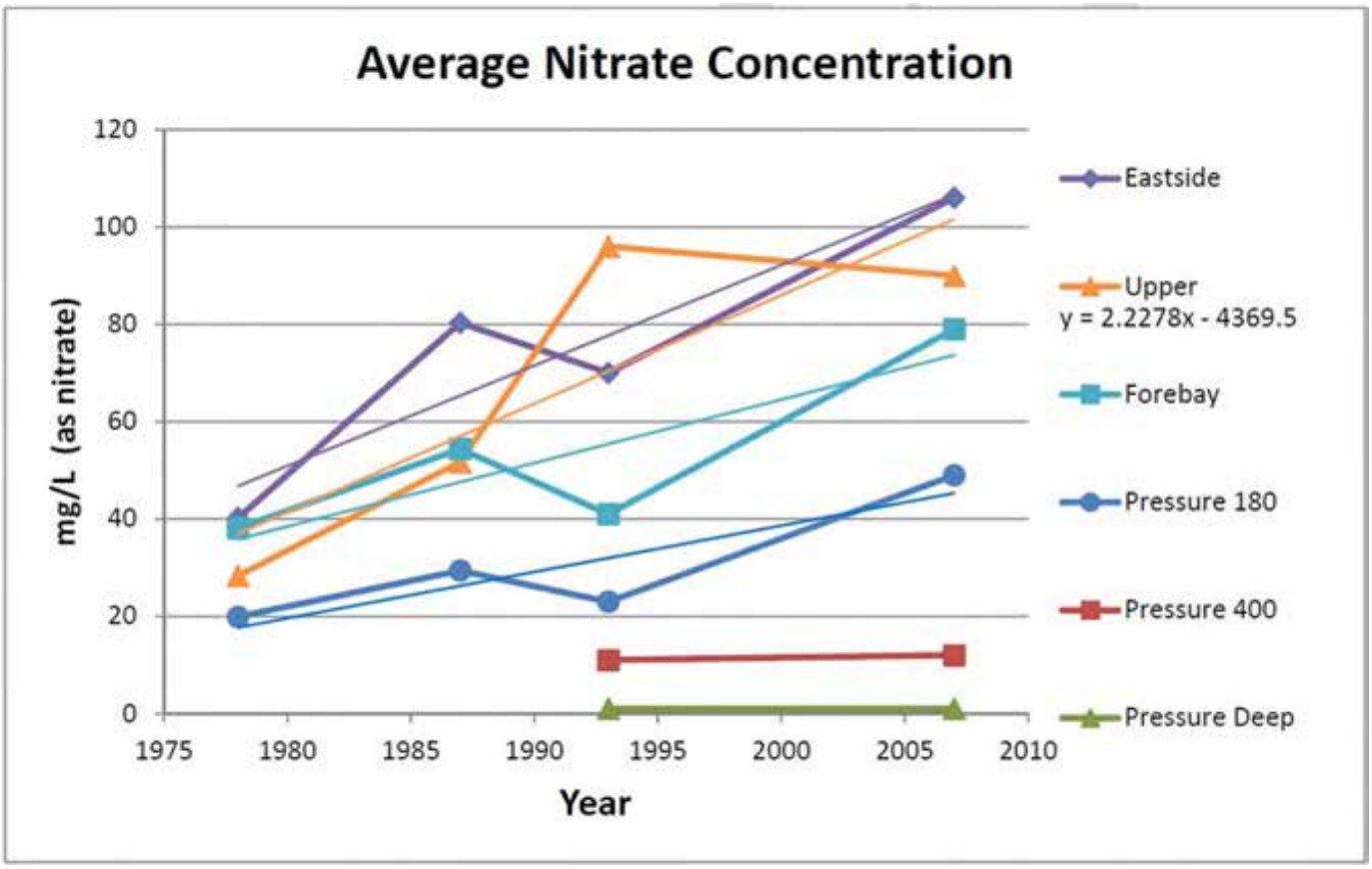
[1] 2015. The 2014 Sustainable Groundwater Management Act, A Handbook to Understanding and Implementing the Law. Water Education Foundation.
[2] See groundwater extraction summaries at https://www.co.monterey.ca.us/government/government-links/water-resources-agency/documents/groundwater-extraction-summaries#wra
[3] http://groundwaternitrate.ucdavis.edu/
[4] Various UC Extension and Department of Pesticide Regulation reports.

also violate the California Nonpoint Source Pollution Policy recently successfully litigated in the trial and appellate courts by Monterey Coastkeeper.

Comment Three: Nitrate laden groundwater plumes are ignored in the Draft GSA. The Draft GSA states at 7.5:

> " There are no known significant contaminant plumes in the GSP area, therefore the monitoring network is monitoring non-point source pollution and naturally occurring water quality impacts."

This statement contradicts studies performed by the Monterey County Water Resources Agency, a partner agency for implementation of the GSP. Graphically, nitrate plumes in the 180/400 aquifers are demonstrated in the following illustration extracted from a MCWRA report[5]:



[5] This graphic was extracted from MCWRA reports that have now been removed from the MCWRA website. The Otter Project would be able to find and provide this report from files provided by MCWRA during legal discovery if the Agency is unwilling to produce the study and information.

Increases in nitrate concentration are results of contamination plumes. Monitoring of plumes will most likely require a greater density of monitoring site.

Comment Four: The cost of priority projects is greatly underestimated. Not all projects were evaluated, but review of the highest priority project, Invasive Species Eradication, revealed a gross under-estimation of the costs of the project. One must wonder if all project costs are under-estimated.

The concept is to remove the invasive reed *Arundo donax* and benefit from the resulting evapotranspiration water savings. Without question, removing Arundo is desirable and would have environmental benefits. However it is extremely expensive as evidenced by the very high cost of the 2014 removal of 75 acres; approximately 1500 acres remain. Referring to the removal project the Draft GSP states:

> "Implementation costs for these projects are typically capital intensive with only minor long-term maintenance costs. Thus, the water supply benefit/cost ratio can increase significantly over the long term."

The concept that removal of 1500 acres of Arundo is financially feasible is a fallacy and the idea that the long term maintenance cost will be minor is equally flawed. As has been experience during the initial roll-out of the project, not all landowners are cooperative and Arundo will re-infest areas very quickly. Continuous removal will be required.

The benefits may be exaggerated as well: removal of Arundo do not result in bare dirt, the Arundo is replaced by other plants that could use a very significant amount of water, just as the Arundo did.

Comment Five: The Tiering Structure of the pumping allowances will be ineffective – for many years – in reducing over-extraction of groundwater. The Draft GSP states that sustainable pumping allowances will be developed over the first three years. We believe this first step is structured to take far longer. We believe determination of the allowances will take longer because of the structure of the board, and/or allowances will be overgenerous in pro-rata allocation and underpriced (limiting management actions) because of the structure of the board.

Once the sustainable pumping allowances are determined, the tiering structure is designed to not meet the goal of sustainable balance within 20 years. As stated on page 9-5, the Tier Two transitional pumping allowance will be phased out over 10 to 15 years. The result of three years of sustainable allowance planning and a 10 to 15-year transition means that it takes 13 to 18 years to even start to come to balance. Also as stated on page 9-5, "Maximum annual (calendar year) pumping between 2012 and 2017 will be used to determine transitional pumping allowances." In other words, the Draft GSP requires absolutely no reduction in pumping from the over-extraction-status-quo for the first 13 to 18 years and then "overnight" growers will be required to meet their sustainable pumping allowance.

We believe, the tiering structing leads to growers simply planning to pay supplemental charges instead of reducing pumping. Again, we must state that because of the board voting structure, the growers control the fees.

Comment Six: The ability to "Carry over" (9.2.3) or"Transfer" (9.2.4) saved water defeats the entire purpose of the Draft GSP and in addition, carry over water is simply "paper water" that will likely no

longer exist in the basin. Water moves. Pumping less that the allocation is a very good thing, but that water allowance can not be carried over into a future year as that water has moved downslope and may no longer be in the watershed.

We understand that these comments are a bit tough. But we believe that the past management of the Salinas Groundwater Basin has put us in a very deep deficit. Long ago, there were lakes surrounding Salinas, water literally gushed from the ground, fish – some species now locally extinct – were plentiful, and the lower Salinas River was free flowing all year, many or most years. We've long forgotten the stories of bricks being barged up the Salinas River to build Spreckles or the ferry that moved people and wagons across the river near where Highway 68 crosses the river today. Our "baseline" of experience has shifted. The lakes and salmon will never return, but we cannot sacrifice the River or our groundwater.

Thank you for your consideration.

Sincerely,

Steve Shimek
Executive Director

Thomas S.
Virsik
ATTORNEY AT LAW

11 November 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA)

Re: November 14, 2019 Board of Directors Meeting
Item 4., General Public comment and Item 7.a, Initial Concepts on Planning Actions and Implementation of the 180/400 Aquifer Draft Groundwater Sustainability Plan (GSP)

Well over a year ago, my clients raised concerns about the GSA's approach, suggesting that above all else, a GSP needs to be "genuinely useful." March 7, 2018 letter to GSA Board. Since then, my clients have supported the GSA when it steered toward practical and useful approaches (e.g., the water charge framework) and raised concerns when it did not (e.g., a single GSP v GSP's for each basin/sub-basin). Unfortunately, some of the warnings and concerns in the March 2018 letter were prescient, e.g., the unavailability of a fully acceptable USGS model and ignoring the tool of management areas.

While the GSA -- its Board, staff, and consultant -- should be congratulated for the efforts to date, the meaningful metric is whether the draft 180/400 GSP both (1) meets the regulatory criteria and (2) is genuinely useful. As explained below, it fails both in varying degrees at various points.

There is overall a curious lack of precision in the draft GSA. The issue is not that some numbers have changed a bit. Such "refinement" is understandable, but some have changed materially. See e.g., below at 6. That the same analysis of what should be the same data, results in notably different outcomes suggests either a lack of transparency or precision, if not both.

The inconsistency is not limited to numerical values. The Draft GSP is not consistent in its use of critical terminology, especially around these terms: basin, sub-basin, and Valley (and their various permutations involving capitalization, hyphenation, or compound words). Consistency for the sake of consistency matters little, but those terms are used inconsistently in the draft GSP to mean different things. See below at 1. (That SGMA and its Regulations do not differentiate between basin and sub-basin is frustrating. Water Code § 10721(b)). When the GSP says "our basin" does it mean the 180/400 that is the subject of the GSP? Or the Salinas Valley Groundwater Basin of Bulletin 118, straddling two counties? Or does it mean the collection of sub-basins for which the GSA has responsibility? Or something else? The context can sometimes provide clues, but not always, and at the risk of readers'/reviewers' misunderstanding. A reader versed in SGMA, the local hydrology, and aware of local terms may be able to steer through the inconsistent terminology and come to the intended meaning, but that should not be the standard of clarity or transparency.

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And finally, the GSP is not consistent between its granular statements and the more "summary" reporting of conclusion and implications. For example, as shown below, the GSP specifically describes and concludes that a certain proposed project would benefit primarily the Eastside, but when all the discussed projects are summarized for purposes of budgeting, that project is lumped into a "benefits the entire/all of the Valley/basin" category. The binary distinction between the 180/400 and "everything else" is false, misleading, and refuted by the granular portions of the draft GSP.

1. Key Terminology Lacks Rigorous Definition and Application

As it stands, the array of terms used to stand for one or more basins, combination of basins, portions of basins, etc. are inconsistent and impossible for the casual reader to accurately understand. The best approach is to add to the beginning portion a definition of the key terms as used in the GSP and then to rigorously adhere to such terms in the entire GSP, including appendices and supplemental materials. In addition, or alternately, the GSP can include something like a FAQ to educate the readers about the context of the key terms in this GSP (rather than just the statutory definitions).

- How many basins make up The Salinas Valley Basin per Bulletin 118?
- Of those, how many are the responsibility of the SVBGSA (e.g., Paso Robles basin)?
- Are there any basins not in the Bulletin 118 list of Salinas Valley basins for which SVBGSA has responsibility, exclusively or jointly? Which?
- How many GSP's does the SVBGSA needs to craft?

2. The Basin or Sub-basin Counts are Misleading and Confusing

The GSP is not sufficiently clear -- sometimes patently wrong -- about how many basins/sub-basins are at issue.

ES 1.1 at 1-1. The statement about seven sub-basins within Monterey County is literally true, but also naming them could provide clarity about which are germane to the SVBGSA.

ES 1.2 at 1-2. The language says all five sub-basins surrounding the 180/400 are high priority. False. The Monterey and Forebay are not presently designated high priority.

Appendix 11D, 1.1 at 1. The narrative states that "our groundwater basin is officially designated . . . as "Critically Over-Drafted." The 180/400 is so designated, but not the Salinas Valley basin itself. The false impression is further confused by references to multiple sub-basins in overdraft and five sub-basins being out of balance (when no analysis has yet been done to reflect which, other than the 180/400, are out of balance). § 1.5 at 3. These specific material

misstatements have been flagged before and staff volunteered at the Board of Directors meeting that the corrections would be made. October 9, 2019 Comment letter. On the other hand, if the GSA is treating Appendix 11D as a legacy document, i.e., not a statement of currently accurate and approved strategy, then the GSP should explicitly so note in the footer, table of contents, and otherwise so that a reader is not misinformed that the DWR has designated every sub-basin from Castroville to San Ardo as critically over drafted.

3. The GSP is Premised on a Demonstrably False Binary Distinction Between the 180/400 and "Valley-wide"

Some text in the GSP suggest that benefits of projects and management actions are either (1) specific to the 180/400 or (2) "Valley-wide." § 10.8 at 10-10, "Because the GSP is being developed in coordination with other GSP's in the Salinas Valley, the initial implementation costs are divided into costs that directly benefit the 180/400-Foot Aquifer Subbasin and the costs that benefit <u>all Salinas Valley Subbasins</u>." (emphasis added). The more detailed portions of the GSP refute that misleading dichotomy that "all" parts of the Valley will benefit or that benefits are "Valley-wide." Some projects and actions will benefit only the 180/400 but the rest are not all Valley-wide. As explained below, various projects and actions benefit specific sub-basins or a combination, rather than "all" or "Valley-wide."

Appendix 2A provides details of what benefits have been (at least preliminarily) analyzed when it comes to the projects, and thus shows that the rest have not. The tool used is the NSV model, which is spatially limited to north and east of the Forebay, concentrating on the 180/400 basin at this time. Appendix 9C at §§ 9c.3.1 at 3, Figure 9C-1 at 4 an § 9C.4 at 11. That means that all conclusion in the draft GSP about benefits of potential projects and actions for Salinas Valley sub-basins other than the 180/400 (and possibly the Eastside) are speculation.

Table 9C-3 (page 12) shows not only that the CSIP projects (including winter injection) benefit the CSIP, but also that the delivery of water to Chualar and Soledad provide benefits predominantly to the Eastside. That modeling analysis is consistent with the narrative text found in Chapter 9 about those projects. <u>See</u> §§ 9.4.3.2 at 9-30 (CSIP projects benefit CSIP), 9.4.3.8 at 9-53 (water diversion to Eastside) and 9.4.3.8.2 at 9-56 (water diversion to Eastside).

The GSP lacks precision in its categorizations. While it is true that the GSA contemplates a "Valley-wide" approach via the ISP, only a few -- and frankly the less critical early -- ISP chapters have been approved thus far. § 11.4 at 11-4. As noted above, the NSV benefit modeling for the 180/400 GSP was appropriately limited to the 180/400 area.

The several potential management actions suffer from a somewhat lesser reliance on the binary. For example, restricting pumping in the deep aquifer (Management Action 5) has no effect on the sub-basins outside of the deep

aquifer, e.g., the Upper Valley. § 9.3.6 at 9-18. The detailed discussions reflect the benefit expected is "reduced Subbasin pumping," meaning presumably the 180/400. § 9.3.6.2 at 9-19. The same can be said for Seawater Intrusion management and CSIP regulation, i.e., they are 180/400 management actions. Yet, those important distinctions about which areas benefit from which actions and projects are not carried over to where it matters -- Chapter 10.

Table 10-2 at 10-13 is misleading, if not outright in derogation of the detailed analyses of which parts of the Valley benefit from which of proposed projects and actions. For example, coordinating the Seawater Intrusion Working Group is categorized as "Valley-wide." Yet, there is no seawater intrusion in at least the Forebay and Upper Valley (and none in the Eastside, yet). Refining all projects and actions is also lumped into a "Valley-wide" category, even though many of those (examples of which are noted above) are admittedly for the benefit of only one or two sub-basins, e.g., the Chualar and Soledad diversions that benefit the Eastside and to a lesser degree the 180/400. Only one of the six priority projects of Table 9-1 (invasive species eradication) suggests potential benefits to areas south of Soledad/Chualar. § 9.4.3 at 9-24.

Table 10-1 at 10-12 purports to contain the planning level costs for the 180/400, but none of the planning costs for the actions and projects the GSP shows benefit some or all the 180/400 are included. The false binary of 180/400 and "everyone else" results in foisting the planning cost for the 180/400 actions and projects onto the "entire Valley" rather than on the 180/400 that benefits from such planning.

Tables 10-1 and 10-2 absolutely ignore or contradict Chapter 9's express statements of which areas benefit from which projects and actions. The two Tables are at least inaccurate, if not outright misleading and must be revised to include at least the 180/400 planning costs in the correct Table.

4. Certain Important Tables are Facially Confusing/Impenetrable

Separately, Tables 10-1 and 10-2 are confusing because they combine annual and lump sum amounts, and then seemingly annualize the total and divide by five. (Assuming for the moment the Tables are acceptable as is.) Yet the arithmetic just does not add up. To put it in blunt terms, the "entire Valley" is currently paying close to $1.2 M in regulatory fees. According to Table 10-2, the Valley would pay $1.8 M annually (a $600 K increase spread over the entire Valley) for planning the additional "Valley-wide" projects and actions.

6. The Water Budgets Tacitly Admit They Do Not Comply with SGMA Standards

Water budgets presented in a GSP are subject to the SGMA regulations. § 354.18(c)(2)(C), (c)(3), and (e) and its "best available" standards for the historical, current, and projected water budgets. The GSP acknowledges that

likely double counting in its analysis, based on reports of water diversions (1) to the State (eWRIMS) as surface water and (2) to the MCWRA as groundwater. See e.g., § 6.4.1 at 6-11. The GSA was instructed how it can resolve the double counting, but it has chosen to not do so. See July 11, 2019 Comment letter, including the June 4, 2019 email pointing out that a comparison of database entries available to the GSA can identify double counts, which the public cannot duplicate as it lacks access to the non-public database. The GSA's choice not to analyze data willfully perverts the "best available" standards. It is akin to estimating the weight of a package by picking it up in one's hand when a digital scale is available, but one refuses to bring the package to the scale. The public is left to speculate whether the double counts are material, and if so, how they affect the integrity of the calculations.

The projected surface water budget is absent. § 6.10.6 at xii. The caveat at that section is unclear whether the "will be included as soon as available" means before the GSP is due (which the public will not be able to properly review) or if it means after the GSP is submitted. The implication elsewhere is that it will only be available well after the GSP is submitted. § 6.10.2 at v ("The surface water budget will be provided after the model post-processing analysis is completed . . . .")

6. The Water Budgets Analyses Have Inexplicably Changed From the Prior Iteration

Surface dynamics appear to have changed considerably in Chapter 6 since its last iteration was approved by the Board in July 2019. Section 6.5.2 used to be headed as "deep" percolation of precipitation, but now the "deep" is absent. Cf. July 4, 2019 Chapter 6 page 12 with current Chapter 6 at 6-14. Not only has the evapotranspiration component been removed from the calculus, but the amount of precipitation for both the historic and current water budgets have materially changed. Cf. Tables 6-8 in both (e.g., previously reported 67 K current water budget precipitation whereas current Table 6-8 reflects 106,600 af)[1]. Runoff for the historical water budget was previously 7 K whereas now it is around 1 K. Tables 6-9 purport to report the same information in both the July and current Chapter 6, i.e., both Tables have the same heading and are found in the same section of the GSP, but the last line of the current version of the Table does not break down the individual return flows and percolation numbers, while the prior one did. In other words, the latest "improvement" to Table 6-9 is to reduce precision and transparency. Cf. also Tables 6-118 with 6-19 and 6-19 with 6-20, below. Making analyses less transparent is the wrong direction.

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[1] One would expect the past and current precipitation numbers are based on objective third-party reports and hence are static. Note that the sub-basin sustainable yield is reported as 97,200 AAF. § 6.8.5 at 6-32. Consider whether the last-minute 30 K increase in precipitation may be material to calculating the water budget for the 180/400.

Many other Tables in Chapter 6 have changed since that chapter was approved for public review in July 2019. Cf. GSP Draft Tables 6-17, 6-18, 6-19, and 6-20 at pages 6-22, 6-23, 6-26. and 6-27 with July 4, 2019 Chapter 6 Tables 6-16, 6-17, 6-18, and 6-19 on pages 19, 22, and 23. Those earlier Tables are enclosed for comparison. Most striking is the difference between current Table 6-19 and prior Table 6-18. Among the jarring differences comparing Tables that are labeled as reflecting the same information/calculation:

July 4, 2019 Chapter 6 release	Current Draft Chapter 6 of GSP
Table 6-16. Precipitation runoff of 69,900	Table 6-17. Precipitation runoff of 9,400
Table 6-16. Min and max river diversions of 2,800 to 22,400	Table 6-17. Min and max river diversions of 6,500 to 9,200
Table 6-17. Forebay and Eastside numbers switched (and adjusted)	Table 6-18. Forebay and Eastside numbers switched (and adjusted)
Table 6-18. Four elements summed for inflow.	Table 6-19. Three elements summed for inflow.
Table 6-18. Streamflow percolation of 73,300	Table 6-19. Streamflow percolation of 50,000
Table 6-19. Four elements summed for inflow.	Table 6-20. Three elements summed for inflow.

The water budget tables have been more than a little "adjusted" since the public last saw them. No explanation is given, for example, why certain factors were combined when calculating net numbers, much less why certain numbers changed substantially. Explanations and presentations on the changes are needed.

7. GSP Ignores the Tool of a Management Area

The GSP states that no management areas have been defined for the 180/400. § 7.1.3 at 7-2. Elsewhere, the GSP explains that management areas are appropriate where "projects and management actions [are] based on differences in water use sector, water source types . . . or other factor." § 8.1 at 8-2. The CSIP meets the requirements of a management area. Its primary water source is different than all other agriculture, e.g., recycled water. The "water charges framework" on which much of the management actions (and projects) are premised reflects that the CSIP will have its own management, i.e., additional CSIP deliveries, and the "allowance" are expected to be unique. § 9.2.2 at 9-5. See also § 9.3.5 at 9-16 (ordinance to prevent use of groundwater in CSIP). Many of the projects are specially designated as for the CSIP, e.g., §§ 9.4.2 at 9-24 (Table 9-1 showing projects 2-5) and 9.4.3.2 at 9-31 (heading: CSIP PROJECTS). Certain management actions are also highly specific to the CSIP. § 9.3.5 at 9-16 (Action 4, restrictions on CSIP pumping). The CSIP differs from

the general infrastructure, economics, burdens, and benefits of other agriculture in the 180/400 and should be managed with those differences in mind, i.e., a management area.

The GSA is not per se obligated to create a management area for the CSIP, but the regulatory standard strongly suggests it is better for it to explicitly do so. "Each Agency may define one or more management areas within a basin if the Agency has determined that creation of management areas will facilitate implementation of the Plan." Regs. § 354.20 (emphasis added). As described above, the GSP acknowledges that the CSIP should be treated differently, e.g., water allowances, projects, management actions, all of which would help to facilitate the goal of sustainability of the 180/400. It would be more honest and transparent for the GSP to acknowledge up front that it is planning a management area for the CSIP, rather than wait for the public and/or DWR to so demand.

Conclusion

SGMA was designed to achieve sustainability in the real world, as opposed to certain prior legal requirements that were facially administrative mandates to generate paper that would have little or no real-world consequences. Missing a deadline outright is not the worst outcome, as SGMA provides notice and a hearing before any action is taken. Water Code §§ 5202 (water extraction reporting -- involving substantial fees -- applies to a probationary basin 90 days after a determination and does not require those who already report their diversions to the state via eWRIMS to do so again); 10736 (90 day notice before hearing to determine whether to place a basin in probationary status). Moreover, this first GSP will set the standard for later GSP's so the stakes are that much higher for all the sub-basins that are or may be required to have GSP's.

On behalf of my clients, the GSA is urged to get it right rather than to meet a deadline. The ideal is to get it right and meet the deadline, but if one of those must take priority, getting it right is much more important to the real world (e.g., health, jobs, economy, and the rest of the factors that constitute sustainability) than administrative success[2]. An administrative failure that results in real-world success must always takes precedence over the converse.

The GSA surely understands its responsibilities, e.g., § 9.1 at 9-1. But the draft GSP requires substantial revisions and explanations before the public or the DWR can accept it. Revise the GSP until it is as good as the "best available" data and science allow, clarify the confusion in terminology, clarify which basins

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[2] No timing criticism is directed at staff or consultants, who had to labor with the ever shifting and ultimately counter-productive timing on the availability of the USGS model.

matter or are involved in which projects, actions, (Chapter 9) and benefits (Chapter 10) or state such matters are not yet known, and only then submit it.

Very truly yours,

Thomas S. Virsik
Thomas S. Virsik

Enclosures
July 4, 2019 Draft Chapter 6 (publically released)
Tables 6-8, 6-9, 6-16 through 6-19
Virsik to SVBGSA BOD, July 10, 2019 letter with attachments

Because the estimated flow to agricultural drains is a combination of flow from precipitation and applied irrigation, it is not explicitly removed from the percolation calculation. Rather, it is removed from the total recharge calculations.

Based on these estimates, the estimated deep percolation of precipitation is calculated in Table 6-8

Table 6-8: Deep Percolation from Precipitation for Historical and Current Water Budget

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)
Total precipitation	100,400	67,800
Runoff	7,400	2,000
Evapotranspiration	81,800	59,300
Deep percolation	11,200	6,500

6.5.3 Deep Percolation of Excess Irrigation

Applied irrigation water that is not consumptively used by plants and is not captured as return flow by agricultural drains percolates below the root zone and becomes an inflow component to the groundwater budget. The total amount of water applied for irrigation is the sum of the groundwater pumping for irrigation, Salinas River diversions for irrigation, and CSIP deliveries.

- Agricultural pumping is reported annually by MCWRA for the Pressure Management Area. This value is adjusted proportionally for the area of the Subbasin relative to the total area of the Pressure Management Area.
- Salinas River diversions in the Subbasin are estimated from eWRIMS data for 2010 to 2017; and the average values for those years are applied to earlier years in the water budget.
- CSIP deliveries began in 1999 and are reported annually.

Crop consumptive use was estimated using an average irrigation efficiency of 80% for the Subbasin. This means 80% of applied irrigation is consumed by evapotranspiration and 20% becomes either return flow to agricultural drains or deep percolation to groundwater.

Table 6-9 presents the calculated deep percolation of irrigation without accounting for return flow to agricultural drains.

Table 6-9: Deep Percolation from Excess Irrigation for Historical and Current Water Budget

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)
Total Agricultural Applied Water	108,600	112,300
Crop Consumptive Use	86,900	89,900
Irrigation return Flow	10,000	18,000
Deep Percolation to Groundwater	11,700	4,500

6.5.4 Subsurface Inflows from Adjacent Subbasins

Based on groundwater flow directions and hydraulic gradients at the Subbasin boundaries, subsurface inflow to the 180/400-Foot Aquifer Subbasin from the Forebay Subbasin has been estimated at approximately 17,000 AF/yr. (Montgomery Watson, 1997; MCWRA, 2006; Brown and Caldwell, 2015). The boundary with the Monterey Subbasin is subparallel to groundwater flow direction resulting in a small amount of subsurface flow between the basins. The flow between basins is estimated as a net inflow of 3,000 AF/yr. from the Monterey Subbasin into the 180/400-Foot Aquifer Subbasin based on quantities reported by Montgomery Watson (1997). The estimated values are assumed constant for the historical and current water budgets. Groundwater generally flows from the 180/400-Foot Aquifer Subbasin into the Eastside and Langley Subbasins, as well as to Pajaro Valley. These subsurface outflows are quantified in Section 6.6.3.

The boundary flows will be reassessed when the calibrated historical SVIHM is available. Table 6-10 summarizes the subsurface inflow components for the historical and current water budgets.

Table 6-10: Subsurface Inflow from Adjacent Subbasins in Historical and Current Water Budgets

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)	Notes
Inflow from Forebay Subbasin	17,000	17,000	Estimate from Brown and Caldwell (2015)
Inflow from Monterey Subbasin	3,000	3,000	Estimate from Montgomery Watson (1997)
Total Inflows	20,000	20,000	

Table 6-16: Summary of Historical Surface Water Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Surface Water Inflows			
	Salinas River from Forebay Subbasin	311,900	5,000	1,154,900
	Tributaries from East Side Subbasin	2,300	00	11,800
	Precipitation Runoff	7,400	0	69,900
	Irrigation Return Flow	10,000	5,000	16,400
TOTAL INFLOW		331,600	12,900	1,246,500
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Surface Water Outflows			
	Salinas River Diversions	9,700	2,800	22,400
	Salinas River Outflow to Monterey Bay	240,700	0	1,250,600
	Other Outflows to Monterey Bay	7,400	2,400	13,800
	Net Percolation of Streamflow to Groundwater	73,300	5,000	80,000
TOTAL OUTFLOW		331,000	16,100	1,360,300

Table 6-17: Summary of Current Surface Water Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Surface Water Inflows			
	Salinas River from Forebay Subbasin	163,600	0	3,900
	Tributaries from East Side Subbasin	900	3,300	477,600
	Precipitation Runoff	2,000	0	2,600
	Irrigation Return Flow	18,000	8,700	30,800
TOTAL INFLOW		184,500	12,000	514,900
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Surface Water Outflows			
	Salinas River Diversions	7,900	7,400	8,200
	Salinas River Outflow to Monterey Bay	103,400	0	310,100
	Other Outflows to Monterey Bay	15,400	6,100	28,200
	Net Percolation of Streamflow to Groundwater	31,100	3,300	80,000
TOTAL OUTFLOW		157,700	17,600	425,700

The surface water budget components are highly variable. Figure 6-3 illustrates the annual inflow and outflow components for the historical budget period. The diagram uses stacked bar

height to illustrate the magnitude of budget components for each year, with inflows shown on the positive y-axis and outflows on the negative y-axis. The inflow and outflow components for each year are tabulated in Appendix 6A.

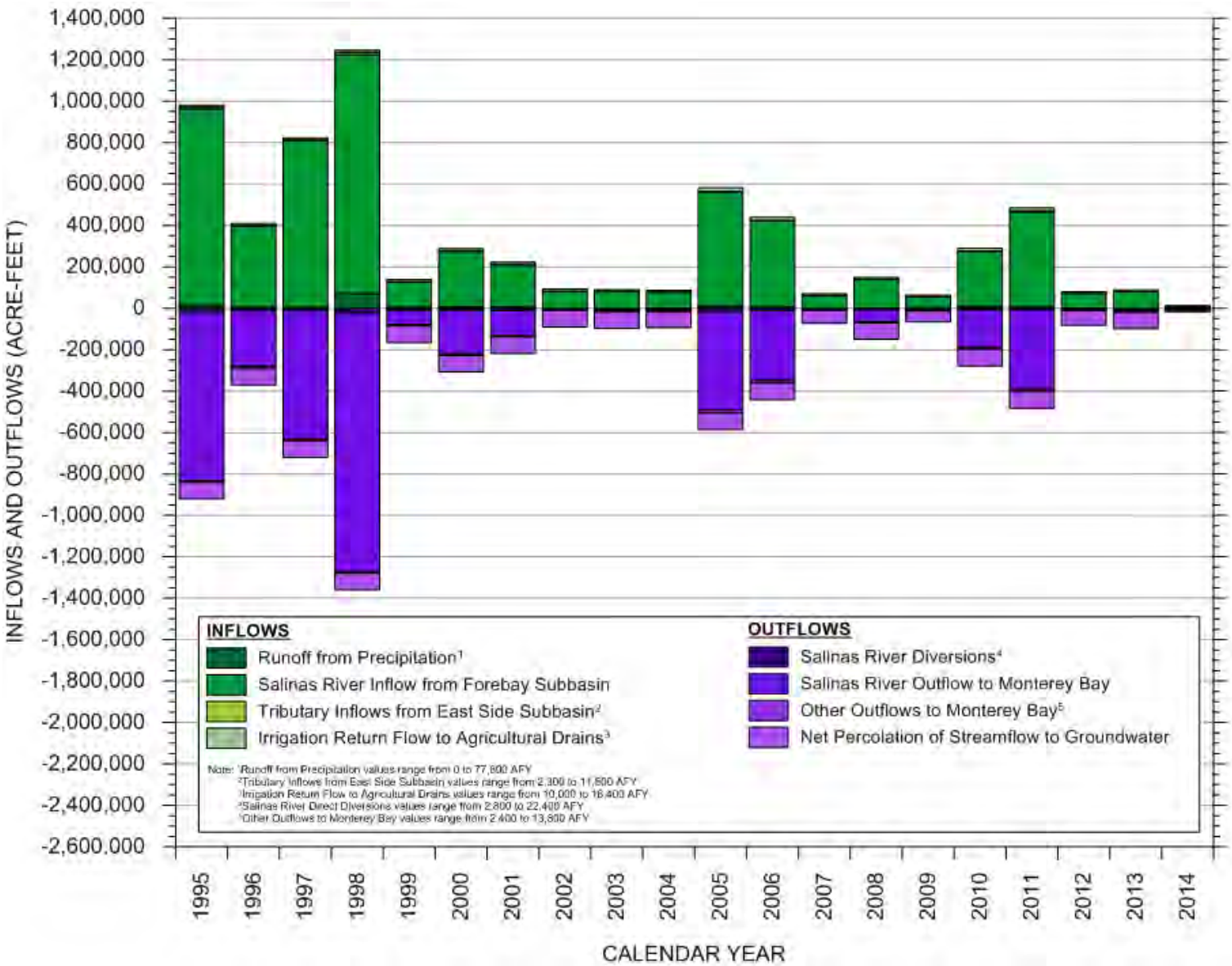

Figure 6-3: Historical Surface Water Budget

6.8.2 Groundwater Budget

The groundwater inflow and outflow components described in Sections 6.5 and 6.6 are combined to generate annual groundwater budgets for the historical (1995-2014) and current (2015-2017) budget periods.

Table 6-18 summarizes the average, minimum, and maximum annual values for each component of the historical groundwater budget. Table 6-19 summarizes the average, minimum, and maximum annual values for each component of the current groundwater budget.

Table 6-18: Summary of Historical Groundwater Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Net Percolation of Streamflow to Groundwater	73,300	5,000	80,000
	Precipitation Percolation to Groundwater	11,200	0	22,800
	Irrigation Percolation to Groundwater	11,700	5,200	18,100
	Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
TOTAL INFLOW		116,200	52,600	133,500
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Pumping - Total Subbasin	108,300	93,200	131,100
	Agricultural	89,000	76,200	110,800
	Urban	19,000	14,000	27,500
	Rural Domestic	400	300	400
	Riparian Evapotranspiration	12,000	12,000	12,000
	Subsurface Outflows to Adjacent Subbasins/Basin	9,500	9,500	9,500
TOTAL OUTFLOW		129,800	114,600	152,500
Storage		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Change in Storage	-13,700	-77,600	16,700

Table 6-19: Summary of Current Groundwater Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Net Percolation of Streamflow to Groundwater	31,100	3,300	80,000
	Precipitation Percolation to Groundwater	6,500	0	10,800
	Irrigation Percolation to Groundwater	4,500	-9400[1]	15,500
	Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
TOTAL INFLOW		62,100	38,700	101,400
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Pumping - Total Subbasin	109,300	108,400	111,000
	Agricultural	91,900	89,000	97,700
	Urban	17,000	12,900	19,000
	Rural Domestic	400	400	400
	Riparian Evapotranspiration	12,000	12,000	12,000
	Subsurface Outflows to Adjacent Subbasins/Basin	9,500	9,500	9,500
TOTAL OUTFLOW		130,800	129,900	132,600
Storage		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Change in Storage	-68,700	-28,500	-93,800

[1]Negative percolation due to extremely high flows in the Rec ditch in 2017, which is all subtracted from irrigation. Some Rec Ditch flows should be subtracted from precipitation. The total recharge from both irrigation and precipitation is correct

The annual groundwater budget components are variable, although not as variable as the surface water budget components. Figure 6-4 illustrates the annual inflow and outflow components for the historical budget period. The diagram uses stacked bar height to illustrate the magnitude of budget components for each year, with inflows shown on the positive y-axis and outflows on the negative y-axis. The inflow and outflow components for each year are tabulated in Appendix 6A.

Thomas S.
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ATTORNEY AT LAW

10 July 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Board of Directors

Re: July 11, 2019 meeting

Agenda Item 4.a
ASGSA coordination

Agenda Item 4.b
Chapter 6 of 180/400 GSP

ASGSA Coordination

On behalf of the Orradre and Scheid interests -- both of which have interests and/or lands in or near the Arroyo Seco area, a coordination agreement for a management area under the jurisdiction of the Arroyo Seco GSA (ASGSA) appears premature. Any concern is borne of ignorance, not animosity. Several maps exist of the current, projected, and other configuration of the lands that may be the management area of the ASGSA, e.g., at the DWR portal and in ASGSA public documents. The maps tend to appear "ragged" or riddled with "holes." Such maps may not pass the "straight face" test with the public or DWR irrespective of whose/which lands constitute the holes or peculiar edges. If the "holes" or "ragged edges" impact a client, then there may be further reasons for concern around inconsistent approaches to overall management.

The public discussions and materials -- mostly from the ASGSA -- reflect that the ASGSA desires the input of the landowners that may be affected and would seek it out. "The Subcommittee suggested meetings be held with property owners that have not been included in the set of properties presented to DWR." ASGSA Advisory Committee minutes (draft) for June 2019. While (1) I have had discussions to set a time/place for meetings and (2) informal, i.e., not subject to public disclosure or verification, overtures have been made to my clients by individuals, the ASGSA has yet to present its proposal(s) to my clients. On behalf of my clients, I urge the SVBGSA to take no action on the ASGSA coordination agreement and allow further time for the ASGSA[1] to initiate and conclude discussion or negotiation with landowners with whom it chooses to

[1] I am aware of the subcommittees and staff at both the ASGSA and GSA that are working on coordination. Those subcommittees are the obvious vector for discussions, at least initially, rather than the full Boards of either entity.

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engage. As the ASGSA and/or GSA Plan for (parts of) the Forebay is not due until 2022, there appears is ample time for a thorough process.

Chapter 6 draft

Many commenters have provided input on the iterations of Chapter 6 that were before the Planning Committee and the Advisory Committee. The agenda packet contains a matrix of such comments. Pages 58-59. I have included my prior two letters for the sake of transparency and consistency, but also provide the below comments on (1) what has changed in the draft and (2) what should have changed, but has not.

NOTE ON REFERENCES
For ease of tracking (given the content will eventually be in other agenda packets), the following format is used: xx/yy, in which xx is the page of the Chapter and yy is the page of the paginated packet. Both numbers are found on the right-hand corner of the page.

CHAPTER STILL LACKS CURRENT SUSTAINABLE YIELD CALCULATION
The current sustainable yield calculation is still absent. That has not changed in any iteration to date. At 6.8.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. Table 6-20 at 25/42. (Note that the text right above the table uses a different figure of 97,300 AFY.)

The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. 25/42[2]. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values Table 6-19 (23/40), the current sustainable yield appears to be 40,600 AFY for the 180/400 (109,300 - 68,700 = 40,600). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is over 50%. While sustainable yield is not "sustainability" itself, the omission of the current sustainable yield is troubling, pointing to a failure to meet a core regulatory requirement. Emergency GSP Reg. 354.18(b)(5) (the historic, current, and projected water budgets must include quantification of overdraft when basin deemed in overdraft per Bulletin 118).[3]

Also, whether the historical sustainable yield is itself accurate is undermined by the text which recites a total pumping figure of 86,5500 AFY but uses 108,300 in Tables 6-20 and 6-31. Cf 25/42 with 37/54 and 38/55.

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[2] Seawater intrusion and groundwater level changes are apparently lumped together as "change in storage" when calculating historical sustainable yield in Table 6-20 on 25/42.
[3] That "overdraft" may be calculated from the figures and values presented does not obviate the GSP regulatory requirement of quantifying "overdraft" for the several water budgets.

FUTURE SUSTAINABLE YIELD STILL BASED ON QUESTIONABLE ASSUMPTIONS

The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 37/54 and 18/35. Consultant Williams explained that the difference arose from the CSIP projects coming online, i.e., the projects were built and started performing during the historical period while the future projections assumed the projects were preforming at full capacity. My follow-up comment after the explanation was that it was unrealistic to assume the projects would perform perfectly (now and) in the future and not founded on the "best available" data. I and others noted that the Monterey County Resources Agency (MCWRA) has substantial data on the real-world efficiency/performance of the projects. The GSA can obtain that data, (1) disclose and (2) use it in its future projections of water needs. As it stands, the future projections of Chapter 6 are at best aspirational, when ready data exists that could support realistic projections.

On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft.

> If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 sub basin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP.

March 2017 letter, pages 6-7. The current iterations of Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential "management action" in SGMA nomenclature).

SURFACE WATER EXTRACTIONS STILL UNRELIABLE

"Surface" water reports to the State are public, unlike "groundwater" reports to the MCWRA. Total surface water diversions are quantified but have not been cross-checked to eliminate double-counting. My letter of June 4, 2019 provided a real-world example of a state report from the 180/400 area that the GSA -- but not the public -- can check against the MCWRA data to find out if there is double-counting. Appendix 6A contains the data used to calculate the surface water diversions in draft Chapter 6, but the data is a mere aggregation. There is

no reason for the GSA to withhold the public data it obtained from the state database, eWRIMS, that it then aggregated.

The order of magnitude of surface pumping reported is not trivial, being around 7,900 AFY on average. 10/27. Changes of similar orders of magnitude have occurred between the initial version of Chapter 6 seen by the Planning Committee to the one before the Board. Updating the draft Chapter because of better data and analyses is good, but it begs the question of why those data command renewed attention while others, e.g., the real-world performance of the CSIP projects and the double-counting of surface/groundwater, do not. By way of example, Table 6-19 is set forth below as it appeared in the initial draft and as it appears now, with highlighting added to illustrate changes.

Table 6-19: Summary of Current Groundwater Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Net Percolation of Streamflow to Groundwater	31,100	3,300	80,000
	Precipitation Percolation to Groundwater	11,600	5,000	6
	Irrigation Percolation to Groundwater	4,500	-9,500	15,500
	Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
TOTAL INFLOW		67,200	43,800	105,700
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Pumping -Total Subbasin	109,300	108,400	111,000
	Agricultural	91,900	89,000	97,700
	Urban	17,000	12,900	19,000
	Rural Domestic	400	400	400
	Riparian Evapotranspiration	12,000	12,000	12,000
	Subsurface Outflows to Adjacent Subbasins/Basin	3,200	-9,500	9,500
TOTAL OUTFLOW		124,400	110,900	132,500
Storage		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Change in Storage	-57,300	-88,700	-5,200

Table 6-19: Summary of Current Groundwater Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Net Percolation of Streamflow to Groundwater	31,100	3,300	80,000
	Precipitation Percolation to Groundwater	6,500	0	10,800
	Irrigation Percolation to Groundwater	4,500	-94001	15,500
	Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
TOTAL INFLOW		62,100	38,700	101,400
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Pumping -Total Subbasin	109,300	108,400	111,000
	Agricultural	91,900	89,000	97,700
	Urban	17,000	12,900	19,000
	Rural Domestic	400	400	400
	Riparian Evapotranspiration	12,000	12,000	12,000
	Subsurface Outflows to Adjacent Subbasins/Basin	9,500	9,500	9,500
TOTAL OUTFLOW		130,800	129,900	132,600
Storage		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Change in Storage	-68,700	-28,500	-93,800

Similar order of magnitude of changes or corrections can be seen in other data, e.g., Tables 6-18 and 6-29 (of questionable addition). But no similar updates exist about the surface/groundwater double-counting risk or the actual performance/efficiency of the CSIP projects.

CONCLUSION

Iterating the data and analyses is good in general, but not when the effort is selectively applied. In its third iteration, draft Chapter 6 still fails (1) to address a key regulatory requirement (explicitly calculating and disclosing overdraft and the current sustainable yield), (2) report and use MCWRA data about the CSIP projects' on-the-ground efficiency and performance, and (3) address double-counting from surface and groundwater reports.

Very truly yours,

Thomas S. Virsik

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Encl.

6 June 2019 comment letter to GSA Planning Committee
18 June 2019 comment letter to GSA Advisory Committee

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4 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Planning Committee

Re: Agenda Item 4.b
Chapter 6 of 180/400 GSP

The below are comments and suggestions for the draft Chapter 6 of the 180/400 GSP. As presented, the draft Chapter fails to meet the minimum requirements of SGMA, lacking literally the word "overdraft" in its text. Emergency GSP Reg. 354.18(b)(5) (the historic, current, and projected water budgets must include quantification of overdraft when basin deemed in overdraft per Bulletin 118).[1]

NOTE ON REFERENCES
For ease of tracking (given the content will eventually be in other agenda packets), the following format is used: xx/yy, in which xx is the page of the Chapter and yy is the page of the paginated packet. Both numbers are found on the right-hand corner of the page.

CHAPTER SKIRTS AROUND IMPORTANT SUSTAINABLE YIELD CALCULATION
Chapter 8 revealed that the future sustainable yield of the entire Valley is estimated at 494,000 AFY. Chapter 8 19/196 (at Planning Committee). What is the current sustainable yield for the 180/400? That specific query does not appear addressed in draft Chapter 6. At 8.6.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. 22/41. The text equates that to a 10% reduction in pumping from the historical average.

The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. Those values come from the chart for the historical groundwater budget. 19/38[2]. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values in the parallel summary chart (20/39), the current sustainable yield appears to be 52,000 AFY for the 180/400. I.e., delta between inflows and outflows at Tables 6-18, 6-19, and 6-20 (109,300 - 57,300 = 52,000). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is near 50%. While sustainable yield is not "sustainability" itself, the

[1] That "overdraft" may be calculated from the figures and values presented does not obviate the GSP regulatory requirement of quantifying "overdraft" for the several water budgets. Whether the next Chapter revision is one of editing (e.g., a change of terminology) or of arithmetic (e.g., add an extra calculation labelled "overdraft" in certain tables) is a matter for the GSA and its consultant.
[2] Seawater intrusion and groundwater level changes are apparently lumped together as "change in storage" in the charts on 19/38 and 20/39 (last entry in both).

omission of the current sustainable yield is troubling, pointing to a failure to meet a core regulatory requirement. Reg. 354.18(b)(5).

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS
The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 34/53 and 15/34. How that significant reduction occurs while projected pumping increases beyond historical levels is not explained. 34/53 (pumping of 86,500 AFY for historical sustainable yield v. pumping of 115,300 to 120,600 AFY for projected). Moreover, the calculated historical sustainable yield in Chapter 6 did not use a total pumping value of 86,500 AFY, but 108,300. Table 6-20 at 22/41. Clearly the two halves of Chapter 6 have not been checked against each other.

The "black box" quality of the SVIHM -- at least in its current state when it cannot be publicly peer reviewed by third parties -- undermines the credibility of the 180/400 GSP. A GSP based on assuming seawater intrusion radically decreases while pumping increases strains credulity. It is possible that the model is "correct" per its myriad assumptions and interconnections used to project results, if only one could review and reality test all of them. But at least as recited in draft Chapter 6, its calculation of a 7% reduction in pumping to balance the 180/400 comes across as far-fetched and unrealistic.

On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft.

> If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 sub basin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP.

March 2017 letter, pages 6-7. Lacking specific quantification of overdraft in the several water budgets, draft Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential "management action" in SGMA nomenclature).

DATA REFERENCES CONFUSING
Draft Chapter 6 states that the 180/400 basin accounts for 7% of the surface water extractions per eWRIMS. 7/26 The data relied upon is listed in Appendix 6-A. ??/58, 62. Data on eWRIMS has always been public and in the current era can be downloaded. 7/26 Yet, the Appendix does not contain the public information on who, where, and

when the diversions are occurring. If the omission is due to convenience or time pressures, the next iteration of the chapter should make such data available in the sprit (if not requirement) of transparency. The relevance of the data from eWRIMS is less "who," but where (the intruded area?) and when (winter rains or parched river?), which may impact the mandatory demand reduction analysis, i.e., assuming a 7% reduction, when and in what areas of the 180/400 does one curtail pumping?

CONCLUSION
As noted above, prior to any further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality.

Very truly yours,

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18 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Advisory Committee

Re: Agenda Item 4.c
Chapter 6 of 180/400 GSP

Enclosed are: (1) the June 4, 2019 letter to the Planning Committee on Chapter 6 and (2) a copy of an email to the SVBGSA of June 11, 2019, including its enclosures. This letter supplements the prior comment letter based on comments and feedback from the consultant and others at the June 6 and June 10 Planning and Board of Directors meetings, respectively. *Page references are to the internal numbering of the Chapter as posted on June 17, 2019 [a different version of the Chapter was posted on June 14, 2019]*.

EWRIMS (SURFACE WATER DIVERSION) DATA NOT VETTED

The enclosed email explains the simple process the GSA has available to it to determine if the surface water diversions used in the water budgets are "double counting" water. To put it starkly, the publically available statements of water diversion near Speckles sent along with the email claims that the surface water diversion reported to the State is -- in the view of the filer -- actually groundwater. See response to "Additional Remarks" of the State form (enclosed with email). Presumably, the filer (an affiliate/proxy for the well-regarded local ag interest Tanimura & Antle) is also following local requirements and providing the exact same water extraction numbers to the MCWRA per local Ordinance.

Unless the GSA compares the (limited) set of eWRIMS data for the 180/400 with the MCWRA groundwater pumping reports for the nearly identical zone (the "Pressure"), the water budget numbers will erroneously assume water users in the 180/400 draw from two separate sources and hence their reduction to meet "sustainable yield" may be inaccurate. SGMA requires the "best available" data and transparency, which would not be met and the Plan may fail at DWR if the GSA continues to ignore the data and simple analytical approach[1] at its fingertips.

[1] The MCWRA reports are tied to wells while the State reports are tied to land, but both require monthly extraction numbers, which can be directly compared. For example, a diversion for water use near Speckles that reports surface water diversions in succeeding calendar months of 115.2, 229.4, and 425.7 AF and a MCWRA report for a well near Speckles that reports groundwater extractions in succeeding calendar months of 115.2, 229.4, and 425.7 AF must be the same water. It should not be included twice in the water budget analyses.

The historical water budget reports surface water diversions on the order of nearly 10,000 AFY, which is a magnitude material to projecting a reliable sustainable yield. Chapter 6 at Tables 6-5 and 6-16, pages 10 and 18.

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS ABOUT CURRENT PROJECTS

The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15, pages 36 and 17. Consultant Williams explained that the delta is due (1) to the seawater intrusion projects (CSIP, SRDF) coming online during the historical period and (2) an assumed current and future "100%" level of performance of the. Again, what does the "best available" data show about the efficiency or performance of the MCWRA projects? If the data compiled by the MCWRA for its projects reflect a 50% or a 25% level of efficiency, then the model should use that metric instead of assuming the projects will magically perform far better than they have to date.

CONCLUSION

As noted in my prior letter and email and above, prior to further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality such as surface water diversions and project performance reality. The real danger for the Salinas Valley lies not in whether DWR accepts or approves the GSP, but in intelligently considering and selecting programs and management actions (a later chapter of the GSP) based on factious assumptions and projections about current project efficiency and wet water use/availability (whether labeled ground or surface). It is preferable to proceed with care than risk committing to projects or management actions that will either not lead to or perhaps even make the attainment of sustainability less likely.

Very truly yours,

Thomas S. Virsik

Thomas S. Virsik

Encl.
June 4, 2019 letter to GSA Planning Committee
June 11, 2019 email to GSA re eWRIMS and MCWRA

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4 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Planning Committee

Re: Agenda Item 4.b
Chapter 6 of 180/400 GSP

The below are comments and suggestions for the draft Chapter 6 of the 180/400 GSP. As presented, the draft Chapter fails to meet the minimum requirements of SGMA, lacking literally the word "overdraft" in its text. Emergency GSP Reg. 354.18(b)(5) (the historic, current, and projected water budgets must include quantification of overdraft when basin deemed in overdraft per Bulletin 118).[1]

NOTE ON REFERENCES
For ease of tracking (given the content will eventually be in other agenda packets), the following format is used: xx/yy, in which xx is the page of the Chapter and yy is the page of the paginated packet. Both numbers are found on the right-hand corner of the page.

CHAPTER SKIRTS AROUND IMPORTANT SUSTAINABLE YIELD CALCULATION
Chapter 8 revealed that the future sustainable yield of the entire Valley is estimated at 494,000 AFY. Chapter 8 19/196 (at Planning Committee). What is the current sustainable yield for the 180/400? That specific query does not appear addressed in draft Chapter 6. At 8.6.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. 22/41. The text equates that to a 10% reduction in pumping from the historical average.

The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. Those values come from the chart for the historical groundwater budget. 19/38[2]. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values in the parallel summary chart (20/39), the current sustainable yield appears to be 52,000 AFY for the 180/400. I.e., delta between inflows and outflows at Tables 6-18, 6-19, and 6-20 (109,300 - 57,300 = 52,000). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is near 50%. While sustainable yield is not "sustainability" itself, the

[1] That "overdraft" may be calculated from the figures and values presented does not obviate the GSP regulatory requirement of quantifying "overdraft" for the several water budgets. Whether the next Chapter revision is one of editing (e.g., a change of terminology) or of arithmetic (e.g., add an extra calculation labelled "overdraft" in certain tables) is a matter for the GSA and its consultant.
[2] Seawater intrusion and groundwater level changes are apparently lumped together as "change in storage" in the charts on 19/38 and 20/39 (last entry in both).

omission of the current sustainable yield is troubling, pointing to a failure to meet a core regulatory requirement. Reg. 354.18(b)(5).

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS
The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 34/53 and 15/34. How that significant reduction occurs while projected pumping increases beyond historical levels is not explained. 34/53 (pumping of 86,500 AFY for historical sustainable yield v. pumping of 115,300 to 120,600 AFY for projected). Moreover, the calculated historical sustainable yield in Chapter 6 did not use a total pumping value of 86,500 AFY, but 108,300. Table 6-20 at 22/41. Clearly the two halves of Chapter 6 have not been checked against each other.

The "black box" quality of the SVIHM -- at least in its current state when it cannot be publicly peer reviewed by third parties -- undermines the credibility of the 180/400 GSP. A GSP based on assuming seawater intrusion radically decreases while pumping increases strains credulity. It is possible that the model is "correct" per its myriad assumptions and interconnections used to project results, if only one could review and reality test all of them. But at least as recited in draft Chapter 6, its calculation of a 7% reduction in pumping to balance the 180/400 comes across as far-fetched and unrealistic.

On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft.

> If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 sub basin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP.

March 2017 letter, pages 6-7. Lacking specific quantification of overdraft in the several water budgets, draft Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential "management action" in SGMA nomenclature).

DATA REFERENCES CONFUSING
Draft Chapter 6 states that the 180/400 basin accounts for 7% of the surface water extractions per eWRIMS. 7/26 The data relied upon is listed in Appendix 6-A. ??/58, 62. Data on eWRIMS has always been public and in the current era can be downloaded. 7/26 Yet, the Appendix does not contain the public information on who, where, and

when the diversions are occurring. If the omission is due to convenience or time pressures, the next iteration of the chapter should make such data available in the sprit (if not requirement) of transparency. The relevance of the data from eWRIMS is less "who," but where (the intruded area?) and when (winter rains or parched river?), which may impact the mandatory demand reduction analysis, i.e., assuming a 7% reduction, when and in what areas of the 180/400 does one curtail pumping?

CONCLUSION
As noted above, prior to any further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality.

Very truly yours,

Thomas S. Virsik
Thomas S. Virsik

Gmail

Thomas S. Virsik <thomasvirsiklaw@gmail.com>

EWRIMS and MCWRA reports

Thomas S. Virsik <thomasvirsiklaw@gmail.com> Tue, Jun 11, 2019 at 2:10 PM
To: Gary Petersen <peterseng@svbgsa.org>

Gary,

For Williams' attention per his remarks yesterday that the nature of the reporting to (1) eWRIMS and (2) the MCWRA on water extractions was dissimilar (and hence could not be readily cross-checked for double counting). I vehemently disagree.

I have attached a T&A state report (three years, including the map showing location -- all from eWRIMS). I selected it at random. It claims to be using groundwater, by the way, at "Additional Comments." [I think the word "fights" is supposed to be "rights"]

One can make a direct comparison of the monthly amounts reported in the MCWRA and State databases. If any two reports (one from eWRIMS and the other from MCWRA) arguably within the same sub-basin reflect the exact same amounts for 1/17, 2/17, 3/17 etc. then there is double counting that skews (Ms. Isakson's word) the calculation of sustainable yield and pumping reductions. One need not correlate precise APN's or well codes. I can -- for my own clients whose MCWRA reports I possess-- do such a month by month comparison (none of which relate to the 180/400). I have made this comment in public before, but perhaps it was not understood.

Given the GSA has access to the MCWRA records, it can and must do the same comparison for the limited number of 180/400 eWRIMS statements. Chapter 8 draft Table 8-9. It's simple, yet necessary to meet the "best available" standard. And it leads to a better and more reliable real-world outcome based on accurate water use / yield numbers. No part of the comparison involves determining any "water right" or claim thereto.
--
Thomas S. Virsik
Attorney at Law

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4 attachments

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2015.pdf
73K

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2016.pdf
80K

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2017.pdf
80K

Maps from S014885.pdf
85K

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2015

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 05/31/2016

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3-4. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		3.017	0	3.017
February		2.637	0	2.637
March		14.177	0	14.177
April		9.469	0	9.469
May		8.465	0	8.465
June		13.554	0	13.554
July		14.954	0	14.954
August		4.292	0	4.292
September		0	0	0
October		0	0	0
November		0	0	0
December		0	0	0
Total		70.565	0	70.565
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
8e. Water transfered	No
8f. Quantity transfered (Acre-Feet)	
8g. Dates which transfer occurred	/ to /
8h. Transfer approved by	

Water Supply Contracts

8i. Water supply contract	No
8j. Contract with	
8k. Other provider	
8l. Contract number	
8m. Source from which contract water was diverted	
8n. Point of diversion same as identified water right	
8o. Amount (Acre-Feet) authorized to divert under this contract	
8p. Amount (Acre-Feet) authorized to be diverted in 2015	
8q. Amount (Acre-Feet) projected for 2016	
8r. Exchange or settlement of prior rights	
8s. All monthly reported diversion claimed under the prior rights	
8t. Amount (Acre-Feet) of reported diversion solely under contract	

5. Water Diversion Measurement		
a.	Measurement	Water directly diverted and/or diverted to storage was measured
b.	Types of measuring devices used	Propeller Meter
c.	Additional technology used	Flow Totalizer
	Description of additional technology used	
d.	Who installed your measuring device(s)	Representative using manufacturer's recommendations
e.	Make, model number, and last calibration date of your measuring device(s)	Water Specialties, Propeller meter
f.	Why direct measurement using a device listed in Section 1 is "not locally cost effective"	
	Explanation of why use of devices and technologies listed in Section 1 are "not locally cost effective"	
g.	Method(s) used as an alternative to direct measurement	
	Explanation of method(s) used as an alternative to direct measurement	

6. Purpose of Use	
Irrigation	661.90 Acres Vegetables

7. Changes in Method of Diversion

8. Conservation of Water		
a.	Are you now employing water conservation efforts?	Yes

	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates.
b.	Amount of water conserved	Acre-Feet
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

11a. Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Ron
Last Name	Yokota
Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2016

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 08/03/2018

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	**Area Irrigated (Acres)**	**Primary Irrigation Method**
Vegetables	Yes	661.90	Sprinkler

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		0	0	0
February		0	0	0
March		0	0	0
April		5.059	0	5.059
May		11.164	0	11.164
June		19.857	0	19.857
July		25.109	0	25.109
August		23.773	0	23.773
September		19.856	0	19.856
October		16.781	0	16.781
November		0	0	0

December		0	0	0
Total		121.599	0	121.599
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2016	
6p. Amount (Acre-Feet) projected for 2017	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M010336
This Device/Method was used to measure water during the current reporting period	
M1. Briefly describe the measurement device or method	propellor meter
M2. Nickname	
M3. Type of device / method	Flow meter (propeller)
M4. Device make	McCrometer
M5. Serial number	932573-8

M6. Model number	
M7. Approximate date of installation	04/13/2016
M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	11/01/2015
M10. Estimated accuracy of measurement	5%
M11. Description of calibration method	Calibrated to manufaturers specifications before installation manufacturer representative
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	
M14. Phone number	
M15. Email	
M16. Qualifications of the individual	California-licensed contractor authorized by the State License Board for C-57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps
M17. License number and type for the qualified individual above and/or any other relevant explanation	
M18. Type of data recorder device / method	
M19. Data recorder device make	
M20. Data recorder serial number	
M21. Data recorder model number	
M22. Data recorder units of measurement	
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	
M26. I report my diversion or storage date by telemetry to the following website	
M27. I have attached additional information on the method I used to calculate the volume of water	
M28. Describe any documents related to this measurement device or method that are attached to this water use report	

8. Conservation of Water

a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Anthony
Last Name	Duttle

Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2017

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 08/03/2018

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	**Area Irrigated (Acres)**	**Primary Irrigation Method**
Vegetables	Yes	661.90	Sprinkler

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		0	0	0
February		0.476	0	0.476
March		6.191	0	6.191
April		8.05	0	8.05
May		27.526	0	27.526
June		27.296	0	27.296
July		24.129	0	24.129
August		0.762	0	0.762
September		3.002	0	3.002
October		41.776	0	41.776
November		0.003	0	0.003

December		1.233	0	1.233
Total		140.444	0	140.444
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2017	
6p. Amount (Acre-Feet) projected for 2018	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M010336
This Device/Method was used to measure water during the current reporting period	Yes
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M3. Type of device / method	Flow meter (propeller)
M4. Device make	McCrometer
M5. Serial number	932573-8

M6. Model number	
M7. Approximate date of installation	04/13/2016
M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	11/01/2015
M10. Estimated accuracy of measurement	5%
M11. Description of calibration method	Calibrated to manufaturers specifications before installation manufacturer representative
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	
M14. Phone number	
M15. Email	
M16. Qualifications of the individual	California-licensed contractor authorized by the State License Board for C-57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps
M17. License number and type for the qualified individual above and/or any other relevant explanation	
M18. Type of data recorder device / method	
M19. Data recorder device make	
M20. Data recorder serial number	
M21. Data recorder model number	
M22. Data recorder units of measurement	
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	
M26. I report my diversion or storage date by telemetry to the following website	
M27. I have attached additional information on the method I used to calculate the volume of water	
M28. Describe any documents related to this measurement device or method that are attached to this water use report	

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a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates.
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

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b.	Amount of groundwater used	
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Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Anthony
Last Name	Duttle

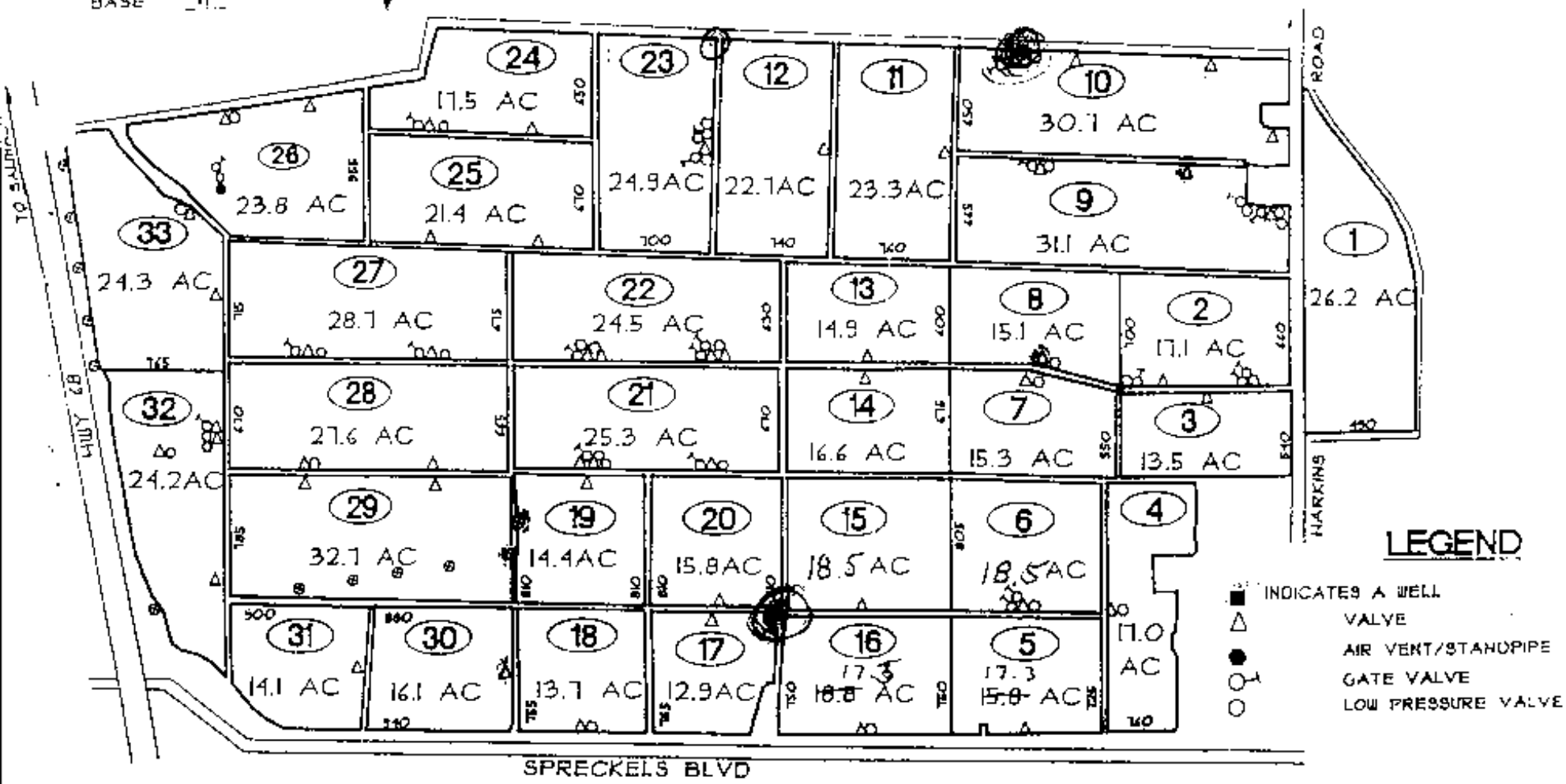
Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

SO14885

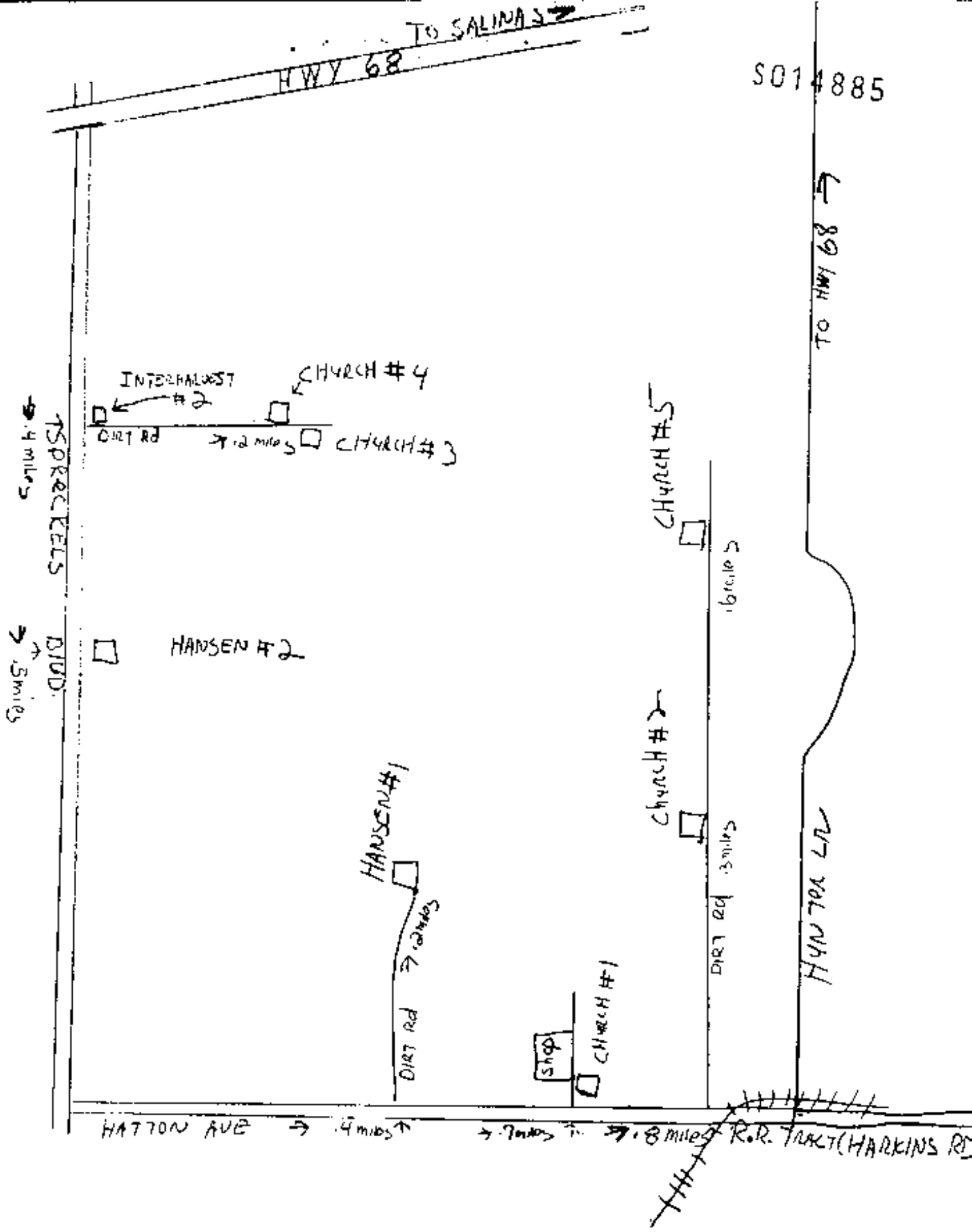
COUNTY 21
TOWNSHIP 15S
RANGE 3E
SECTION 20
BASE M

SPRECKELS RANCH
TANIMURA & ANTLE, INC.

SURVEYED 1982. REVISED 1984 & 1988
MAPPED APRIL 1995
FILE: TASPRECK.DWG 1"=100'



677.2± ACRES NET CROP



TO SALINAS
HWY 68
S014885
TO HWY 68
INTERHARVEST #2
CHURCH #4
DIRT Rd
.2 miles
CHURCH #3
SPRECKELS BLVD
.4 miles
.5 miles
HANSEN #2
CHURCH #5
.6 miles
CHURCH #2
.3 miles
DIRT Rd
HUNTER LN
HANSEN #1
.2 miles
DIRT Rd
CHURCH #1
shop
HATTON AVE
.4 miles
.7 miles
.8 miles
R.R. TRACT (HARKINS RD

Thomas S.
Virsik
ATTORNEY AT LAW

31 October 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA)

Re: 180/400 Draft GSP (comments on errata)

This comment letter is limited to proofreading level issues. The draft reviewed carries an October 1, 2019 date and was released on or about October 21, 2019.

- Volume 1, Chapter 2 at 2.3.2 on page 2-8. The second sentence appears unfinished, ending with a clause without any verb.

- Volume 2, Chapter 6 at 6-9 through 6-11, pages i through xii. This portion of Chapter six carries a lower case Roman pagination whereas all other pages of Chapter 6 (and the other chapters) use a hyphenated Arabic system, i.e., 6-1, 9-23. The unexplained and anomalous switch to a different pagination system is confusing.

- Volume 2, Chapter 8 at 8.9.2.1, page 8-46. There is a portion of a sentence in blue text, center justified, in a font and size different than the rest of the text. It appears the fragment continues to the next page in text, but the size, placement, and color of the fragment do not match the text that follows.

- Volume 2, Chapter 8 at 8.9.2.2 and 8.9.2.3, pages 8-48 and 8-49. On both pages, there is a portion of a sentence in blue text, center justified, in a font and size different than the rest of the text. It appears the fragments continue to the next page in text, but the size, placement, and color of the fragment do not match the text that follows.

- Volume 3, Chapter 9 at 9.3.2, page 9-10. The final sentence has a single closing parenthesis.

A comment letter addressing substantive issues, errors, omissions, and suggestions will be sent separately.

Very truly yours,

Thomas S. Virsik
Thomas S. Virsik

2363 Mariner Square Drive, Suite 240, Alameda, California 94501 | 510.521.3565 TEL | 510.748.8997 FAX | thomasvirsiklaw@gmail.com

Thomas S.
Virsik
ATTORNEY AT LAW

8 January 2020

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA)

Re: January 9, 2020 meeting

Agenda Item 7.a
Resolution approving the GSP for 180/400

On behalf of my clients, none of whom have direct interests in the 180/400 sub-basin but look with great interest on the quality of the process, I offer two comments, one of which is for emphasis and the other appears to identify a flaw that may result in rejection of the GSP.

<u>The 7% pumping reduction number is not a prediction of pumping reduction</u>
First, the emphasis. Buried in the responses to the written comments is the following articulate explanation at W-142, page 1076 of the agenda packet posted on 3 January 2020 (references are to that numbering unless otherwise noted):

> Text has been added to explain that the sustainable yield is a long term management number, not the amount of pumping needed to stop current seawater intrusion. The sustainable yield assumes seawater intrusion has been halted. In other words, the future sustainable yield is the sustainable yield once actions have been taken to reach measureable objectives and avoid undesirable results. Prior to the future sustainable yield there will need to be actions taken to come to sustainability.

This explanation is far more precise and clear than the several references in the GSP text to the far from intuitive definition of "sustainable yield." <u>See e.g</u>., 6.10.5 at 272; 8.7.2 at 328. Unfortunately, the text also appears to falsely state that in order to reach sustainability, only a 7% (approximate) pumping reduction is needed.

> This table [6-31] estimates that pumping reductions of between 7.0 % and 7.1 % will be needed to reduce Subbasin pumping to the Sustainable Yield.

Page 272. The sentence is misleading, because the 7% reduction will not <u>reduce</u> pumping to the sustainable yield, which target instead require other magnitudes of reductions, projects, and actions per the explanation above at W-142. To follow the GSA text at note W-142, the above sentence needs to add: " . . . only after much higher pumping reductions and/or other projects and actions have resulted in actually halting all seawater intrusion."

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It is important that the Board, consultants, and GSA staff disabuse the public from a facile assumption that the 7% reduction number reflects the foreseeable level of pumping reductions in the 180/400. That low number is the projection some decades down the road only if and when the much more severe and expensive efforts of projects, actions, and pumping restrictions in the 180/400 finally and firmly halt seawater intrusion.

Historical water budget now fatally flawed as opaque and bereft of justification
With this comment is a sheet created from a direct comparison of parts of Appendix 6A from December 2019 and the current one of January 2020. The December 2019 Appendix 6A reported that during the drought years when the River showed little to no water on its surface and the gage at the Bay reflected zero outflow[1], the percolation into the 180/400 was either low or nonexistent. Shockingly, 2020 version of that same table in Appendix 6A finds that in those drought years the percolation is now characterized as quite robust. That one wholesale change in how the River percolates in the 180/400 during severe drought years affects the input and numbers in multiple other tables and analyses, resulting in a much rosier set of historical water budget tables / numbers / conclusions throughout the GSP. See and compare, the following "then (12/19) and now (1/20)" versions of Tables 6-17, 6-18, Figure 6-4 (bar graph), Figure 6-5 (bar graph), Tables 6-19, 6-20, 6-22, and 6-23 (and the parallel Executive Summary versions).[2]

Current Appendix 6A carries no notes or other explanation of why/how the percolation numbers during drought years rose by great amounts. Recall that the GSP was on the cusp of adoption in December, which would have included the version of Appendix 6A that reflected that zero outflow to the Bay meant little to no percolation from the dray River in the 180/400. What changed less than thirty days later?

Given the twin pillars of the best available science and data, which of the two resulted in the changes? What historic data changed between December 9, 2019 and January 3, 2020 (the release dates of the two versions of Appendix 6A) to so radically result in far greater percolation numbers? If it was not "new" historic data, what new tool was developed in the fewer than 30 days between versions?

The Board is challenged to demand an explanation -- to honor transparency in this concrete situation. If the Board cavalierly accepts a water budget that changed to a far rosier hue in less than 30 days, the DWR will be well justified to

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1 It's not explicit, but one assume the outflow amounts are taken from legacy MCWRA data based on actual gage readings.

2 It appears that the changes to the percolation amounts may have been triggered by the MCWRA's keen observation that when math was applied to the 2019 water budget numbers (derived from the data reported in the 2019 Appendix 6A), a 37% pumping reduction was the result. W-246.

reject the GSP for failure to meet SGMA standards for the historical water budget, one of the explicit regulatory requirements for a GSP. Involving the State entities may become an advantage in the long-term perspective, because probation may bring with it the expertise and assistance of the DWR and SWRCB.

Final comment:
The purpose of my comments, and one assumes most if not all other comments, is to improve the GSP to the point that it is acceptable to the DWR, fair, reliable, and useful. The GSA has made many, many improvements and correction to it based on the comments. Nevertheless, when a critical part of the historic water budget radically changes at the very last moment with no warning, justification, or hint at explanation, the GSA must stop and demand full daylight be brought on the changes.

Do not accept the GSP -- at least not today, and at least not until both the Board and the public can be assured that the water budget numbers are not goal oriented, but are based exclusively on the best data and science. In the alternative if the Board is too fearful of a missed deadline, it can approve the GSP contingent on its commitment to present to the public and for adoption within the expected public comment period (i.e., sixty days or less) an amendment to Appendix 6A and the tables, figures, and calculations that arise therefrom based on transparent data and science. SGMA Reg. § 355.10 (re amending a GSP after submission).

Very truly yours,

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December 2019

SURFACE WATER OUTFLOW				
Salinas River Direct Diversions (AF/yr.)	Salinas River Outflow to Monterey Bay (AF/yr.)	Other Outflows to Monterey Bay (AF/yr.)	Net Percolation of Streamflow to Groundwater (AF/yr.)	Total Outflow (AF/yr.)
8,000	817,500	10,000	90,000	925,500
8,000	274,400	10,000	80,000	372,400
8,000	622,400	10,000	90,000	730,500
8,000	1,251,400	10,000	90,000	1,359,400
8,000	68,500	10,000	68,500	155,100
8,000	209,700	10,000	80,000	307,700
8,000	119,900	10,000	80,000	217,900
8,000	0	10,000	0	18,000
8,000	6,000	7,800	6,000	27,800
8,000	3,300	9,100	3,300	23,700
8,000	477,500	16,400	90,000	591,900
8,000	338,000	14,900	90,000	450,900
8,000	0	7,100	0	15,100
8,000	57,600	6,200	57,600	131,400
8,000	0	8,600	0	16,600
8,000	181,500	13,400	80,000	282,900
6,500	384,500	14,300	90,000	495,300
7,200	0	7,300	0	14,500
9,200	4,500	8,000	4,500	26,100
8,900	0	5,000	0	13,900
8,300	0	8,700	0	17,000
7,600	0	14,400	0	22,000
7,600	310,300	30,800	90,000	438,900
8,000	240,800	10,000	50,000	308,800
7,900	103,400	18,000	30,000	159,300

January 2020

SURFACE WATER OUTFLOW				
Salinas River Direct Diversions (AF/yr.)	Salinas River Outflow to Monterey Bay (AF/yr.)	Other Outflows to Monterey Bay (AF/yr.)	Net Percolation of Streamflow to Groundwater (AF/yr.)	Total Outflow (AF/yr.)
8,000	817,500	10,000	90,000	925,500
8,000	274,400	10,000	90,000	382,400
8,000	622,400	10,000	90,000	730,500
8,000	1,251,400	10,000	90,000	1,359,400
8,000	68,500	10,000	80,000	166,500
8,000	209,700	10,000	80,000	307,700
8,000	119,900	10,000	80,000	217,900
8,000	0	10,000	80,000	98,000
8,000	6,000	7,800	80,000	101,800
8,000	3,300	9,100	76,400	96,800
8,000	477,500	16,400	90,000	591,900
8,000	338,000	14,900	90,000	450,900
8,000	0	7,100	62,000	77,100
8,000	57,600	8,200	80,000	153,800
8,000	0	8,600	52,100	68,700
8,000	181,500	13,400	80,000	282,900
6,500	384,500	14,300	90,000	495,300
7,200	0	7,300	70,500	85,100
9,200	4,500	8,000	79,600	101,200
8,900	0	5,000	5,000	18,900
8,300	0	8,700	3,300	20,300
7,600	0	14,400	10,000	32,000
7,800	310,300	30,800	90,000	438,900
8,000	240,800	10,000	76,800	335,600
7,900	103,400	18,000	34,400	163,700

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January 8, 2020

By Hand Delivery and E-Mail

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Re: Finalizing Groundwater Sustainability Plan and Adopting Cooperation Agreement with the County of Monterey–SVBGSA Board of Directors January 9, 2020 Meeting, Agenda Items # 7a and # 7b

Dear Salinas Valley Basin Groundwater Sustainability Agency Board of Directors:

On behalf of the City of Marina ("City" or "Marina") and the Marina Groundwater Sustainability Agency ("MGSA"), we submit these comments opposing the adoption of two proposed resolutions on the Agenda for the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") Board of Directors' January 9, 2020 meeting: (1) the resolution adopting SVBGSA's final groundwater sustainability plan ("GSP") for the 180/400 Foot Aquifer Subbasin ("Subbasin"); and (2) the resolution adopting a cooperation agreement between SVBGSA and the County of Monterey ("County") for management of an approximately 400-acre parcel within the Subbasin.

INTRODUCTION

The City and MGSA previously opposed both resolutions when the SVBGSA Board of Directors first considered them on December 12, 2019. A copy of the City/MGSA letter in opposition to those resolutions is enclosed as Exhibit 1 and incorporated herein by reference. After considering the resolutions, the SVBGSA Board of Directors continued them to its January 9, 2020 meeting. However, in the intervening time, SVBGSA has failed to address the concerns of the City and MGSA regarding both resolutions. As a result, the City and MGSA continue to oppose the resolutions for the reasons set forth in our December 12, 2019 opposition letter and for the further reasons set forth herein.

The City and MGSA oppose both of SVBGSA's proposed resolutions as impermissible interference with the City and MGSA's sustainable management of groundwater in MGSA's jurisdictional area ("MGSA Area") and MGSA's performance of its obligations as a groundwater sustainability agency ("GSA") under the Sustainable Groundwater Management Act ("SGMA"). On December 11, 2019, the Monterey County Board of Supervisors adopted Resolution 19-171, which attempts to utilize Water Code Section 10724 to become the "exclusive" GSA for the MGSA Area. County staff then filed a GSA notification with the California Department of Water Resources ("DWR") to become the GSA for the MGSA Area, and on December 18, 2019, DWR posted the County's notification and designated the County as the "exclusive" GSA for the MGSA Area.

On December 30, 2019, the City and MGSA filed a Petition for Writ of Mandate and Complaint for Declaratory and Injunctive Relief in Monterey County Superior Court against Monterey County and DWR, with SVBGSA and its Board of Directors named as Real Parties in Interest (Case No. 19CV005270). This Petition was served on the SVBGSA parties on January 2, 2020. The City and MGSA allege that SVBGSA is participating in an unlawful scheme to conduct a hostile takeover of MGSA's jurisdiction for the purpose of divesting MGSA of its SGMA jurisdiction and substituting SVBGSA management and the SVBGSA GSP for the MGSA Area. Since adoption of this proposed cooperation agreement with the County would represent a further step to consummate this unlawful scheme, the City and MGSA strongly advise SVBGSA not to take this action.

Together, SVBGSA's two proposed resolutions purport to deny the City and MGSA the opportunity to contribute to the sustainable management of the portions of the Subbasin within the City's jurisdiction either as a local entity or as a SGMA GSA. First, SVBGSA's proposed resolution to adopt its Final GSP without fully considering or incorporating the City and MGSA's public comments would deny the City its right to contribute to the management of the entire 180/400 Foot Aquifer Subbasin as a local government entity under Water Code Section 10728.4. That section mandates that a GSA "shall review and consider comments from any city or county" within its GSP's area. Cal. Water Code § 10728.4; *see also* Cal. Code Regs. tit. 23, § 354.10(c) (requiring a GSP to include the public comments on the GSP "and a summary of any responses by the [GSA]"). SVBGSA's decision to almost completely ignore the City and MGSA's comments not only leaves critical gaps in SVBGSA's GSP, but it also leaves MGSA's role as a GSA with its own GSP as the only way for the City and MGSA to shape groundwater management in the MGSA Area.

Second, SVBGSA's resolution proposing to adopt a cooperation agreement with the County further attempts to quash the City and MGSA's right to contribute to groundwater management in the Subbasin through MGSA's GSP. This cooperation agreement would effectively install SVBGSA as the exclusive GSA for the MGSA Area by assigning SVBGSA the responsibility of complying with SGMA, including reviewing, adopting, and implementing the GSP for the Marina Area. As a result, the cooperation agreement improperly attempts to cement the County's efforts to strip the City and MGSA of their groundwater management authority under SGMA.

Accordingly, SVBGSA's proposed resolutions would collectively deprive the City and MGSA of their ability to ensure sustainable management of the Subbasin and protect the beneficial groundwater uses and users in the City's coastal areas. Therefore, the City and MGSA strongly urge SVBGSA to (1) immediately revise its Final GSP to incorporate the comments of the City and MGSA, and (2) decline to adopt the cooperation agreement.

I. SVBGSA's Failure To Address The City And MGSA's Public Comments In Its Final GSP Results In A Deficient Final GSP.

The City and MGSA oppose SVBGSA's resolution to adopt its Final GSP. SVBGSA's staff report for the January 9, 2020 Board of Directors' meeting maintains that SVBGSA will not respond to all of the timely comments it received on its Draft GSP before its November 25, 2019[1] comment deadline. Unfortunately, SVBGSA has only considered and responded to a fraction of the City and MGSA's public comments.[2] Instead, SVBGSA's proposed resolution still seeks to approve its Final GSP without fully considering these comments or addressing them through changes to its GSP. This approach violates SGMA, essentially nullifies the important public comment process, and impairs the due process rights of all commenters whose comments SVBGSA did not choose to consider. Accordingly, SVBGSA's Board cannot legally approve the Final GSP without first completing the comment review, response, and GSP revision processes.

SVBGSA's Final GSP fails to address the critical gaps in SVBGSA's GSP previously identified by the City and MGSA in their public comments on the Draft GSP.[3] In particular, SVBGSA's GSP still does not correctly characterize, monitor, or manage the groundwater resources in the coastal region south of the Salinas River or recognize the critical municipal,

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[1] *See* SVBGSA, *Public Notice Release of Groundwater Sustainability Plan 180-400 Foot Aquifer Subbasin*, available at https://svbgsa.org/groundwater-sustainability-plan/180-400-ft-aquifer/.

[2] SVBGSA's comment response matrix indicates that SVBGSA has considered and responded to only seven of the City and MGSA's public comments. In addition to a cover letter and four attachments, the City and MGSA submitted a table outlining 39 separate comments on SVBGSA's Draft GSP. SVBGSA's Staff Report notes that it will not consider or respond to "[c]omments that are not individually addressed in this matrix." SVBGSA Board Agenda, *Staff Report on Agenda Item 7a* at p. 15. Instead, those comments "will be addressed as the GSP is implemented and refined." *Id.* This means SVBGSA has not considered or addressed the vast majority of the City and MGSA's public comments. A copy of SVBGSA's comment response matrix is available at https://svbgsa.org/wp-content/uploads/2020/01/Master_Review_Comments_ 20191231- CF.pdf.

[3] The City and MGSA submitted comments on the SVBGSA's Draft GSP including a cover letter, four attachments, and a comment table on November 25, 2019. Those comments are available at https://svbgsa.org/wp-content/uploads/2019/12/WholeGSP_Comment_letters_compiled_reduced.pdf and are incorporated by reference herein.

domestic, groundwater-dependent ecosystems ("GDEs"), and other beneficial uses or users in that area. SVBGSA also fails to utilize the newest and best available science for its GSP, including state-of-the-art airborne electromagnetic investigations performed by Stanford University researchers and others that have generated three-dimensional groundwater maps and cross-sections of the Subbasin. These studies reveal critical characteristics and complexities in the Subbasin that SVBGSA must consider to manage and protect groundwater resources in the Subbasin.

SVBGSA's failure to consider these studies also contributes to the Final GSP's inadequate protections against ongoing and worsening seawater intrusion. This failure puts the City's water supply and coastal beneficial groundwater users at risk. Furthermore, and without limitation, SVBGSA's Final GSP also fails to (1) designate, protect, and manage the Dune Sand Aquifer as a principal aquifer; (2) meaningfully recognize, address, monitor, and manage GDEs as a beneficial groundwater use; (3) consider state and federal protections for habitats and species in and near the MGSA Area; and (4) include an adequate monitoring network in the coastal portion of the Subbasin. The Final GSP is thus deficient in its current form.

Adopting SVBGSA's GSP without addressing the deficiencies delineated in the City and MGSA's comments will result in a GSP that lacks the necessary protections for the Subbasin's coastal areas as well as local beneficial uses and users of groundwater. SVBGSA's failure to address the crucial factual, technical, and scientific issues that MGSA and the City raised in their comments undermines the integrity and validity of SVBGSA's Final GSP. Further, SVBGSA's failure to revise its GSP in response to the City and MGSA's valid comments denies the City of its right to contribute to groundwater management in its jurisdiction in violation of SGMA. It also leaves the City and MGSA with only a future undefined "implemented and refined" GSP process to voice and address local concerns regarding groundwater management in the MGSA Area.[4]

II. The Proposed Cooperation Agreement Unlawfully Attempts To Eliminate The City And MGSA's Groundwater Management Authority.

The City and MGSA oppose SVBGSA's proposed resolution to approve a cooperation agreement between SVBGSA and the County of Monterey GSA. SVBGSA failed to negotiate in good faith with MGSA over the terms of a coordination agreement for four months and instead requested that the County take over MGSA's jurisdictional area. The proposed cooperation agreement would further the County's hostile takeover of the MGSA Area by attempting to

[4] In correspondence with MGSA, SVBGSA confirmed that it would only agree to meet with MGSA to coordinate on a GSP if MGSA "agrees to give up its GSA." Relinquishing its GSA status would leave the City with only the public comment process to influence groundwater management in its jurisdiction. Therefore, SVBGSA's improper refusal to fully consider MGSA's comments and revise its GSP to address the gaps identified by MGSA further illustrates why SVBGSA's negotiation demand that MGSA give up its valid GSA status was a complete non-starter.

legitimize the illegal efforts of the County and SVBGSA to deprive MGSA of any groundwater management authority and circumvent SGMA's coordination requirements.

The cooperation agreement seeks to bar the City and MGSA from exercising any groundwater management authority in the MGSA Area. In the proposed agreement, the County purports to delegate complete management authority for the MGSA Area to SVBGSA, including the responsibility of "comply[ing] with SGMA at the CEMEX Site," as well as "taking actions to review, adopt and implement the GSP." SVBGSA and Monterey County Cooperation Agreement at p. 4. The agreement further provides that the "County GSA authorizes SVBGSA to exercise any and all legal authorities in compliance with applicable law for the CEMEX Site." *Id.*

These provisions effectively eliminate any voice that the City or MGSA has in the management of the MGSA Area. They also demonstrate that the County has no interest in acting as the GSA for the MGSA Area. The County instead only seeks to become a GSA to remove MGSA, so its agency partner SVBGSA, can manage the site. Indeed, through the cooperation agreement, the County and SVBGSA aim to do what SVBGSA cannot do under the SGMA on its own—adopt SVBGSA's GSP for the MGSA area without coordinating with MGSA and its GSP. Accordingly, the proposed cooperation agreement functions as a key part of the unlawful scheme to circumvent the local voices and local concerns contained in MGSA's GSP.

CONCLUSION

For all of these reasons, the City and MGSA oppose SVBGSA's proposed resolutions. Together, SVBGSA's resolutions threaten to silence MGSA both as a local agency participating in the public comment process and as a validly formed GSA. The City and MGSA therefore strongly urge SVBGSA to (1) immediately revise its Final GSP to incorporate the comments of the City and MGSA, and (2) decline to adopt the cooperation agreement.

Sincerely,

Paul P. "Skip" Spaulding, III

PPS:jla
Enclosures

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EXHIBIT 1

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December 12, 2019

By Hand Delivery

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Re: Finalizing Groundwater Sustainability Plan and Adopting Cooperation Agreement with the County of Monterey–SVBGSA Board of Directors
December 12, 2019 Meeting, Agenda Items # 7.a and # 7.b

Dear Salinas Valley Basin Groundwater Sustainability Agency Board of Directors:

On behalf of the City of Marina ("City" or "Marina") and the Marina Groundwater Sustainability Agency ("MGSA"), we submit these comments opposing the adoption of two proposed resolutions on the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") Board of Directors' December 12, 2019 Agenda: (1) the resolution adopting SVBGSA's final groundwater sustainability plan ("GSP") for the 180/400 Foot Aquifer Subbasin ("Subbasin"); and (2) the resolution adopting a cooperation agreement between SVBGSA and the County of Monterey ("County") for management of an approximately 400-acre parcel within the Subbasin.

INTRODUCTION

The City and MGSA oppose both resolutions before the SVBGSA Board of Directors' for different reasons. First, the City recognizes the hard work that has gone into the preparation of SVBGSA's GSP. As required by the Sustainable Groundwater Management Act ("SGMA"), SVBGSA circulated its Draft GSP for a 45-day public comment period, and we understand that SVBGSA received a considerable volume of comments. However, according to the Staff Report, SVBGSA has no intention to respond to the timely comments it received after mid-November or to make any changes to its Draft GSP based on those comments. Rather, SVBGSA's proposed resolution seeks to approve its Final GSP without taking these comments into account.

SVBGSA's approach violates SGMA and essentially nullifies the important public comment process. The City and MGSA submitted comments on November 25, 2019 (within the public comment period), but SVBGSA is disregarding these comments and making no changes

to its GSP based on them. This procedural misstep by SVBGSA fundamentally impairs the due process rights of all commenters who filed comments after mid-November. It also undermines the integrity and validity of SVBGSA's Final GSP because it does not address the crucial factual, technical, and scientific issues that MGSA and the City raised in their comments. Accordingly, SVBGSA's Board cannot legally approve the Final GSP without first completing the comment review, response, and GSP revision processes. The Final GSP is thus deficient in its current form.

Second, the City and MGSA oppose the resolution approving a cooperation agreement between SVBGSA and the County of Monterey. SVBGSA failed to negotiate in good faith with MGSA over the terms of a coordination agreement for four months and instead requested that the County take over MGSA's jurisdictional area. This is no less than a "hostile takeover" of MGSA's entire groundwater area. Pursuant to this plan, on December 11, 2019, the County adopted a resolution to utilize Water Code Section 10724 to pursue becoming the groundwater sustainability agency ("GSA") for the approximately 400-acre parcel within the Subbasin where MGSA and SVBGSA have filed overlapping GSA notifications.

However, the County cannot lawfully invoke Section 10724, in part because as a member, majority funder, and architect of SVBGSA and its GSP, the County "is creating or contributing to the [GSA] overlap" it allegedly seeks to solve by becoming a GSA. State Water Resources Control Board, *Frequently Asked Questions on GSAs*, at 3 (Nov. 22, 2017). The County thus has no legal basis for disregarding MGSA, a properly-formed GSA with jurisdiction over the MGSA area. Furthermore, the County's efforts to install SVBGSA's GSP and to delegate management of the overlapping area expose the County's real motive. Together, SVBGSA and the County seek to contravene SGMA's GSA coordination requirements and effectively designate SVBGSA as the exclusive GSA for the Subbasin through a prohibited "backdoor" maneuver. These actions violate SGMA and attempt to unlawfully block the City of Marina and MGSA from exercising their rights under SGMA.[1]

Both of these resolutions would undermine the efforts of the City and MGSA to contribute to the sustainable management of the Subbasin and protect the critical coastal areas in the City's jurisdiction. Accordingly, the City strongly urges SVBGSA not to adopt either proposed resolution and instead begin coordinating with MGSA to develop a GSP or set of GSPs to sustainably manage the Subbasin.

I. SVBGSA's Proposed Resolution To Finalize Its GSP Unlawfully Disregards Timely Filed Public Comments And Has Resulted In A Deficient Final GSP.

The City and MGSA oppose SVBGSA's proposed resolution to adopt its Final GSP after only considering and addressing a portion of the public comments on it. The deadline to submit

[1] The City and MGSA provided a detailed description of these issues in their December 10, 2019 joint opposition letter to the County's GSA Resolution, which is enclosed herewith as Attachment 1 and incorporated herein by reference.

public comments on SVBGSA's GSP was November 25, 2019.[2] Now, after that deadline has passed, SVBGSA seeks to impose an earlier comment deadline by failing to consider and address public comments received "[b]etween mid-November and prior to the closing comment date of November 25, 2019." SVBGSA Board Agenda, *Staff Report on Agenda Item 7a* at 63.

SVBGSA openly admits that "not all" public comments "will be initially addressed individually in the comment matrix." *Id.* SVBGSA plans instead to wait until after it approves and submits its Final GSP before addressing all of the comments. It tries to justify this deferral by stating that it can take the comments into account "as the GSP is implemented and refined." *Id.* Because of SVBGSA's newly announced mid-November comment cutoff, the unaddressed comments include the City and MGSA's November 25, 2019 comment letter and matrix.[3]

SVBGSA's failure to consider the City and MGSA's comments violates SGMA, which mandates that a GSA "shall review and consider comments from any city or county" within its GSP's area. Cal. Water Code § 10728.4; *see also* Cal. Code Regs. tit. 23, § 354.10(c) (requiring a GSP to include the public comments on the GSP "and a summary of any responses by the [GSA]"). SVBGSA's failure to consider and address these comments undermines the purpose of the public comment process and potentially deprives local governments, beneficial users, and interested parties of the opportunity to provide input on the GSP. *See* Cal. Water Code § 10727.8. Accordingly, SVBGSA's efforts to adopt its GSP without considering or addressing the City and MGSA's comments present a clear violation of SGMA.

Failing to consider the City and MGSA's comments also leaves critical gaps in SVBGSA's GSP unaddressed. These gaps include the GSP's failure to (1) utilize the newest and best available science; (2) designate, protect, and manage the Dune Sand Aquifer as a principal aquifer; (3) provide sufficient protections against ongoing or worsening seawater intrusion; (4) meaningfully recognize, address, monitor, and manage groundwater-dependent ecosystems as a beneficial groundwater use; (5) consider state and federal protections for habitats and species in and near the MGSA area; and (6) include an adequate monitoring network in the coastal portion of the Subbasin. These and the other deficiencies delineated in the City and MGSA's comments only heighten the harm from SVBGSA's refusal to consider them. Adopting SVBGSA's GSP without addressing these issues will fail to protect the Subbasin's coastal areas as well as local beneficial uses and users of groundwater.

When taken together, SVBGSA's instigation of the County's new effort to become a GSA and failure to consider the City's public comments would deny the City of its right to contribute to the management of the MGSA area as either a DWR-recognized GSA or a local government entity. In correspondence with MGSA, SVBGSA has confirmed that it will only

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[2] *See* SVBGSA, *Public Notice Release of Groundwater Sustainability Plan 180-400 Foot Aquifer Subbasin*, available at https://svbgsa.org/groundwater-sustainability-plan/180-400-ft-aquifer/.

[3] City of Marina and MGSA, *Comments on SVBGSA Draft Groundwater Sustainability Plan* (Nov. 25, 2019).

agree to meet with MGSA to coordinate on a GSP if MGSA "agrees to give up its GSA."[4] Relinquishing its GSA status would leave the City with only the public comment process to influence groundwater management in its jurisdiction. However, SVBGSA has thus far failed to consider MGSA's public comments before finalizing its GSP. These efforts collectively would deprive the City and MGSA of their ability to ensure sustainable management of the Subbasin and protect the City's coastal areas.

II. The County And SVBGSA's Proposed Cooperation Agreement Confirms SVBGSA's Role As The County's Affiliate In The County's GSA Takeover.

SVBGSA's proposed resolution adopting a cooperation agreement with the County to install SVBGSA's GSP and manage the overlap area demonstrates SVGBSA's role in the County's proposed unlawful GSA takeover. Indeed, both SVBGSA's proposed resolution and the cooperation agreement provide further proof of the unlawful nature of the County's efforts and SVBGSA's status as the County's affiliate. The City and MGSA oppose the adoption of this proposed cooperation agreement because it formalizes the County and SVBGSA's joint effort to exclude MGSA from the management of the MGSA area.

First, the cooperation agreement evidences the County's and SVBGSA's shared intent to deny MGSA the opportunity to collaborate on groundwater management issues in the Subbasin and circumvent SGMA's coordination requirements. SVBGSA's Staff Report demonstrates that SVBGSA had no intention of coordinating with MGSA and instead has sought ways to work with the County to implement its GSP. Only two days after MGSA released its Draft GSP on October 8, 2019, the SVBGSA Board voted to "request[] that Monterey County take all necessary steps to become the GSA for either the entire 180/400 Foot Aquifer Subbasin or the CEMEX site." SVBGSA Board Agenda, *Staff Report on Agenda Item 7b* at 502. This motion included a request that the County also adopt SVBGSA's GSP. *Id*. Thus, before MGSA and SVBGSA even submitted comments on each other's GSPs, SVBGSA already solicited the unlawful intervention of its member and majority funder to override MGSA and implement its GSP.

Second, SVBGSA and the County's proposed cooperation agreement also confirms their plan to have the County become a GSA, not to manage the overlap area, but instead to effectively install SVBGSA as the exclusive GSA for the MGSA area. In particular, Section 5.2 assigns SVBGSA the responsibility of "comply[ing] with SGMA at the CEMEX Site, including taking actions to review, adopt and implement the GSP." SVBGSA and Monterey County Cooperation Agreement at 4. Section 5.3 then provides that the "County GSA authorizes SVBGSA to exercise any and all legal authorities in compliance with applicable law for the CEMEX Site." *Id.* These provisions demonstrate that the County has no interest in acting as the GSA for the overlap area. The County instead only seeks to use Section 10724 to remove MGSA, so its affiliate, SVBGSA, can manage the site. In other words, the County's resolution

[4] *See* Letter from Layne Long to Gary Petersen (Nov. 21, 2019) (stating SVBGSA's position) (enclosed as Attachment 2).

and the cooperation agreement aim to use Section 10724 to do what SVBGSA cannot on its own—adopt SVBGSA's GSP for the MGSA area without coordinating with MGSA and its GSP.

Third, as explained in the City and MGSA's letter opposing the County's GSA resolution, the County is indisputably creating and contributing to the overlap situation, as a member, majority funder, and driving force in the SVBGSA. The proposed cooperation agreement further links the County and SVBGSA through provisions like Section 14.13's joint defense provision. It provides that SVBGSA and the County may "further coordinate and cooperate by undertaking joint defense, including utilizing a common interest/joint defense agreement" to defend against "any challenge to the Subbasin GSP as it relates to the CEMEX Site." *Id.* at 10. The County created and contributed to the overlap with MGSA through SVBGSA. Now, the two affiliates seek to jointly defend their bad faith takeover of the MGSA area against a potential legal challenge from the City and MGSA. This confirms the County and SVBGSA's affiliation as joint actors and further cements the County's status as a creator and contributor to the overlap area.

CONCLUSION

For the reasons outlined above, the City and MGSA oppose SVBGSA's proposed resolutions. Together, SVBGSA's resolutions threaten to silence MGSA both as a local agency participating in the public comment process and as a DWR-recognized GSA. Accordingly, the City and MGSA strongly urge SVBGSA not to adopt either resolution and instead begin working with MGSA to coordinate on a GSP or set of GSPs to sustainably manage the Subbasin.

Sincerely,

Paul P. "Skip" Spaulding, III

PPS:jla
Enclosures

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ATTACHMENT 1

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December 10, 2019

Via Hand Delivery

Monterey County Board of Supervisors
168 West Alisal Street, First Floor
Salinas, California 93901

Re: Formation of Groundwater Sustainability Agency and Related Actions
County Board of Supervisors December 11, 2019 Meeting, Agenda Item #4

Dear Chair Phillips and Honorable Monterey County Supervisors:

On behalf of the City of Marina ("City" or "Marina") and the Marina Groundwater Sustainability Agency ("MGSA"), we submit these comments opposing the adoption of a resolution by Monterey County ("County") to become the Groundwater Sustainability Agency ("GSA") for a portion of the 180/400 Foot Aquifer Subbasin ("Subbasin") and to take related actions.

INTRODUCTION

The City of Marina and MGSA strongly object to Monterey County's unlawful effort to subvert the intent and explicit text of the Sustainable Groundwater Management Act ("SGMA"). The County proposes to undertake a "hostile takeover" of MGSA's entire groundwater area and then turn over the management of this groundwater to its affiliate, the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA").

The County is hopelessly conflicted and therefore disqualified from taking these actions. It was the moving force in founding SVBGSA, has provided 60% of its funding so far and, until only two months ago, provided all legal services for SVBGSA's SGMA activities and management, including the preparation of SVBGSA's draft groundwater sustainability plan ("GSP"). The County is masquerading as a "neutral" agency coming in to resolve a local agency "overlap" in jurisdiction, but in fact, its sole motivation is to eliminate MGSA and supplant MGSA's GSP in favor of the SVBGSA GSP that it supervised and approved as the most prominent SVBGSA member.

Notably, the County's proposed resolution fails to consider MGSA's GSP, recognize the need for sustainable groundwater management in and near the MGA Area, or make any findings on the merits of SVBGSA's GSP to address these needs. Instead, the proposed resolution demonstrates that the County's true motivation is not collaborative management of the Subbasin,

but rather is to strip the City of Marina of any voice in the management of groundwater within its own jurisdiction.

MGSA is a validly formed SGMA GSA. It took all required SGMA steps and filed all appropriate notices with the Department of Water Resources ("DWR") for MGSA's formation and GSP preparation, and DWR accepted these notices and posted them on its website.[1] MGSA authorized a $275,000 contract for preparation of the GSP and continues to expend these funds as its GSP preparation proceeds. MGSA issued a draft GSP on October 8, 2019, and accepted comments on it until November 25, 2019. Responses to comments and any necessary revisions to the GSP will be completed in the next few weeks, and the GSP is scheduled for MGSA consideration in January 2020. Thus, it is "on track" to be submitted to DWR by the January 31, 2020 deadline prescribed in SGMA.

These actions by the County have been orchestrated by California-American Water Company ("CalAm"), which has encouraged the SVBGSA Board and Committees to eliminate the City of Marina and the MGSA by requesting that the County attempt to "take over" MGSA's groundwater area. CalAm, of course, has no interest in sustainable groundwater management – rather, its sole goal is to eliminate any potential impediments to its foundering Monterey Peninsula Water Supply Project ("MPWSP" or "Project").[2] CalAm does not want the City of Marina to have any groundwater management role in this area, primarily because they prefer the "hands off" approach of SVBGSA. Once SVBGSA made this request to the County, the County immediately notified DWR of its "takeover" plans in a letter and has now published the proposed resolution.

This proposed County action has no precedent under SGMA. The statutory sections which the County relies on are intended to apply only to areas that are "unmanaged" because *no* GSA has filed to manage the groundwater in that area (rather than the situation here where two agencies have filed for the same area). In the only other case where a County has stepped in to

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[1] The County and SVBGSA have tried to create the incorrect impression that MGSA is not a valid GSA because it supposedly did not file to be a GSA by a deadline in SGMA. However, this contention has been completely debunked and has never been supported by DWR. We enclose as Exhibit "1" hereto and incorporate herein a copy of a letter dated August 28, 2019 sent to DWR on behalf of MGSA that explains why this contention lacks any merit.

[2] CalAm has suffered severe, and potentially fatal, setbacks in its efforts to obtain agency permits and authorizations for the MPWSP. After the City of Marina (the certified local coastal agency) denied the primary Coastal Development Permit ("CDP") for the Project, California Coastal Commission Staff recommended that both the appealed CDP application and the CDP application within its original jurisdiction be denied. The Coastal Commission will not consider these permits until March 2020 or later. In the meantime, as the result of a lawsuit brought by Marina Coast Water District, a Monterey County Superior Court Judge has entered an Order enjoining any construction of the Project's desalination plant until at least March 2020. CalAm has also failed to apply for or pursue other key federal and state permits necessary for the Project. If the Project is ever fully approved and constructed, it will be many years behind schedule.

resolve an overlap in jurisdiction, the local agencies *supported* the county action. According to DWR: *"No county has yet sought to use Section 10724 [the SGMA section relied on by the County] to form a GSA against the wishes of agencies within their jurisdiction."*

Monterey County appears to be adopting the simplistic position that DWR has supposedly blessed this action through a letter dated November 5, 2019 ("DWR Letter"). However, the County is making a serious mistake. DWR actually said that the County might be able to do so if certain conditions are satisfied. Ultimately, a court will determine whether SGMA allows the County to take this action in the current context. And under California administrative law, courts give no deference to inconsistent agency statutory interpretations. *See, e.g., Yamaha Corp. of Am. v. State Bd. of Equalization*, 19 Cal. 4th 1, 13 (1998)("*Yamaha*"). DWR has taken inconsistent positions over time on this issue, and the County's current position directly contradicts its position only two months ago. Indeed, on the crucial "creating or contributing" test discussed below, the County's action would violate the published guidance of the State Water Resources Control Board ("State Board") on this issue. Moreover, the latest DWR advice runs directly counter to SGMA's text and purpose. Given the lack of case precedent and the shifting DWR positions, it would be extremely risky for the County to adopt this resolution.

This dispute must be viewed against the larger backdrop of the MGSA and SVBGSA GSPs. The SVBGSA GSP is a regional approach to the management of the Subbasin which is primarily oriented to protecting the interests of the agricultural producers north of the Salinas River and inland from the coastal region. The GSP ignores or disregards the recent site-specific studies by a Stanford University research team and others, based on state-of-the-art airborne electromagnetic ("AEM") techniques, that have resulted in three-dimensional maps and cross-sections of the Subbasin groundwater, which forms the best scientific information on Subbasin groundwater conditions.

The SVBGSA GSP contains a wholly deficient monitoring network south of the Salinas River. No meaningful monitoring of any kind is proposed within several miles of the coast, leaving the area effectively unmanaged under SGMA. The SVBGSA GSP also fails to consider and manage groundwater resources in the Dune Sand Aquifer that are designated by the State Board to be protected, and fails to acknowledge or protect the interconnected surface water features such as the vernal pools and wetlands in and near the City of Marina. Thus, the County's proposed takeover of the MGSA as an "unmanaged area" will have exactly the opposite effect – it will perpetuate a lack of management of groundwater resources in this area by failing to protect local beneficial uses and users of groundwater in favor of the policy preferences of a select group of inland beneficial users.

In contrast, MGSA has prepared a locally-focused GSP that uses the best available science and information to ensure sustainable groundwater management in the MGSA Area, to protect local beneficial users and property, and to support regional efforts to address seawater intrusion and other undesirable results. Unlike the SVBGSA GSP, the MGSA GSP characterizes, monitors and manages the Subbasin groundwater resources south of the Salinas

River in the coastal region and recognizes the important municipal, domestic, groundwater dependent ecosystem, and other beneficial uses and users in this area, including the urban and other users who depend on this drinking water source in the Subbasin and the adjacent Monterey Subbasin.

Five independent reasons, discussed below, prevent Monterey County from invoking Section 10724 in attempt to become the new GSA for the overlap portion of the Subbasin:[3]

- Because Monterey County is creating and/or contributing to the overlap, it cannot invoke Section 10724;
- Section 10724 does not authorize a county to file a GSA notice for areas covered by multiple GSA notices;
- Monterey County's decision to invoke Section 10724 is premature and would unlawfully circumvent SGMA's explicit local agency coordination requirements and GSP resolution provisions;
- Monterey County's resolution to become the GSA for the overlapping area cannot nullify MGSA's GSA notice or solve the underlying coordination problem; and
- Monterey County cannot become the GSA for the overlap portion in time to submit a GSP before SGMA's January 31, 2020 deadline.

The County should be clear that the City of Marina and MGSA view this proposed action and resolution as a direct and unlawful attempt to eliminate the City's SGMA rights and responsibilities and that the City and MGSA will take all necessary steps to protect their SGMA jurisdiction. The City strongly advises Monterey County not to undertake this misguided action.

SGMA CONTEXT

Both MGSA and SVBGSA filed notices of their GSA formation and of their intent to prepare GSPs for the Subbasin. While SVBGSA's notice covers the entire Subbasin, MGSA's notice applies only to an approximately 400-acre portion of the Subbasin within the City of Marina's jurisdictional boundaries that is not under the jurisdiction of a local water agency. Thus, MGSA and SVBGSA have overlapping claims to this portion of the Subbasin.

When competing GSA notices cause overlapping boundaries, SGMA prevents a GSA decision from "tak[ing] effect unless the other notification is withdrawn or modified to eliminate any overlap in the areas proposed to be managed." Cal. Water Code § 10723.8(c). Here, DWR has not recognized an exclusive GSA for the Subbasin. *See* DWR SGMA Portal, *All Posted GSA*

[3] We enclose as Exhibit "2" hereto and incorporate herein a copy of a October 21, 2019 letter on behalf of MGSA to DWR explaining these factual and legal issues.

Notices.[4] SGMA instructs the local agencies to "seek to reach agreement to allow prompt designation of a groundwater sustainability agency." Cal. Water Code § 10723.8(c). SGMA further requires GSAs "intending to develop and implement multiple groundwater sustainability plans" to "coordinate with other agencies preparing a groundwater sustainability plan within the basin." *Id.* § 10727.6. The GSAs must "jointly submit" their GSPs with a coordination agreement "to ensure the coordinated implementation of the groundwater sustainability plans for the entire basin." *Id.* § 10733.4(b); *see also* Cal. Code Regs. tit. 23, § 357. 2.

Accordingly, when GSAs file overlapping claims, SGMA envisions a process where those agencies negotiate in good faith to reach a compromise and enter into a coordination agreement which they submit with their GSPs. MGSA and SVBGSA must file their GSPs and coordination agreement for the Subbasin by January 31, 2020.

LEGAL AND FACTUAL ANALYSIS

I. Monterey County Cannot Invoke Section 10724 Because It Is A Creator And Contributor To This GSA Overlap.

A county cannot invoke Section 10724 if it "is creating or contributing to the [GSA] overlap." State Board, *Frequently Asked Questions on GSAs*, at 3 (Nov. 22, 2017) ("SWRCB FAQs"). The State Board's limitation on Section 10724 prevents counties that contribute to overlapping areas from circumventing SGMA's GSA collaboration requirements.

Here, the County is indisputably creating and contributing to the GSA overlap as a member, majority funder, and architect of SVBGSA and its GSP. As a result, the State Board's limitation precludes the County's proposed resolution, which weaponizes Section 10724 in an attempt to install its affiliate's GSP and disregard a properly-formed GSA with jurisdiction over the MGSA Subbasin area. The necessary implications of SGMA's GSA coordination requirements mandate that the County cannot override MGSA's GSP and deny MGSA the opportunity to collaborate with SVBGSA on the management of groundwater within Marina's jurisdiction.

A. Based On Its Close Affiliation with SVBGSA, The County Is Creating Or Contributing To The Overlap Area.

As discussed in Section II, the Legislature intended counties to use Section 10724 as a backstop to protect groundwater users from facing Water Code Section 5202(a)(2)'s reporting requirements. The County's proposed resolution would attempt to improperly exploit this backstop to install a GSP commissioned by the County as a member of SVBGSA.

The County was the moving force behind SVBGSA's formation and even "pushed for the establishment of the Joint Powers Authority" ("JPA"). SVBGSA Minutes at 2 (Sept. 19, 2019). Section 10.4 of the JPA Agreement for SVBGSA shows that the County has provided almost

[4] Available at https://sgma.water.ca.gov/portal/gsa/all.

60% of all initial funding for SVBGSA during the 2017–19 period, totaling $1.34 million. Monterey County remains a member of SVBGSA, and the County Administrative Officer position (who authored the County's October 9, 2019 letter to DWR) is designated as the official County representative to SVBGSA. *See* Exhibit A to SVBGSA's JPA Agreement. Further, the County played an integral role in the development of SVBGSA's GSP. The Monterey County Counsel's office has served as the attorney for SVBGSA as it filed GSA and GSP notices and prepared the GSP that the County's resolution seeks to adopt after it overrides MGSA.

In short, contrary to the resolution's purported findings, the County, as a member, majority funder, and driving force in the SVBGSA, is indisputably creating and contributing to the overlap situation. The County therefore cannot credibly pose as a disinterested county coming in under a ministerial application of Section 10724 to resolve a dispute among two local GSA agencies. This is precisely the kind of conflict situation that disqualifies a county from attempting to invoke Section 10724 under the "creating or contributing" limitation.

B. The County's Proposed Resolution Would Represent A Bad Faith Attempt To Circumvent SGMA's Coordination Requirements And Implement The GSP Of Its Close Affiliate.

Monterey County's proposed resolution vividly illustrates the dangers of a county misusing Section 10724 to override a local agency instead of cooperating with it. The County's proposed resolution responds to a request by an affiliated entity (SVBGSA) to prevent the City of Marina from exercising its GSA authority. Monterey County then seeks to adopt the same GSP that the County helped design as a member of SVBGSA. Notably, Monterey County fails to even consider adopting any part of MGSA's GSP, addressing SGMA management gaps identified by MGSA, or providing any justification for adopting SVBGSA's GSP. The County likewise fails to present any groundwater management justification for asserting control over the overlap area.

It is striking that the County actually has no intention of managing the overlap area, which is exactly what it would be required to do under Section 10724. Rather, the County blatantly announces its intention to instead delegate management authority to SVBGSA, whose GSP provides no framework for sustainable groundwater management in or near the MGSA Area, and does not consider the needs and rights of coastal beneficial groundwater users and uses. These County actions lead to only one conclusion. The County's resolution seeks to use Section 10724 to do what the County's affiliate SVBGSA cannot: adopt only the SVBGSA GSP for the MGSA jurisdictional area without coordinating with MGSA and its GSP. Indeed, the intent appears to be retain the area as essentially unmanaged under SGMA, leaving CalAm to implement the MPWSP unhindered by any requirements for sustainable groundwater management for the benefit of beneficial users in inland portions of the Subbasin. The State Board's guidance aims to quash these exact types of bad-faith maneuvers.

While the County's proposed resolution blames the overlap on Marina's GSA notice, the County and SVBGSA continue to contribute to the overlap by refusing to collaborate with MGSA. The County and SVBGSA are engaging in this waiting game at the behest of CalAm,

which has encouraged these actions to promote its Project. In its October 9, 2019 letter to SVBGSA, copied to the Monterey County Administrative Officer, CalAm requests both entities to "defer any action on a coordination agreement" with MGSA and instead advocates that the County should become the GSA for the overlap area. CalAm takes the ridiculous position that MGSA is only preparing a GSP to stop its Project and attempts to enlist the County's help so that it can build the Project. CalAm is not a GSA, and, as a private corporation intent on profit, it has no interest in ensuring sustainable groundwater management in the Subbasin. Rather, it is a third party with no official role in this SGMA process, attempting to pressure public agencies to achieve its corporate goals. By advocating to stop any coordination agreement discussions, CalAm wanted to artificially create an impasse in hopes of a County takeover. And by acquiescing to CalAm's demands, the County and SVBGSA have needlessly created this situation.

We note that the MGSA has been working in good faith to negotiate a Coordination Agreement with SVBGSA and, in August 2019, prepared, approved and transmitted to SVBGSA a draft agreement based on a template provided by SVBGSA. Since that time, SVBGSA staff has not negotiated in good faith with MGSA to reach agreement. In contrast, in the last month, SVBGSA has developed a Coordination Agreement with the County, which is being considering for adoption at the SVBGSA Board meeting on December 12, 2019. This backroom Coordination Agreement effort with the County vividly illustrates that SVBGSA knows how to negotiate such an Agreement when it really wants to.

SGMA, in contrast, "requires the agencies to resolve" boundary disputes. SWRCB FAQs at 3. The State Board only deems an area unmanaged until the GSAs resolve their conflict. *Id.* This limitation aligns with the intended purpose of Section 10724 to function as a backstop, allowing a county to assume the role of a GSA in a ministerial manner as a last resort or as a temporary solution before a local agency can take control. Instead of serving that purpose, Monterey County's proposed resolution uses Section 10724 to target only the City of Marina and block it from exercising its GSA authority and implementing its GSP. This bad-faith effort contravenes SGMA's emphasis on and processes for local agency cooperation and basin management.

C. DWR's Latest Inconsistent Interpretation Of Section 10724 Does Not Apply.

DWR has articulated inconsistent standards for when a county is disqualified from invoking Section 10724. First, DWR guidance authored in May 2019 prohibits a county who "is responsible for creating the overlap" from becoming a GSA under Section 10724. DWR, *GSA Frequently Asked Questions*, at 4 (May 10, 2019) ("DWR FAQs"). A DWR representative (Tom Berg) expanded on DWR's position at the September 19, 2019 SVBGSA Advisory Committee meeting, stating to SVBGSA that:

> **Monterey County can remove itself from the SVBGSA and become the GSA for the unmanaged area and enter into a coordination agreement.** The cleaner approach is if Monterey County decides there is an overlap and becomes the GSA for the

> entire 180/400 Subbasin. **They can become the GSA for only Marina if they do not create the GSA with the intent to take over Marina's portion.** You can resolve the overlap and trust Marina will timely submit their Plan. If the Plan is determined to be insufficient during the two-year review, the Water Board could determine the entire Subbasin to be insufficient. He expects legal fights if Monterey County takes over the Subbasin. **Mr. Berg referenced the determination that Kern County had created their overlap conflict, and they were prevented from becoming the GSA as a result.**
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> Tom Berg stated that during the telephone conversation with Mr. Nordberg, DWR, it was suggested that the cleaner approach is for Monterey County to become the GSA for the entire basin. **If the County becomes the GSA only for Marina, it is no longer ministerial in terms of taking out Marina instead of just trying to clear the overlap.**[5]

Id. at 3–4 (emphasis added).

As you can see, the requirements for County use of Section 10724 articulated by DWR at this meeting contains several important elements. First, the County would need to remove itself as a member of the SVBGSA before undertaking any action under Section 10724 to eliminate the conflict of interest and associated County contribution to the overlap. Second, the County is barred from creating the GSA "with the intent to take over Marina's portion." Third, if the County does not take over management of the entire Subbasin, it would contravene SGMA because it is clearly only trying to take out Marina. The County's resolution fails to address and follow these DWR requirements. It plans to remain a member of the SVBGSA, its transparent intent is to take over Marina's portion, and it is not installing itself as the GSA for the entire Subbasin.

Despite recently articulating these positions, DWR's November 5, 2019 letter attempts to constrict the standard for precluding a county from invoking Section 10724. The DWR Letter states, "that it would be inappropriate to accept a Section 10724 notice from a county that had deliberately created the overlap that led to the existence of an unmanaged area with the purpose of doing so, and simply waited out other actual or potentially overlapping agencies."[6] DWR

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[5] The minutes reflect that a representative of Monterey County (Charles McKee) attended this meeting.

[6] Even under its narrower test, DWR also appears to share concerns about Monterey County's contribution to the overlap. In particular, the DWR Letter requests further "information related to the decision-making role of the County as part of the SBVGSA, and the intent of the SBVGSA in filing the notice that resulted in overlap" if the County decides to submit a GSA notification. DWR Letter at 2.

Letter at 2. This standard purports to narrow and change the exception that DWR previously recognized in its own guidance and articulated to SVBGSA. And unlike the State Board's "creating or contributing" standard (SWRCB FAQs at 3), DWR's new standard potentially only guards against situations where a county files a GSA notice after another GSA. However, as the County's current actions demonstrate, a county can act in bad faith even if it or its affiliate filed its GSA notice first by refusing to coordinate with the other GSP and invoking Section 10724 to install its affiliate's GSP.

DWR's failure to consistently articulate its standard for precluding bad-faith actions under Section 10724 undermines the weight a reviewing court will grant it. Although California courts consider an agency's interpretation of a statute, "the binding power of an agency's interpretation of a statute or regulation is contextual . . . and depend[s] on the presence or absence of factors that support the merit of the interpretation." *Yamaha*, 19 Cal. 4th at 7. When applying this standard, courts further recognize that an agency's "vacillating position . . . is entitled to no deference." *United Artists Theatre Circuit, Inc. v. Reg'l Water Quality Control Bd.*, No. A152988, 2019 WL 6337763, at *18 (Cal. Ct. App. Nov. 27, 2019) (quoting *Yamaha*, 19 Cal. 4th at 13) (internal quotation marks omitted).

Here, the DWR Letter attempts to change its previous standard and limit its Section 10724 exception to situations where a county or its affiliate files its GSP notice after another GSA. This limitation contradicts DWR's previously issued guidance and statements to SVBGSA. Further, the DWR's Letter fails to explain or even acknowledge this switch. DWR likewise offers no justification for the fact that its new standard potentially only covers one of many scenarios in which a county could use Section 10724 in bad faith to override an overlapping GSA and circumvent SGMA's coordination requirements. DWR's interpretation warrants even less deference given the unprecedented nature of the County's actions. DWR Letter at 2 (noting that "[n]o county has yet sought to use Section 10724 to form a GSA against the wishes of agencies within their jurisdiction"). Accordingly, a Court will likely disregard DWR's latest articulated standard, and that standard cannot serve as the basis for the County's proposed resolution.

D. The County's Bad Faith Intentions Also Preclude It From Invoking Section 10724.

As described in Section I(A), the County's failure to (1) offer a groundwater management justification for invoking Section 10724, (2) consider adopting any part of MGSA's GSP, or (3) support its decision to adopt SVBGSA's GSP, demonstrate that the County's intention in adopting the proposed resolution is only to adopt its affiliate's GSP without coordinating with MGSA. The County's plan to delegate management of the overlap area to SVBGSA provides further evidence of its bad faith intentions. Indeed, the County's plan to adopt the SVBGSA GSP will leave the coastal area south of the Salinas River without a monitoring and management framework for sustainable groundwater management in violation of SGMA and its own General Plan policies. These intentions contravene SGMA's purpose of promoting collaborative groundwater basin management, and as result, they cannot be permitted.

As DWR's representative stated to SVBGSA, the County "can become the GSA for only Marina if they do not create the GSA with the intent to take over Marina's portion." SVBGSA Minutes at 3 (Sept. 19, 2019). For example, a determination that Kern County created its overlap conflict prevented it from becoming the GSA. *Id.* Only one county has successfully relied on Section 10724 to become a GSA for an area with overlapping GSAs. DWR Letter at 2. And unlike the current situation, the overlapping GSAs there *supported* the county's decision. *Id.* Indeed, no county has ever attempted to form a GSA using Section 10724 "against the wishes of agencies within their jurisdiction." DWR Letter at 2. Therefore, Monterey County is the first county to invoke Section 10724 as part of a strategy to veto the GSP of a valid GSA within its jurisdiction. Moreover, the proposed resolution creates a dangerous precedent, not intended by SGMA, that enables counties to ignore and override the actions of GSAs within their county area.

II. SGMA Section 10724 Does Not Apply To This Situation Because Multiple GSAs Have Asserted SGMA Jurisdiction Over The Overlap Area.

The County relies primarily on Water Code Section 10724(a) for its potential plan to eliminate MGSA and take over its SGMA jurisdictional area. This provision states:

> In the event that there is an area within a high- or medium-priority basin **that is not within the management area of a groundwater sustainability agency**, the county within which that unmanaged area lies will be presumed to be the groundwater sustainability agency for that area.

Cal. Water Code § 10724(a) (emphasis added).

The County is mistaken in asserting that this provision applies here. As SGMA's legislative history reflects,[7] the Legislature intended Section 10724 to cover situations where *no* GSA asserts jurisdiction over an area within a basin, not where multiple GSAs assert jurisdiction and prepare GSPs for a particular area. Indeed, the DWR Letter characterizes Section 10724 as a "backstop" to prevent Section 5202(a)(2)'s reporting requirements from applying. DWR Letter at 2. Section § 5202(a)(2) requires persons who extract groundwater within a high- or medium-priority basin on or after July 1, 2017, to file a report of groundwater extraction if (1) the area "is not within the management area of a groundwater sustainability agency" and (2) "the county does not assume responsibility to be the groundwater sustainability agency" for that area. This implicitly provides that the overlapping GSA notices did not render the area unmanaged under

[7] The Legislature intended Section 10724 to apply "in the case of an area where no local agency has ***assumed*** management." S. Rules Comm., Floor Analysis on S.B. 11168 at 4 (Aug. 29, 2014) (emphasis added). In particular, the Legislature linked this provision to whether a local agency has acted to assume management over an area—not whether the local agency has become the exclusive GSA.

Section 5202(a)(2).[8] The overlapping GSA notices likewise do not render the Subbasin unmanaged under Section 10724. Indeed, because no reporting requirements currently apply to the Subbasin, no need exists for the County to intervene to prevent the triggering of Section 5202(a)(2)'s reporting requirements.

The County's interpretation of Section 10724 inaccurately conflates the provisions for establishing an exclusive GSA under SGMA Section 10723.8 with Section 10724 to reach a faulty conclusion that, because of the overlapping area in MGSA's and SVBGSA's GSA notices, SGMA deems the areas "unmanaged." Section 10724(a) does not address disputes arising under the process for determining an exclusive GSA under Section 10723.8, and the purpose of Section 10724 weighs against reading Sections 10723.8 and 10724 together in this manner. Rather, these GSA and GSP provisions are best understood as operating at the same time on parallel tracks. Consistent with this interpretation, the plain language of Section 10724(a) does not require that a basin be within the management area of an exclusive GSA. Therefore, where multiple GSAs file to manage the same basin area, Section 10724(a)'s text cuts against the County's ability to claim the area is unmanaged. This is especially true when, as here, both of the GSAs are on track to submit their GSPs, and a coordination agreement is not due for any overlapping areas until the January 31, 2020 GSP submittal deadline.

Accordingly, when multiple GSAs adopt GSPs to manage a basin, that area falls within the management area of several GSAs, and Section 10724 does not apply. No DWR regulations or any judicial decisions interpret this section or alter its plain meaning.[9]

III. Monterey County's Resolution Is Premature And Would Fatally Undermine SGMA's Required GSA Collaboration Process.

SGMA establishes a specific process for GSAs who file overlapping notices to coordinate and submit a joint GSP or set of GSPs. *See* Cal. Water Code §§ 10727.6 and 10733.4(b). The Water Code likewise provides a process for resolving disputes if GSAs fail to coordinate and submit joint GSPs for a critically overdrafted basin by the January 31, 2020 deadline. In that situation, the State Board can designate that basin as probationary. *Id.* §§ 10735.2(a)(2) and 10735.2(a)(3) (providing that the State Board can also make a probationary designation after finding that a GSP is inadequate). The State Board must give the local agencies or GSAs "180 days to remedy the deficiency," and "[t]he board may appoint a mediator or other facilitator . . . to assist in resolving disputes, and identifying and implementing actions that will remedy the

[8] Although State Board guidance suggests that overlapping GSA notices would trigger Section 5202(a)(2)'s reporting requirements, this has not been the case in practice. State Board, Frequently Asked Questions on GSAs, at 5 (Nov. 22, 2017) ("SWRCB FAQs").

[9] MGSA acknowledges that one guidance document from the State Board opines that "[i]f two or more local agencies overlap, the combined area will be deemed unmanaged" and asserts that a county potentially could become a GSA in this situation. SWRCB FAQs at 3. However, this interpretation is not consistent with the intent, legislative history, and text of Section 10724 and is unsupported by any official regulation or case law.

deficiency." *Id.* § 10735.4(a). This provision covers disagreements over overlapping portions of the basin.

The County's resolution seeks to strip MGSA of its authority over the overlap area and to intervene as the exclusive GSA. In doing so, the County is misusing Section 10724 to implement the GSP of its affiliated GSA entity, violating State Board and DWR guidance directly on point, and undermining SGMA's dispute resolution processes. This action would set a dangerous precedent that could incentivize the misuse of Section 10724 by counties.

IV. Monterey County Cannot Use Section 10724 To Nullify MGSA's GSA Notice Or The Need For MGSA And SVBGSA To Resolve The Overlap.

The County appears to assume that by invoking Section 10724 and becoming the GSA for the overlap area, the County will nullify MGSA's GSA notice. However, nothing in SGMA or its regulations provides that a county or other local agency can nullify the GSA notice of another. Indeed, SGMA specifically provides that to resolve an overlapping area, a GSA "notification [must be] withdrawn or modified to eliminate any overlap in the areas proposed to be managed"—not overridden by another local agency. Cal. Water Code § 10723.8(c). Similarly, Section 10724 does not change this fundamental premise or grant a county the power to nullify a GSA notification. Accordingly, even if the County attempts to become the GSA for the overlap area, MGSA's GSA notification will remain valid.

Section 10724 also does not give the County the power to designate another local agency as an exclusive GSA. Instead, DWR has responsibility for posting GSA notifications. *See* § 10723.8(b). On the SGMA portal, DWR currently does not list either MGSA or SVBGSA as the exclusive GSA for any portion of the Subbasin. See DWR SGMA Portal, All Posted GSA Notices; DWR SGMA Portal, Salinas Valley Basin GSA - 180/400 Foot Aquifer Map.[10] DWR instead identifies the GSA notices of both MGSA and SVBGSA as overlapping. *Id.* DWR will not recognize MGSA's and SVBGSA's notices until they resolve their conflict,[11] and the County's intervention under Section 10724 for the overlapping portion will not change this. Both MGSA's and SVBGSA's notices will remain valid, but non-exclusive, GSA notifications. Accordingly, the only way for SVBGSA to become the exclusive GSA for any part of the Subbasin is for MGSA and SVBGSA to reach a coordination agreement.

The fact that SVBGSA and MGSA will remain nonexclusive GSAs even if the County invokes Section 10624 raises additional logistical issues. Under SGMA, a GSP or set of GSPs must "cover[] the entire basin." Cal. Water Code § 10727(b); *see also* Cal. Code Regs. tit. 23,

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[10] This map is available at https://sgma.water.ca.gov/portal/gsa/print/461.P

[11] Indeed, State Board guidance provides that "[i]f two local agencies file notices with DWR to be a GSA for the basin, and all or a portion of their proposed management areas overlap as of June 30, 2017, neither of the local agencies will become a GSA. As a result, the proposed management areas of both local agencies will be unmanaged." SWRCB FAQs at 4; *see also* DWR FAQs at 4 ("If overlap exists, the decision to become a GSA will not take effect unless the overlap is eliminated.").

§ 355.4(a)(3); Cal. Water Code § 10733.4(b)) ("If groundwater sustainability agencies develop multiple groundwater sustainability plans for a basin, the submission" of a GSP "shall not occur until the entire basin is covered by groundwater sustainability plans"). Thus, if the County maintains that only GSAs who DWR has designated as exclusive GSAs may file a GSP, then SVBGSA and MGSA will not be able to file GSPs. The County likewise will not be able to file a GSP for the overlapping area because the GSP would not cover the entire basin. As a result, the County would instead have to become the GSA and submit a GSP for SVBGSA's entire jurisdiction in the Subbasin. The County would then have to manage the entire Subbasin until MGSA and SVBGSA resolve the overlap. This would cause needless and extensive organizational and financial harm to all the parties involved and would completely undercut SGMA's goals. Therefore, the County's attempt to become the GSA for only the overlap area will not result in efficient or effective management of the Subbasin or relieve SVBGSA of the need to coordinate with MGSA to resolve the overlap.

V. The County Must Wait 90 Days For Its GSA Notice To Take Effect, So It Cannot Meet SGMA's January 31, 2020 Deadline.

Although the DWR Letter asserts that the County would immediately become the exclusive GSA when DWR posts the County's GSA notice, DWR fails to cite any legal authority for instantly granting a county exclusive GSA status.[12] DWR Letter at 3. Instead, DWR states that its "practice has been to immediately declare the GSA exclusive." DWR Letter at 3. However, this statement contradicts DWR's statement earlier in the letter that no other county has attempted to use Section 10724 despite opposition from a GSA within its jurisdiction – so, in fact, DWR has *never* immediately posted a county notice letter in this situation. *Id.* at 2.

The DWR Letter also states that it "adopted that practice on the assumption that counties would be taking responsibility for areas in which no other agency had any interest," and that "same logic applies for notices filed in areas that are unmanaged as a result of the overlapping GSA notices of other entities." *Id.* at 3. However, the same logic does not apply because SGMA provides a specific process for GSAs who file overlapping notices to coordinate and submit a joint GSP or set of GSPs. *See* Cal. Water Code §§ 10727.6 and 10733.4(b).

Further, in an overlap situation, multiple GSA's have an "interest" in an area and applying the 90-day notice period allows the overlapping GSAs to engage in the coordination process before the county's GSA notice takes effect. This interpretation promotes SGMA's collaboration process. It also recognizes the fact that given the opportunity, GSAs may resolve an overlap situation without the need for county intervention, which aligns with Section 10724's purpose of serving as a backstop for when SGMA's other processes fail. As a result, the County must wait 90 days before becoming a GSA for the overlapping area to allow SVBGSA and MGSA to resolve the overlap and collaborate on a GSP or set of GSPs. The County therefore could not submit a GSP before the January 31, 2020 deadline.

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[12] MGSA acknowledges that State Board guidance also states that "[t]here is no 90-day waiting period for the county's intent to become the GSA to take effect" in this scenario. SWRCB FAQs at 4.

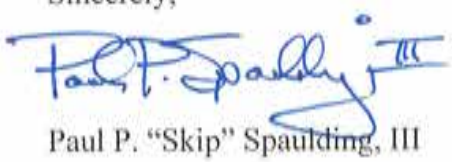
CONCLUSION

For the foregoing reasons, the County cannot lawfully invoke Section 10724 to become the GSA for the overlap portion of the Subbasin. Bending to the will of CalAm and its reluctance to be governed and monitored by the government entity with the overlying interest (or to be subject to negotiation under sustainable management criteria at all), is fatally inconsistent with SGMA and the intention of the Legislature to sustainably manage groundwater. The City of Marina formed MGSA to prepare its own GSP to govern critical groundwater resources within its jurisdiction in this Subbasin and is completely consistent with the spirit and language of SGMA.

MGSA is complying in all respects with SGMA and MGSA is prepared to take the necessary steps to protect its jurisdiction over the CEMEX site. In the first instance, this means continuing its efforts to finalize and submit its GSP for the overlapping area by the January 31, 2020 deadline. By committing significant financial resources and following the prescribed SGMA process, MGSA has been doing exactly what the law requires and is entitled to complete the process.

The proposed resolution by which the County would attempt to take over MGSA's jurisdictional area and to install its affiliate SVBGSA as the manager of this area using SVBGSA's GSP is a bad faith attempt to misuse SGMA to eliminate MGSA and achieve a hostile takeover of its area. This action, which was conceived and encouraged by CalAm and SVBGSA, would violate SGMA and deprive the City of Marina and MGSA of their SGMA rights, leaving the area effectively unmanaged under SGMA. The City and MGSA strongly oppose this resolution and encourage the County not to pursue this misguided course of action.

Sincerely,



Paul P. "Skip" Spaulding, III

PPS:jla

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EXHIBIT 1

FARELLA BRAUN + MARTEL LLP

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August 28, 2019

Via SGMA Portal and E-Mail

Ms. Taryn Ravazzini (*taryn.ravazzini@water.ca.gov*)
Deputy Director of Statewide Groundwater Management
Department of Water Resources
P.O. Box 942836
Sacramento, California 94236-0001

Re: City of Marina GSA Groundwater Sustainability Plan
Response to California-American Water Company Comment Letter

Dear Ms. Ravazzini:

We submit this letter on behalf of the City of Marina Groundwater Sustainability Agency ("MGSA"), which recently filed an initial notification of its intent to prepare a Groundwater Sustainability Plan ("GSP") for a portion of the 180/400 Foot Aquifer Subbasin ("Subbasin") as authorized by the Sustainable Groundwater Management Act ("SGMA"). This letter responds to the August 12, 2019 comment letter submitted by the Ellison Schneider law firm on behalf of California-American Water Company ("CalAm").

In this "comment letter," CalAm requests that the Department of Water Resources ("DWR") "reject" MGSA's Groundwater Sustainability Agency ("GSA") formation notice and its GSP initial notification. However, CalAm has no legal standing under SGMA to make the request and lacks any legal authority or precedent to obtain the relief it seeks. In fact, CalAm's letter is no more than a misguided attempt by a third party to short-circuit the processes prescribed by SGMA for resolution of local groundwater management issues. Moreover, CalAm has mischaracterized the underlying facts and invented non-existent policy reasons to support its unprecedented request. DWR is not required to respond to or to take any action in response to this letter. *See* 23 C.C.R. § 353.8(f). However, if DWR does respond, it must deny CalAm's request in all respects.

BACKGROUND FACTS

The MGSA was validly formed in full compliance with SGMA. On March 20, 2018, the Marina City Council adopted a resolution forming the MGSA to "undertake sustainable groundwater management within the portion of the Salinas Valley Ground Water Basin 180/400

Foot Aquifer Subbasin within the City and outside of the Marina Coast Water District service area." On April 16, 2018, MGSA properly filed a notice of its GSA formation with DWR pursuant to Water Code Section 10723.8. DWR duly accepted and posted MGSA's notice of GSA formation on its SGMA Portal.

On July 31, 2019, pursuant to Water Code Section 10727.8(a), the City filed an initial notification of intent to prepare a GSP for its jurisdictional area. This notice provides a written statement describing the manner in which interested parties may participate in the development and implementation of the GSP and contains the other required elements for this initial notice. MGSA also provided the notice to all required persons. MGSA is proceeding forward rapidly with preparation of the GSP and, in its initial notice, specifically identified the MGSA meeting dates and other opportunities for the public to provide comments and other input on the GSP. MGSA's GSP is expected to be completed and submitted to DWR by January 31, 2020.

CALAM'S COMMENT LETTER LACKS ANY LEGAL, FACTUAL OR POLICY BASES TO SUPPORT ITS "REJECTION" REQUESTS.

CalAm's comment letter makes a series of unsupported legal contentions in which it attempts to question the validity of MGSA's formation and to argue that the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") must or should be the exclusive GSA for the entire Subbasin. However, not only do these arguments lack any factual and legal support, but they improperly attempt to undermine decisions already made by DWR and to thwart the ongoing collaborative local processes that are embedded in SGMA.

For the reasons explained below, CalAm's arguments should be disregarded in their entirety. Instead, the processes contemplated by SGMA should continue without the partisan interference reflected in CalAm's letter. We will address each CalAm argument in turn.

A. The MGSA Was Validly Formed In A Timely Manner And There Is No Factual Or Legal Basis For Attempting To "Reject" Its GSA Formation Notice.

CalAm contends that the MGSA should not be recognized as a valid GSA because it was not formed before June 30, 2017. However, CalAm has made several fundamental analytical errors that have led to this spurious contention.

First, SGMA does not contain a mandatory final deadline for the formation of all GSAs, even for medium and high priority basins. The only SGMA mention of the June 30, 2017 date in this context is in Water Code Section 10735.2 (a)(1), which relates to the circumstances under which the State Water Resources Control Board ("State Board") can designate a basin as a probationary basin and thereafter take steps to develop its own interim groundwater sustainability plan for that basin. *See* Water Code §§ 10735.4-10736.6. The June 30, 2017 date is only the trigger date for a potential probationary basin finding if one or more GSAs, or a local agency "alternative" plan, has not been noticed for an entire basin. Contrary to CalAm's contention, it is not a drop-dead date for all GSAs to have been formed and it is not true that no additional GSAs can form in a basin after that date.

Second, CalAm attempts to buttress its erroneous analysis with a quotation, taken out of context from DWR's website, that supposedly stands for the proposition that June 30, 2017 is the absolute deadline for forming a GSA. To the contrary, DWR characterizes the June 30, 2017 date on its website as only an "initial planning milestone" and recognizes that new GSAs can, will and have been formed thereafter as SGMA implementation continues. This portion of the DWR website states in full (emphasis added):

> SGMA required Groundwater Sustainability Agencies (GSAs) to form in the State's high- and medium- priority basins and subbasins by June 30, 2017. Over 260 GSAs in over 140 basins were formed by *SGMA's initial planning milestone*. However, *as SGMA continues to be implemented* and the priorities and boundaries of some basins change, *new GSAs will be formed*, and existing GSAs may want to reorganize, consolidate, or withdraw from managing in all of part of a basin. All GSA notifications are managed on DWR's SGMA Portal.[1]

Thus, the GSA formation process was expected to and has in fact continued after June 30, 2017 as SGMA continues to be implemented. Indeed, after June 30, 2017, at least ten other new GSA formation notices were posted, including those for the Fresno County Pleasant Valley GSA Area, City of Coalinga GSA, Vina GSA, Montecito Groundwater Basin GSA, Owens Valley Groundwater Authority GSA (for two different basin areas), Castaic Basin GSA, Triangle T Water District GSA, Santa Barbara County Water Agency GSA – Goleta Fringe Areas, and Corning Subbasin GSA. It appears that all but one of these post-June 30, 2017 GSA formations cover high or medium priority basins.

In sum, CalAm's assertion that MGSA's GSA formation notice should be rejected because it was filed after June 30, 2017 has no factual or SGMA legal basis. There was not an absolute June 30, 2017 deadline for forming GSAs because this process is intended to be fluid and not frozen in time. Rather, it was an initial planning milestone for determining what basins may qualify for probationary status. Indeed, this has consistently been DWR's position. Although CalAm would like to override both SGMA and DWR's judgment on this point for its own private financial purposes, it cannot do so here.

B. The SVBGSA Never Became The Exclusive GSA For The 180/400 Foot Subbasin.

CalAm makes a tortured and wholly frivolous argument that SVBGSA became the exclusive GSA for the 180/400 Foot Aquifer Subbasin on July 26, 2017, thereby supposedly preventing the City of Marina from forming a GSA or preparing a GSP for any portion of the Subbasin. However, once again, this argument defies the considered judgment of DWR and

[1] This website page is found at https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainable-Agencies.

lacks any factual or legal basis.

CalAm's line of reasoning is that, on April 27, 2017, DWR posted the notice of SVBGSA to become the GSA for the entire Subbasin and that, in its view, no other GSA filed a valid GSA notice for this Subbasin within 90 days, thereby essentially resulting in SVBGSA becoming the exclusive GSA for this Subbasin.[2]

In making this argument, CalAm relies on Water Code Section 10723.8, which provides that a local agency notice to become a GSA for a particular basin/subbasin "shall take effect" 90 days after posting if no other local agency has filed a notification of its intent to undertake groundwater management in all or a portion of the same area prior to expiration of this 90-day period. If another agency has such a notice posted before the expiration of this period, the GSA notice shall *not* take effect.

CalAm's first critical error in making this argument is that another local agency – Marina Coast Water District ("MCWD") – did file a GSA formation notice for a portion of the 180/400 Foot Aquifer Subbasin area that SVBGSA claimed in its GSA notice. It is undisputed that, on February 6, 2017, MCWD formed a GSA for the Fort Ord portion of this Subbasin and, on March 14, 2017, DWR posted the notice of this formation (even before SVBGSA filed its notice). Thus, since MCWD filed a GSA formation notice for a portion of the same Subbasin area that SVBGSA's later notice covered, SGMA Section 10723.8 prescribes that SVBGSA's notice did not take effect and SVBGSA never became the exclusive GSA for the Subbasin area it claimed.

CalAm attempts to explain away this complete roadblock to its Section 10723.8 contention by making a convoluted set of arguments that MCWD GSA's notice supposedly was not valid or effective and therefore should be completely ignored for SGMA purposes. It cites to a November 2, 2017 letter authored by a State Board attorney (attached as Exhibit G to its comment letter) that supposedly supports this argument. However, CalAm is mistaken and its citation is misleading.

At the outset, CalAm misrepresents the nature of the State Board letter by implying that it is somehow a dispositive determination by the State Board regarding the status of MCWD's GSA March 14, 2017 formation notice. To the contrary, the letter explicitly states that it is "merely advisory" and that "[t]hese opinions [in the letter] are not a declaratory decision and do not bind the State Water Board in any future determination." Moreover, CalAm also attempts to create the erroneous impression that the letter found that MCWD's GSA notice was void and must be disregarded by DWR. However, in so arguing, CalAm has entirely missed the central point of the letter. Rather than attempting to void MCWD's notice, the State Board letter was

[2] MCWD also formed a separate GSA for another portion of the 180/400 Foot Aquifer Subbasin (Marina Coast Water District GSA – Marina) at the same time and DWR posted notice of this GSA formation on February 24, 2017. This area was excluded from the area SVBGSA claimed in its own GSA formation notice.

explicitly intended to encourage SVBGSA and MCWD GSA to meet and work out their differences: "By way of this letter, I would like to encourage local resolution of the conflicts over groundwater management in Salinas Valley."

Indeed, that is exactly what occurred here. MCWD GSA and SVBGSA negotiated an agreement that resolved most of their various conflicting issues regarding the 180/400 Foot Aquifer Subbasin and Monterey Subbasin. In addition, in the advisory letter, the State Board attorney suggested that, if MCWD could expand its jurisdictional boundaries by annexation to include Fort Ord, it could become the "exclusive GSA" for the Fort Ord area. MCWD thereafter did annex this area with the final approval occurring in or about July 2019. Thus, rather than the MCWD GSA – Fort Ord notice being void (as CalAm contends), this notice eventually led to MCWD establishing its SGMA jurisdiction for the area covered by the GSA formation notice in the 180/400 Foot Aquifer Subbasin.

Notably, DWR does not agree with CalAm's argument regarding SVBGSA's alleged Subbasin exclusivity. To the contrary, DWR has consistently informed all parties that SVBGSA never achieved exclusive GSA status for the Subbasin under Section 10723.8 because of the timely filings of MCWD GSA for this Subbasin. Consistent with the local and collaborative policies contained in SGMA, DWR has encouraged the various GSAs in the Subbasin to work together to resolve any GSP conflicts. And, as prescribed by SGMA, DWR has clearly stated to all parties that no GSPs for Subbasin overlap areas will be accepted until such a resolution has occurred.

Thus, in light of this law and factual context, CalAm's demand that DWR "reject" MGSA's GSA formation and GSP preparation notices based on SVBGSA's alleged "exclusivity" is baseless. CalAm is not trying to further the purposes of SGMA or promote more effective groundwater management. Rather, it is only trying to promote is own narrow corporate agenda.

C. Contrary To CalAm's Innuendos, There Is Every Reason To Believe That MGSA's Sustainable Management of Groundwater In Its Subbasin Area Can And Will Be Effective.

CalAm attempts to create the erroneous impression that MGSA will not be successful in meeting the requirements of SGMA for its jurisdictional area. CalAm states that the covered area is "extremely small," that some of the technical information MGSA may rely on in forming its GSP is supposedly discredited, and that it is unlikely that MGSA will meet the January 31, 2020 deadline for completing the GSP. However, this is no more than the SGMA equivalent of throwing spaghetti against the wall to see if any will stick.

First, SGMA does not contain any minimum or maximum basin size for sustainable groundwater management. Rather, it implicitly recognizes that these sizes may vary substantially. Indeed, some of the GSA formation notices cover very small areas of larger basins. *See, e.g.*, Santa Barbara County Water Agency GSA -- Fringe Areas notice, posted on the SGMA Portal on September 22, 2017. Rather, one of the hallmarks of SGMA is its

recognition that local agencies will be in the best position to determine initially who should manage basins, to analyze local conditions, and to apply SGMA's sustainability criteria to these conditions. SGMA envisions local flexibility and has not mandated any artificial GSA jurisdictional area size requirements.

Second, CalAm complains (incorrectly) that some of the technical data and reports that MGSA may rely on in preparing its GSP "conflicts with the weight of the modeling and science supporting the MPWSP and has been repeatedly rejected by regulatory bodies and courts…." Although CalAm does not identify what reports it means, MGSA assumes that it refers to the Stanford University research studies regarding groundwater basin conditions that cover this exact area of the Subbasin. Unfortunately, CalAm misleads DWR regarding this technical information.

The Stanford University studies used well-accepted scientific methodologies (including state-of-the-art electrical resistance tomography ("ERT") and airborne electromagnetic ("AEM") techniques) to create two- and three-dimensional images of the actual hydrostratigraphic and groundwater quality conditions, and seawater intrusion characteristics, in portions of the 180/400 Foot Aquifer Subbasin, including the MGSA jurisdictional area. In brief, the studies found that there are significant areas of higher quality groundwater in areas of some seawater intrusion, identified an existing freshwater wedge that was retarding seawater intrusion, and identified gaps in the soil layers (aquitards) that are allowing vertical migration of saline water to the deeper aquifers. This is valuable data, gathered by one of our country's leading educational institutions, that should be utilized, along with all other available data, to prepare a GSP for this area.

It is significant that the northward extension of the same datasets are being used by other agencies for SGMA groundwater sustainability planning purposes. For example, in its recent draft GSP for the Santa Cruz Mid-County Subbasin, the Santa Cruz Mid-County Groundwater Agency (MGA) notes the following:

> In May 2017, the MGA successfully completed an offshore Airborne Electromagnetic (AEM) geophysical survey to assess groundwater salinity levels and map the approximate location of the saltwater/freshwater interface in the offshore groundwater aquifers. This important data will inform the assessment of the extent and progress of seawater intrusion into the Basin and the management responses. The MGA anticipates repeating the AEM survey on a five-year interval (2022) to identify movement of the interface and assess seawater intrusion.

This is only one example of the use of this state-of-the-art technology for sustainable groundwater management planning in California.

CalAm appears to be making a ridiculous argument that this Stanford data must be ignored in preparation of the GSP. However, a GSA is not a court of law. Rather, it is a groundwater management agency that has an obligation to gather and evaluate all water basin

data potentially relevant to SGMA's sustainability criteria. By trying to inject an issue regarding what data supposedly supports or contravenes "the weight of the modeling and science" for CalAm's particular project, CalAm is misperceiving the purpose and function of a GSA that is in the midst of preparing a GSP. Further, CalAm's has misled DWR by stating that this technical information "has been repeatedly rejected by . . . courts." In fact, no court has rejected this technical information. Indeed, the one regulatory agency that even considered a small early subset of this data – the California Public Utilities Commission – did not "reject" it.

Third, CalAm asserts that one "practical" ground for rejecting MGSA's GSP preparation notice is that MGSA supposedly will not be able to meet SGMA's January 31, 2020 deadline for submitting a GSP. To the contrary, MGSA has a schedule in place that meets all of SGMA's requirements for public notice and comment, MGSA consideration and decision on the GSP, and timely submittal of the GSP to DWR. Even so, CalAm's uninformed speculation about completion of the GSP is not, of course, a credible ground for rejecting a GSP preparation notice. SGMA does not prescribe any minimum time period for the actual preparation of a GSP. Indeed, given the focused nature of the GSP here, there is every reason to believe that it will be completed in a timely manner.

Finally, CalAm's letter displays a dismissive attitude toward the City of Marina[3] and questions the legitimacy of its interest in managing the groundwater in this Subbasin. In so doing, CalAm ignores the City's long-standing track record in protecting groundwater at the property (sometimes referred to as the "CEMEX" property) that is the subject of the MGSA notices. For example, in 1996, the City entered into an extensive Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands ("Annexation Agreement") with several other parties, including the CEMEX property owner. The expressed purpose of the Annexation Agreement is "to help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin through voluntary commitments by the Parties to limit, conserve and manage the use of groundwater from the Salinas River groundwater basin. . . ." The groundwater conditions on the CEMEX property were one main focus of the Annexation Agreement.

The City also worked closely with the California Coastal Commission and the State Lands Commission in a series of combined enforcement actions in 2016-17 to end the current sand mining operation on the CEMEX site by December 31, 2020. After decades of efforts to end this environmentally destructive use, this termination was achieved through a settlement approved by all three agencies. In addition to terminating this mining use at the end of next year and gaining full restoration of the site, the settlement requires CEMEX to transfer the entire site at a reduced purchase price to a non-profit organization or government entity approved by the Coastal Commission and the City. As part of this conveyance, a deed restriction will be put in

[3] The City of Marina has a working class, ethnically diverse population, many of whom do not speak English. Marina is a recognized "disadvantaged community" at state, federal and local government levels. The groundwater under the City is an important and valuable community resource because it is provides a clean, local and affordable groundwater source for City residents.

place to protect the CEMEX property and limit its potential uses to public access, conservation, low-impact passive recreation, and public education.

In sum, the City has a demonstrated interest and a 25-year track record in taking action to identify and protect this groundwater under MGSA's jurisdiction. MGSA expects to file a GSP with DWR by January 31, 2020 that fully complies with the groundwater sustainability requirements of SGMA and results in effective and sustainable groundwater management for many years.

D. CalAm's Articulated "Policy" Reasons For Rejecting MGSA's GSP Notice Are Contrived And Unpersuasive.

CalAm argues that rejection of MGSA's GSP notice is required to eliminate "uncertainty" about SVBGSA's GSA and GSP status and that MGSA's notice of GSP preparation supposedly could cause "significant damage" (unspecified) to the work that SVBGSA has undertaken. This is no more than empty rhetoric. The "uncertainty" that CalAm refers to is inherent in the structure of SGMA and has not been created by MGSA, SVBGSA or DWR. SGMA contemplates that there will be overlapping GSA jurisdictional claims and GSP notices and it contains built-in incentives and provisions for the involved parties to resolve these claims on the local level and, if these are unsuccessful, a resolution process at the State level. At this point, these processes are just beginning and they will be concluded in the manner SGMA contemplates.

Contrary to CalAm's rhetoric, MGSA's notices are not causing any damage, much less "significant damage," to SVBGSA's work. By all appearances, SVBGSA is moving forward in preparing and completing its GSP. Regardless of the outcome of the overlap in the jurisdictional area, SVBGSA's work will be valuable and important to completing its GSP. There is no indication that SVBGSA has violated or will violate the terms of the grants it has received, so CalAm's assertion that SVBGSA could potentially lose or need to return such funds is wholly unsupported and unrealistic.

In contrast, the action that CalAm seeks in its letter (DWR rejection of MGSA's GSA and GSP notices) would be catastrophic to MGSA. MGSA has properly formed, begun preparation of a GSP and committed all of the funds necessary to complete and file its GSP by January 31, 2020. CalAm's request is no more than an unlawful attempt to disenfranchise MGSA of its SGMA rights and would plainly thwart the goals of SGMA.

CALAM'S ATTEMPTED INTERVENTION INTO THE GSA/GSP PROCESS WOULD UNDERMINE SGMA'S LOCAL COLLABORATIVE GSP PROCESSES.

CalAm is a private party with its own narrow corporate interest in promoting a project that it would like to build in Monterey County. It is not a GSA and it is not preparing a GSP to sustainably manage groundwater in the 180/400 Foot Aquifer Subbasin. Rather, it is a member of the public that has been and will be provided with many opportunities under SGMA (which is

notable for its robust public participation provisions) to participate in the preparation of GSPs for the Subbasin and to participate in other ways as the SGMA process proceeds. Apparently not content with this role, CalAm is trying to interfere in and short-circuit the SGMA process. However, this interference is unauthorized and cannot be allowed.

One bedrock set of principles in SGMA is its structural recognition of local control and cooperative local management of groundwater. Its overall goal is to "enhance local management of groundwater." Water Code § 10720.1(b). SGMA also contemplates that state intervention only occur when absolutely necessary. SGMA articulates the Legislature's intent to "manage groundwater basins through the actions of local government agencies to the greatest extent feasible, *while minimizing* state *intervention to only when necessary to ensure that local agencies manage groundwater in a sustainable manner*." *Id.*, § 10720.1(h)(emphasis added). Moreover, "[i]t is the intent of the Legislature to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdiction." *Id.*, § 10750(a).

These themes of local management, minimization of state intervention, and local agency cooperation run throughout SGMA. This is especially the case with regard to formation of GSAs and to basin management through GSPs. SGMA recognizes that multiple GSAs can be formed and multiple GSPs can be prepared to manage a single groundwater basin or subbasin. *See, e.g., id.,* § 10720.7(a)(1)(recognizing that subbasins can be managed by "coordinated groundwater sustainability plans"); *id.*, § 10727(b)(recognizing that multiple GSP's can be used to manage a basin pursuant to a "single coordination agreement"). The SGMA mechanism for achieving this coordination is a coordination agreement, which means "a legal agreement adopted between two or more GSAs that provides the basis for coordinating multiple agencies or groundwater sustainability plans within a basin." *Id.* § 10721(d).

SGMA envisions that, when there are jurisdictional overlaps in a basin, the GSAs first negotiate in good faith with one another to resolve the overlap. If these overlaps are not resolved and both GSAs submit a GSP for the overlap area, the GSPs will not be accepted (as DWR has confirmed). MGSA staff has met with SVBGSA staff and is working in good faith to negotiate a coordination agreement and will continue to do so.

CalAm is attempting to precipitate premature state action to undermine the SGMA collaborative local GSP processes. This would violate the legislative directive to minimize State intervention "to only when necessary to ensure that local agencies manage groundwater in a sustainable manner." *Id.*, § 10720.1(h). At this stage of the process, the MGSA and SVBGSA GSPs have not been prepared and submitted to DWR, and no determination can yet be made as to whether they ensure sustainable groundwater management. CalAm cannot be allowed to subvert these important, ongoing SGMA processes.

CONCLUSION

For all of the reasons set forth above, MGSA respectfully requests that DWR take no action in response to the CalAm August 12, 2019 comment letter. As DWR's regulations state, DWR "is not required to respond to comments, but shall consider comments as part of its

evaluation of a Plan." 23 C.C.R. § 353.8(f). However, if DWR believes that any response is necessary, it should deny in its entirety CalAm's request to "reject" MGSA's GSA formation notice and/or GSP preparation notice.

Very truly yours,

Paul P. "Skip" Spaulding, III

PPS:jla

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EXHIBIT 2

FARELLA
BRAUN + MARTEL LLP

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October 21, 2019

Via E-mail and Mail

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Re: Monterey County's October 9, 2019 SGMA Letter
Marina Sustainable Groundwater Agency Jurisdictional Area

Dear Ms. Ravazzini and Ms. Sobeck:

On behalf of the City of Marina Groundwater Sustainability Agency ("MGSA"), we are responding to Monterey County's October 9, 2019 letter informing the Department of Water Resources ("DWR") and the State Water Resources Control Board ("State Board") of its intent to consider becoming the Groundwater Sustainability Agency ("GSA") for a portion of the 180/400 Foot Aquifer Subbasin ("Subbasin").[1]

INTRODUCTION

In brief, Monterey County ("County") apparently plans to supplant MGSA and become the exclusive GSA for MGSA's jurisdictional area because MGSA and the Salinas Valley Basin GSA ("SVBGSA") have filed overlapping GSA notices for the approximate 400-acre portion of the Subbasin within the City of Marina. DWR and the State Board should firmly reject any County effort to usurp MGSA's GSA authority. The Sustainable Groundwater Management Act ("SGMA") provides for a local agency resolution process to resolve overlapping GSA notices and uncoordinated Groundwater Sustainability Plans ("GSPs"). MGSA and SVBGSA have until January 31, 2020 to negotiate and submit a coordination agreement. Then, if an overlap has not been resolved, SGMA specifies a resolution process implemented by the State Board, which includes a mandatory 180-day negotiation/mediation provision.

[1] In its letter, the County states in several places that it "will consider" taking actions to become the GSA for this property. However, at the end of the letter, the County requests that the agencies let them know if they "have concerns about **the County's plans** to become a GSA for the CEMEX property, as outlined above." (Emphasis added.)

Four independent reasons compel cessation of any Monterey County efforts to become the GSA for this overlap portion of the Subbasin:

- SGMA Section 10724 does not provide a platform for Monterey County to replace MGSA for this area;
- Since it is creating and/or contributing to the overlap, Monterey County cannot invoke Section 10724;
- If it tried to invoke Section 10724, Monterey County would be unlawfully circumventing the explicit local agency coordination requirements and GSP resolution provisions in SGMA; and
- Intervention by DWR or the State Board in support of Monterey County would be premature and inappropriate.

SGMA CONTEXT

Both MGSA and SVBGSA filed notices of their GSA formation and of their intent to prepare GSPs for the Subbasin. While SVBGSA's notice covers the entire Subbasin, MGSA's notice applies only to an approximate 400-acre portion of the Subbasin within the City of Marina's jurisdictional boundaries. Thus, MGSA and SVBGSA have overlapping claims to this portion of the Subbasin.

When competing GSA notices cause overlapping boundaries, SGMA prevents a GSA decision from "tak[ing] effect unless the other notification is withdrawn or modified to eliminate any overlap in the areas proposed to be managed." Cal. Water Code § 10723.8(c). SGMA instructs the local agencies to "seek to reach agreement to allow prompt designation of a groundwater sustainability agency." *Id.* SGMA further requires GSAs "intending to develop and implement multiple groundwater sustainability plans" to "coordinate with other agencies preparing a groundwater sustainability plan within the basin." *Id.* § 10727.6. The GSAs must "jointly submit" their GSPs with a coordination agreement "to ensure the coordinated implementation of the groundwater sustainability plans for the entire basin." *Id.* § 10733.4(b); *see also* Cal. Code Regs. tit. 23, § 357.

Accordingly, when GSAs file overlapping claims, SGMA envisions a process where those agencies negotiate in good faith to reach a compromise and enter into a coordination agreement which they submit with their GSPs. The GSPs and coordination agreement between MGSA and SVBGSA for the Subbasin must be filed by January 31, 2020.

MGSA is complying in all respects with SGMA. It properly formed its GSA, provided the requisite notice of its intent to prepare a GSP, issued a draft GSP on October 8, 2019 and is on schedule to file an approved GSP with DWR by the January 31, 2020 deadline. By

committing the necessary (and significant) financial resources and following the prescribed SGMA process, MGSA has being doing exactly what the law requires and it is entitled to complete this process.

I. SGMA Section 10724 Does Not Apply To This Situation Because Multiple GSAs Have Asserted SGMA Jurisdiction Over The Overlap Area.

The County relies primarily on Water Code Section 10724(a) for its potential plan to eliminate MGSA and take over its SGMA jurisdictional area. This provision states:

> In the event that there is an area within a high- or medium-priority basin **that is not within the management area of a groundwater sustainability agency**, the county within which that unmanaged area lies will be presumed to be the groundwater sustainability agency for that area.

Cal. Water Code § 10724(a) (emphasis added).

The County is mistaken in asserting that this provision is applicable here. As SGMA's legislative history reflects,[2] Section 10724 is intended to cover situations where no GSA asserts jurisdiction over an area within a basin, not where multiple GSAs assert jurisdiction and prepare GSPs for a particular area. When multiple GSAs adopt GSPs to manage such an area, the area is within the management area of several GSAs. Section 10724 comes into play when no local agency shows an interest in a particular basin area (thereby making it "unmanaged") and a county is thereafter given the option to become the GSA of that area. If the county declines, the area will instead be managed by the State Board. No DWR regulations or any judicial decisions interpret this section or alter its plain meaning.

The County argues that this provision should also be applied in a multiple GSA situation. The County attempts to conflate the provisions for establishing an exclusive GSA under SGMA Section 10723.8 with Section 10724 to reach a faulty conclusion that, because of the overlapping area in MGSA's and SVBGSA's GSA notices, the areas should be deemed to be "unmanaged." However, the County inaccurately reads Section 10724(a) as addressing disputes arising under the process for determining an exclusive GSA under Section 10723.8 and incorrectly presumes that where overlapping GSAs jurisdictional claims exist, there is no GSA to manage an area.

MGSA acknowledges that one guidance statement from the State Board opines that "[i]f two or more local agencies overlap, the combined area will be deemed unmanaged" and asserts that a county potentially could become a GSA in this situation. State Board, Frequently Asked

[2] The Legislature intended Section 10724 to apply "in the case of an area where no local agency has ***assumed*** management." S. Rules Comm., Floor Analysis on S.B. 11168 at 4 (Aug. 29, 2014) (emphasis added). In particular, the Legislature linked this provision to whether a local agency has acted to assume management over an area – not whether the local agency has become the exclusive GSA.

Questions on GSAs, at 3 (Nov. 22, 2017) ("SWRCB FAQs"). However, this interpretation is not consistent with the intent, legislative history, and text of Section 10724 and is unsupported by any official regulation or case law. Even so, the State Board attaches an important caveat to this interpretation: if a county is "creating or contributing to the overlap, the county does not become the presumptive GSA." As explained in the next section, this rule disqualifies Monterey County from taking such an action.

In sum, it is not a reasonable interpretation of SGMA to read Sections 10723.8 and 10724 together in this manner, nor does SGMA define its use of the term "unmanaged." Rather, these GSA and GSP provisions are best read as operating at the same time on parallel tracks. Consistent with this interpretation, Section 10724(a) does not require that a basin be within the management area of an exclusive GSA. Where multiple GSAs file to manage the same basin area, the clear text in Section 10724(a) does not support Monterey County's ability to claim the area is unmanaged. This is especially true when, as here, both of the GSAs are on track to submit their GSPs, and a coordination agreement is not due for any overlap areas until the January 31, 2020 GSP submittal deadline.

II. Since Monterey County Is Creating And/Or Contributing To This GSA Overlap, It Is Disqualified From Invoking Section 10724.

Guidance from the State Board and DWR places a very important limitation on Monterey County's authority to become a GSA for an unmanaged area under Section 10724: "If a county is creating or contributing to the overlap, the county does not become the presumptive GSA." SWRCB FAQs at 3; *see also* DWR, *GSA Frequently Asked Questions,* at 4 (May 10, 2019).

The County argues that it is a completely separate entity from SVBGSA and thus could not be creating or contributing to the overlap. However, the facts do not support this claim. Monterey County was a moving force behind SVBGSA's formation and even "pushed for the establishment of the Joint Powers Authority" ("JPA"). SVBGSA Minutes at 2 (Sept. 19, 2019). Monterey County is a member of SVBGSA and the County Administrative Officer position (who authored the County's October 9, 2019 letter) is designated as the official County representative to SVBGSA. (*See* Exhibit A to SVBGSA's JPA Agreement.) Section 10.4 of the JPA Agreement for SVBGSA reflects that the County has provided almost 60% of all initial funding for SVBGSA during the 2017–19 period, totaling $1.34 million. The Monterey County Counsel's office has served as the attorney for SVBGSA as it filed GSA and GSP notices and even prepared the GSP that the County now proposes to adopt after it eliminates MGSA. Indeed, the law reflects that a JPA agreement allows "two or more public agencies by agreement [to] jointly exercise any power common to the contracting parties." Cal. Gov't Code § 6502.

In short, it is wholly unpersuasive for the County to assert that it is a separate entity from SVBGSA and therefore is not creating or contributing to the overlap situation. In actuality, the County, as a member, majority funder and driving force in the SVBGSA, is indisputably creating and/or contributing to the overlap situation and cannot masquerade as a disinterested county

agency coming in under a ministerial application of Section 10724 to resolve a dispute among two local GSA agencies.

This is exactly the kind of conflict situation envisioned by the DWR/State Board guidance where a county is disqualified from attempting to invoke Section 10724. Monterey County's contemplated actions here vividly illustrate these dangers. The County is responding to a request by an affiliated entity (SVBGSA) of which it is the primary funder, to consider using its powers to prevent the City of Marina from exercising its GSA authority. Monterey County has announced its intention to adopt SVBGSA's GSP for the overlap area – the same GSP that the County helped design as a member of SVBGSA. Notably, Monterey County fails to present any groundwater management justification for asserting control over the overlap area. It is exactly to prevent such county conflicts that the "creating or contributing" limitation was adopted.

SVBGSA and the County are being encouraged by California-American Water Company ("CalAm") to take these actions to promote its Monterey Peninsula Water Supply Project ("Project"). In its October 9, 2019 letter to SVBGSA, copied to the Monterey County Administrative Officer, CalAm requests both entities to "defer any action on a coordination agreement" with MGSA and instead requests that the County become the GSA for the overlap area. CalAm takes the ridiculous position that MGSA is only preparing a GSP to stop its Project and attempts to enlist the County so it can build the Project. CalAm is not a GSA and, as a private corporation intent on profit, it has no interest in ensuring sustainable groundwater management in the Subbasin. Rather, it is a third party with no official role in this SGMA process attempting to pressure public agencies to achieve its corporate goals. By advocating to stop any coordination agreement discussions, it is also trying to artificially create an impasse in hopes of a County takeover or state intervention.

As a DWR representative has already informed SVBGSA, the County would need to withdraw from the SVBGSA if it intends to take any action under Section 10724. According to the minutes of the September 19, 2019 SVBGSA Advisory Committee meeting, a DWR representative (Tom Berg) stated to SVBGSA:

> Monterey County can remove itself from the SVBGSA and become the GSA for the unmanaged area and enter into a coordination agreement. The cleaner approach is if Monterey County decides there is an overlap and becomes the GSA for the entire 180/400 Subbasin. **They can become the GSA for only Marina if they do not create the GSA with the intent to take over Marina's portion.** You can resolve the overlap and trust Marina will timely submit their Plan. If the Plan is determined to be insufficient during the two-year review, the Water Board could determine the entire Subbasin to be insufficient. He expects legal fights if Monterey County takes over the Subbasin. **Mr. Berg referenced the determination that Kern County had created**

> **their overlap conflict, and they were prevented from becoming the GSA as a result.**
>
> * * *
>
> Tom Berg stated that during the telephone conversation with Mr. Nordberg, DWR, it was suggested that the cleaner approach is for Monterey County to become the GSA for the entire basin. **If the County becomes the GSA only for Marina, it is no longer ministerial in terms of taking out Marina instead of just trying to clear the overlap.**[3]

Id. at 3–4 (emphasis added).

There are explicit withdrawal provisions in Sections 11.6 and 11.8 of SVBGSA's JPA Agreement that the County could utilize to accomplish this withdrawal. Moreover, after withdrawal, the County would need to assert jurisdiction over all overlap areas in the Subbasin. This would, of course, cause needless and extensive organizational and financial harm to all GSAs with overlapping claims and would completely undercut SGMA's goals.

In actuality, "SGMA requires the agencies to resolve" boundary disputes. SWRCB FAQs at 3. The State Board only deems an area unmanaged until the GSAs resolve their conflict. *Id.* This limitation aligns with the intended purpose of Section 10724 to function as a safety valve, allowing a county to assume the role of a GSA in a ministerial manner as a last resort or as a temporary solution before a local agency can take control. Instead of serving that purpose, Monterey County would be using Section 10724 to target only the City of Marina and block it from exercising its GSA authority and implementing its GSP. This effort would contravene SGMA's emphasis on and processes for local agency cooperation and basin management.

III. Monterey County's Potential Action Would Fatally Undermine SGMA's GSA Collaboration Process.

SGMA specifies a specific process for GSAs who file overlapping notices to coordinate and submit a joint GSP or set of GSPs. *See* Cal. Water Code §§ 10727.6 and 10733.4(b). The Water Code likewise provides a process for resolving disputes, in the event that GSAs fail to coordinate and submit joint GSPs for a critically overdrafted basin by the January 31, 2020 deadline. In that situation, the State Board can designate that basin as probationary. *Id.* §§ 10735.2(a)(2) and 10735.2(a)(3) (providing that the State Board can also make a probationary designation after finding that a GSP is inadequate). The State Board must give the local agencies or GSAs "180 days to remedy the deficiency," and "[t]he board may appoint a mediator or other

[3] The minutes reflect that a representative of Monterey County (Charles McKee) attended this meeting.

facilitator . . . to assist in resolving disputes, and identifying and implementing actions that will remedy the deficiency." *Id.* § 10735.4(a). Disagreements over overlapping portions of the basin are covered by this provision.

If it tried to eliminate MGSA's authority over the overlapping area and intervene as the exclusive GSA, the County would be improperly using Section 10724 to implement the GSP of its affiliated GSA entity, violating State Board and DWR guidance directly on point, and undermining SGMA's dispute resolution processes. This action would set a dangerous precedent that could incentivize the misuse of Section 10724 by counties.

IV. DWR And State Board Intervention Is Premature And Legally Unauthorized.

MGSA and SVBGSA are entering a critical time for collaboration to meet the January 31, 2020 GSP submission deadline. Monterey County's potential plan to assert itself as the GSA for the MGSA jurisdictional area threatens to derail this process. Intervention by DWR or the State Board to support Monterey County would similarly quash any possibility of compromise between the two GSAs. Unfortunately, CalAm is urging a strategy to promote its own narrow agenda, likely because it does not want to comply with the GSP of MGSA or with MGSA oversight of its potential groundwater source. However, MGSA and SVBGSA must negotiate in good faith and be given the opportunity to complete the local agency coordination process prescribed by SGMA. The Water Code specifically provides for State Board intervention if MGSA and SVBGSA cannot meet the January 31, 2020 deadline. *See* Cal. Water Code § 10735.2(a)(2). Any actions that interfere with or undermine these SGMA processes are premature and inappropriate.

CONCLUSION

For the foregoing reasons, DWR and the State Board must immediately inform Monterey County that Section 10724 is not applicable in this situation. The County, as the moving force, member, primary funder and general legal advisor to SVBGSA, has created and or contributed to the overlap situation and is therefore disqualified from using this provision. Supporting CalAm's reluctance to be governed and monitored by the government entity with the overlying interest, does not support SGMA and the intention of the Legislature to sustainably manage groundwater. The City of Marina's formation of MGSA to prepare its own GSP to govern critical groundwater resources within its jurisdiction is consistent with the spirit and language of SGMA.

Thank you for giving MGSA the opportunity to provide comments on this important issue. We are certainly available to discuss these issues with you.

Very truly yours,

Paul P. "Skip" Spaulding, III

PPS:jla

cc: Mark Nordberg, Department of Water Resources
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November 21, 2019

Gary Petersen
General Manager
Salinas Valley Basin Groundwater Sustainability Agency

Re: MGSA/SVBGSA Coordination Agreement Discussions

Gary,

I wanted to follow up on our previous discussions regarding a coordination agreement with SVBGSA and next steps to move this forward. I understand from our last telephone conversation that you have received direction that the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) will only agree to meet with the Marina Groundwater Sustainability Agency if MGSA "agrees to give up its GSA." From MGSA's viewpoint, this is not a negotiation on a coordination agreement; rather, it is a request that MGSA go out of existence, which is of course not acceptable.

We continue to be ready to have a discussion on a coordination agreement that will comply with the Sustainable Groundwater Management Act. We strongly encourage SVBGSA to negotiate in good faith to achieve this goal.

Sincerely,

Layne Long
City Manager/Executive Director
City of Marina-Marina Groundwater Sustainability Agency

December 25, 2019

Gary Petersen, General Manager
Members of the Board
Salinas Valley Basin Groundwater Sustainability Agency

We, the signers of this letter, are farmers and landowners in the 180/400, commonly referred to as the Pressure. The 20-year Groundwater Sustainability Plan for the Pressure that your agency is about to submit to the State Department of Water Resources will have a substantial effect on the operations and economics of our companies.

We believe there is an easily correctable problem in the plan.

Project 1, found in section 9.4.3.2, is Invasive Species Eradication (arundo and tamarisk). According to the plan, this project "will reduce evapotranspiration from these invasive plants, leaving more water in the Salinas River and increasing aquifer recharge or reducing the amount of water required to be release from Nacimiento and San Antonio Reservoirs." All vegetative overgrowth in the river, not just invasives, contributes to these problems. Project 1 should be changed so that all vegetative overgrowth is managed, not just invasives, in order to reduce evapotranspiration and leave more water in the river.

Your plan will force us to pay millions of dollars for projects. It will also potentially subject us to management actions such as reduced pumping. These costs and actions are not acceptable if the SVBGSA leaves cheap water on the table from river evapotranspiration.

We ask that you amend Project 1 for the following reasons:

1. Evapotranspiration reduction. Brown & Caldwell's 2015 report states that up to 50,000 acre/feet of water are lost every year due to evapotranspiration from river vegetation overgrowth.
2. Increase conveyance of water in the river. This will benefit other GSP projects, such as water diversion for the Eastside Canal and operation of the SRDF.
3. Increase water available for percolation in the river.
4. Operation and re-operation of the reservoirs (9.3.4, #2 "Allow summer flows to better reach the SRDF") directly contribute to vegetation overgrowth in the river. The SVBGS needs to mitigate the negative side-effects of its projects and actions.
7. River vegetation management would be cheap in comparison to the plan's other projects. Chapter 9 estimates water cost from Invasive Species Eradication at $160 AF/year, which is theoretically higher than non-invasive vegetation management, as invasives require pesticides. Other projects' water costs are even higher: CSIP Optimization is $270 AF/year, CSIP Expansion is $630 AF/year, SRDF

Maximization is $220 AF/year, Extraction Barrier is $590 AF/year and the Chualar Diversion is $750 AF/year. In context with these expensive water sources, leaving cheaper water on the table is poor fiscal stewardship.

8. The total capital costs of projects 1-9 in the 20-year-plan, according to your draft, total $385,000,000.00 with an additional $24,000,000.00 in annual O&M costs. Why should we pay for high cost projects when a relatively inexpensive project like river vegetation maintenance is being ignored?

We ask that you amend Project 1 to include vegetation management before you submit the plan to the State Department of Water Resources.

Pressure Letter to SVBGSA Board 12/25/2019

signature

Carlos Ramirez

printed name

San Berry Growers

company

Pressure Letter to SVBGSA Board 12/25/2019

signature

TOM DE NUNES

printed name

THE NUNES COMPANY, INC.

company

Pressure Letter to SVBGSA Board 12/25/2019

Stephen de Lorimier

signature

Stephen de Lorimier

printed name

D'Agrigo California

company

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DALE D. KUSS

printed name

OCEAN MIST FARMS

company

SEA MIST FARMS

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MICHAEL SCATTINI

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Luis Scattini & Sons

company

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Dick Giannini

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Dick Giannini

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Christensen + Giannini, LLC

company

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Wayne Gularte

signature

Wayne Gularte

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Rincon Farms INC

company PO Box 616
Gonzales, CA 93926

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SHARI HIGASHI

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HIGASHI FARMS

company

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CHRIS BURN

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Crown Park Co Inc.
General Farm Investment Co

company

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Victor Ramirez

printed name

Bay View Farms

company

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George Fontes

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Fontes Farms

company

Pressure Letter to SVBGSA Board 12/25/2019

Bardin Bengard

signature

Bardin Bengard

printed name

Bengard Ranch

company

Pressure Letter to SVBGSA Board 12/25/2019

David Costa

signature

David Costa

printed name

Costa Farms Inc.
Costa Family Farms
Anthony Costa & Sons

company

Pressure Letter to SVBGSA Board 12/25/2019

John R. Marihart

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John R. Marihart

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Marihart Family LLC

company

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KEN HIGASHI

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HIGASHI FARMS INC

company

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signature

Allan Clark

printed name

Merrill Farms

company

Pressure Letter to SVBGSA Board 12/25/2019

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KENT K. HIBINO

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HENRY HIBINO FARMS, LLC

company

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Josh Ruiz

printed name

Church Brothers Farms

company

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EDWARD S. MORIMOTO

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YUKI FARMS

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Gary Tanimura

signature

GARY TANIMURA

printed name

TANIMURA & ANTLE

company

Pressure Letter to SVBGSA Board 12/25/2019

signature

Nick Huntington

printed name

Huntington Farms

company

Pressure Letter to SVBGSA Board 12/25/2019

signature

ROBERT RODOVI

printed name

SUNSET FARMS INC

company

Pressure Letter to SVBGSA Board 12/25/2019

Dennis Lebow

signature

Dennis Lebow

printed name

Reiter Affiliated Co.

company

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