SVBGSA Monterey Subbasin Planning Committee

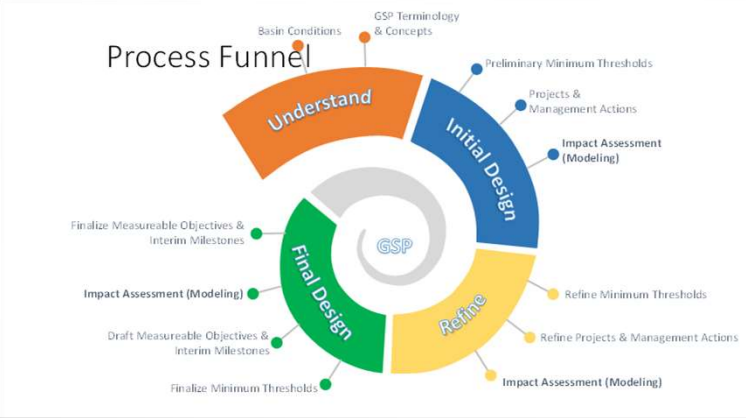
SMC Update, Options, and Additional Data

November 6, 2020

MONTGOMERY & ASSOCIATES

Process

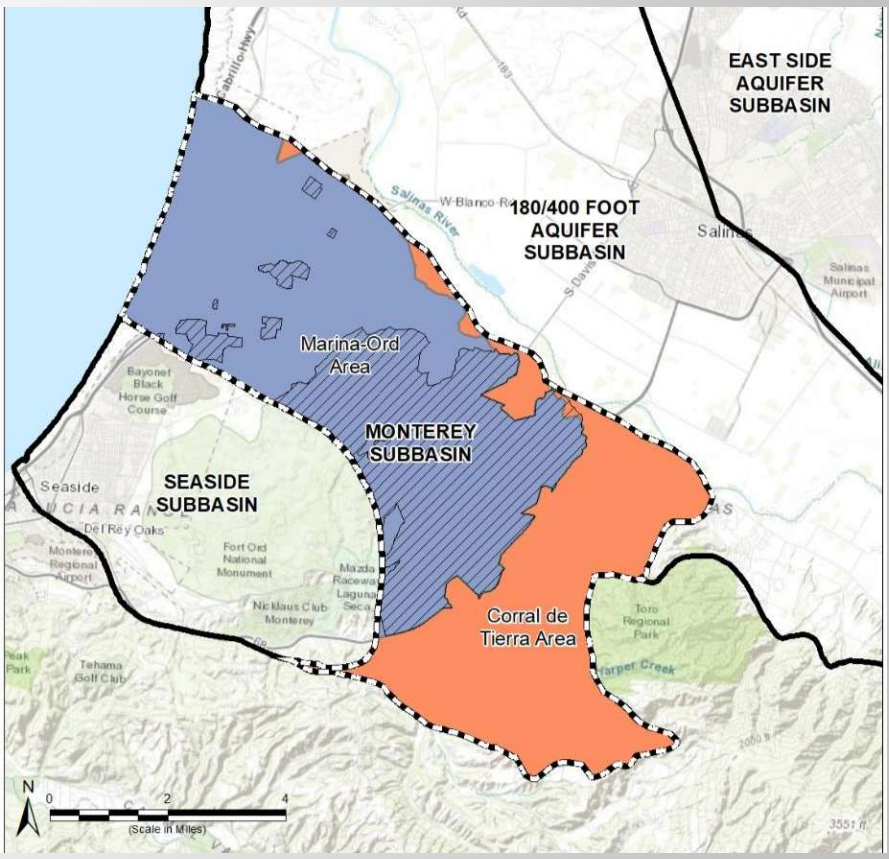
- July 7 Subbasin Committee Meeting – received overview of SMCs in the Monterey Subbasin
- July 28 workshop – provided greater detail on SMC terminology and concepts
- Sept 4 Subbasin Committee Meeting – discussed and gave direction on SMCs in the Monterey GSP
- Sept/Oct – SVBGSA and MCWD worked jointly on SMCs
- Nov 6 Subbasin Committee Meeting – received SMC update and discussed SMC options
- Jan 2021 – receive SMC chapter



Opinions/guidance will be included in boxes

Coordination between SVBGSA and MCWD

- SVBGSA-MCWD Technical Committee (TC) worked out preliminary SMCs
  - Pending consultation with stakeholder and Steering Committee agreement
- Stakeholder meetings
  - SVBGSA Subbasin Planning Committee
  - MCWD Stakeholder Committee



Coordination between SVBGSA and MCWD

- Two sets of SMCs may be developed for some indicators where concerns and drivers are different in the Corral de Tierra area vs. the Marina-Ord Area
  - Focus of this meeting is input on basin-wide / Corral de Tierra SMCs
  - Discussion and commenting on additional basin-wide / Marina-Ord Area SMCs will occur during the MCWD Stakeholder Meeting, anticipated during the week of Nov 16

Monterey: Subsidence

- *SVBGSA Subbasin Committee Selected:*
  - Any subsidence anywhere in the Subbasin is significant and unreasonable
    - Minimum threshold = 0 subsidence (+/- 0.1ft InSAR data)
    - Measurable Objective = 0 subsidence (+/- 0.1ft InSAR data)

- *Definition of Significant and Unreasonable*:
  - Any inelastic land subsidence that impacts surface land uses and is caused by lowering of groundwater elevations occurring in the Subbasin
- *Measurement:* InSAR data provided by DWR
- *MT/MO: 0 subsidence (+/- 0.1 foot for measurement error)*
- *Undesirable Result*:
  - In any one year, there will be no exceedances of the MT

Monterey: Interconnected Surface Water

SVBGSA Subbasin Committee Selected:

- The current rate of surface water depletion is not unreasonable (although it may be significant)
  - Minimum threshold
    - Equal to today's simulated depletion, or
    - Equal to today's shallow groundwater levels
  - Measurable objectives
    - Equal to today's simulated depletion, or
    - Equal to today's shallow groundwater levels

Monterey: Interconnected Surface Water

- *Definition of Significant and Unreasonable*:
  - Depletion of surface water that causes significant and unreasonable impacts on the beneficial uses and users of surface water in the basin, such as groundwater dependent ecosystems
  - Below [YEAR] shallow groundwater elevations near locations of interconnected surface water is not unreasonable, although it may be significant.
- *Measurement:* Shallow groundwater elevations of shallow wells nearby locations of ISW
- *MT/MO:* *Set based on a year (MCWD preliminarily proposed 2015 or as identified by the City of Marina, but could be different for each area of ISW)*
- *Undesirable Result*: During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, no more than X% of ISW RMWs exceed shallow groundwater MTs within each area of ISW [Toro Creek and Marina Ponds]

Monterey: Reduction of Groundwater Storage

- *SVBGSA Subbasin Committee Selected:* Pumping in excess of the sustainable yield leads to significant and unreasonable impacts
  - Minimum threshold = pump within the sustainable yield. Provide an estimate of the sustainable yield, acknowledging it will be refined with better data
  - Measurable objective = pump at, or less than the sustainable yield
- *Definition of Significant and Unreasonable*:
  - Reduction of GW storage that causes significant and unreasonable impacts to the long-term sustainable beneficial use of GW in the basin, as determined by long-term reductions in groundwater storage or pumping exceeding the sustainable yield

SVBGSA Subbasin Committee
Measurement: Pumping
MT/MO: Long-term sustainable yield, as determined by SVIHM
Undesirable Result:
X% reduction in calculated storage, as calculated through pumping

Reduction in Groundwater Storage - Metrics

- **PUMPING**
- Pros:
  - Simple, easy for annual report
  - Can be used to control pumping
- Cons:
  - Not favored by MCWD
  - Limited wells included in Corral de Tierra area (only 7 wells that report extraction through the GEMS program)
- *Possibility to expand GEMS, but that would take years to put into place*

- **CALCULATED BASED ON GROUNDWATER ELEVATIONS**
- Pros:
  - More monitoring wells for elevations than extraction in Corral de Tierra area
  - Can interpolate groundwater elevation contours between monitoring wells
- Cons:
  - Doesn't control pumping
  - Data gaps in a few areas
  - Time-consuming calculation for annual reports
- *Possibility to include more elevation monitoring wells in monitoring network*

- **USING GROUNDWATER ELEVATION AS A PROXY**
- Pros:
  - More monitoring wells for elevations than extraction in Corral de Tierra area
  - Can interpolate groundwater elevation contours between monitoring wells
- Cons:
  - Doesn't control pumping
  - Data gaps in a few areas
- *Possibility to include more elevation monitoring wells in monitoring network*

Monterey: SWI – *still developing*

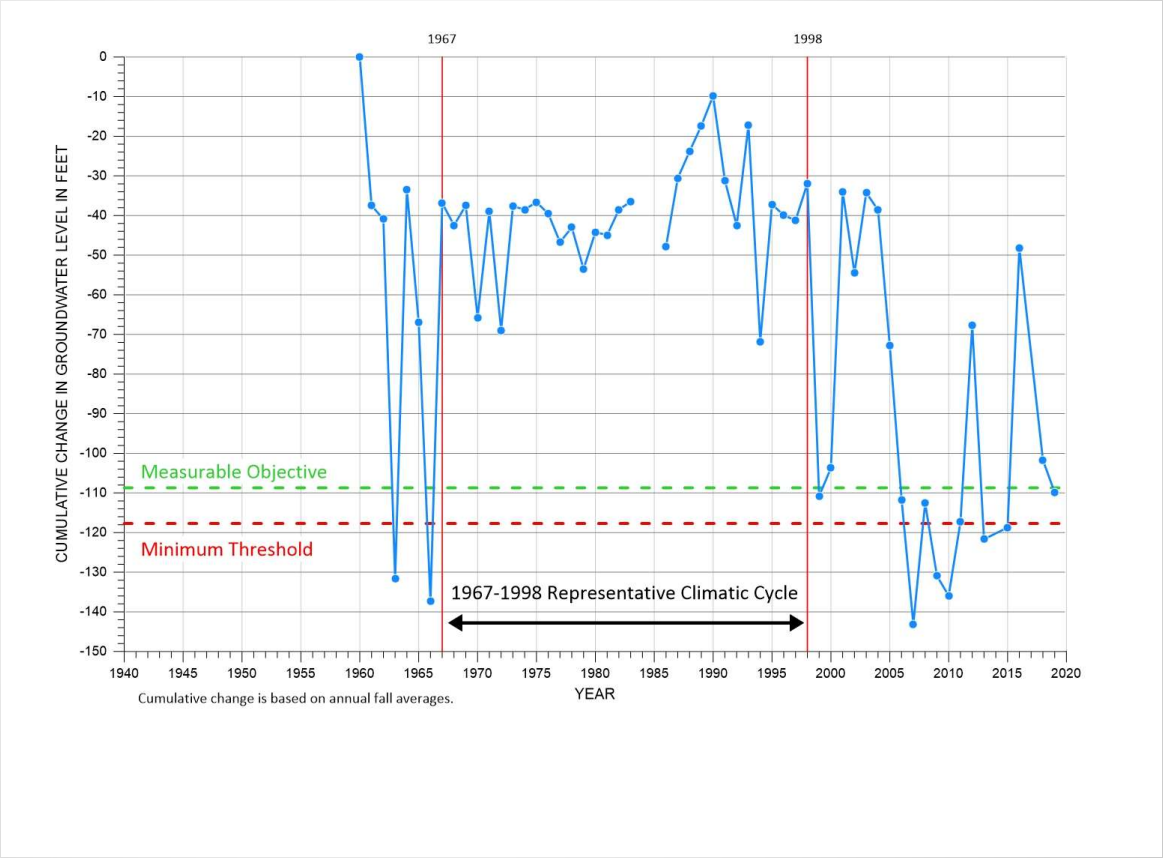
- *SVBGSA Subbasin Committee Selected:* Existing SWI is significant and unreasonable, and SVBGSA chooses to improve SWI. Goal is to push back seawater intrusion.
  - Minimum threshold = Existing SWI is significant and unreasonable, and SVBGSA chooses to improve SWI. Goal is to push back seawater intrusion.

***Still working on with MCWD*

Monterey: Groundwater Levels

- *SVBGSA Subbasin Committee Selected:* impacting shallow, domestic wells is significant and unreasonable, with more information and an analysis of domestic wells and small systems wells impacts
  - Minimum thresholds are set to ensure most shallow domestic wells have adequate water for operation
  - Measurable objectives are set above the minimum thresholds
- *Definition of Significant and Unreasonable*:
  - Lowering of GW levels that directly or indirectly causes significant and unreasonable effects on the beneficial use of GW in the basin, as defined by groundwater elevations that:
    - Are at or below the observed groundwater elevations in [YEAR TO BE DETERMINED].
    - Cause low groundwater elevations in a significant number of domestic and small water system wells that lead to inadequate water production. (Corral de Tierra)
    - Interfere with other sustainability indicators.
- *Measurement:* Groundwater elevations
- *Undesirable Result*: X% of groundwater level representative monitoring wells (in each area of management) exceed MTs for X period, *OR* over the course of any one year, no more than [15?]% of the groundwater elevation minimum thresholds shall be exceeded. Additionally, the minimum threshold in any one well shall not be exceeded for more than two sequential years.

Cumulative Change in Groundwater Elevation – Corral de Tierra



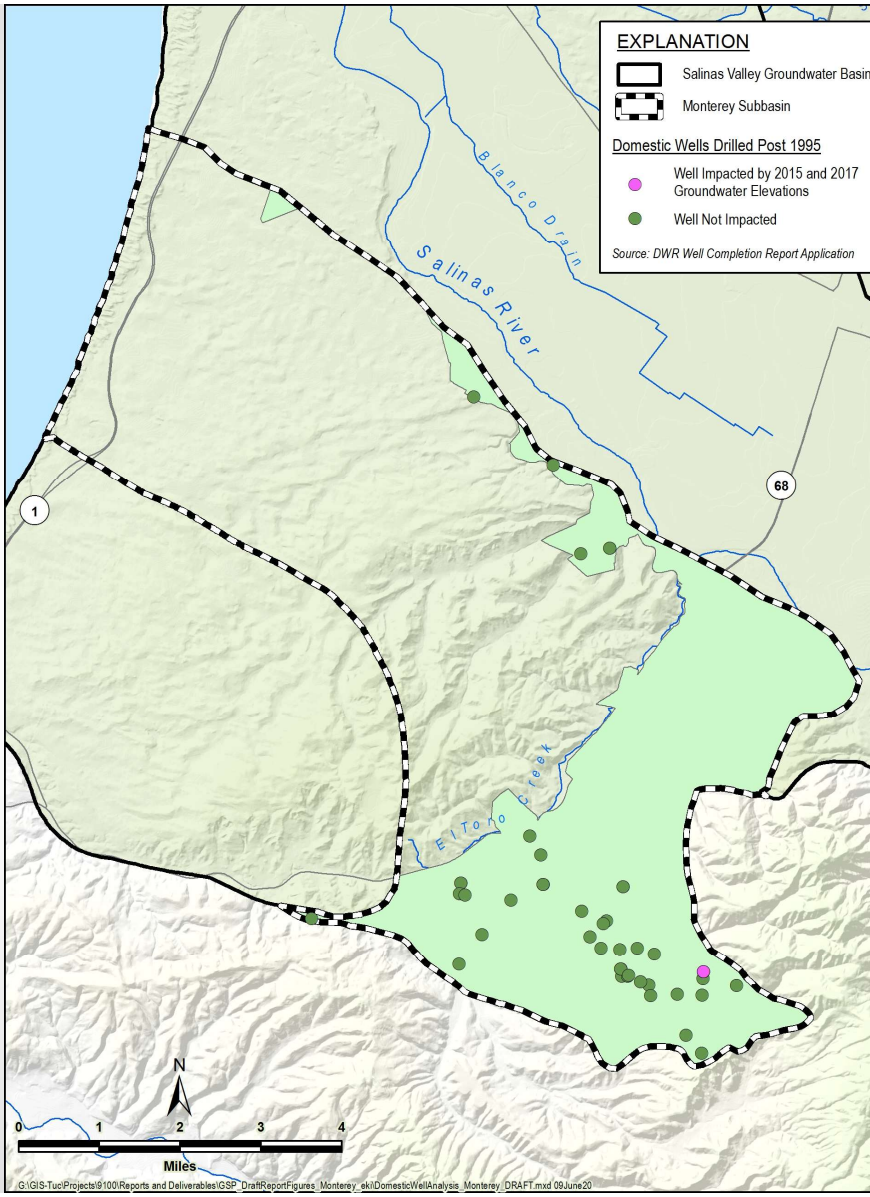
Domestic Well Analysis for Groundwater Level MT

(Corral de Tierra)

Wells installed post-1995, with inaccurate locations

2015	400-Ft Aquifer	Deep Aquifer
Impacted Domestic Wells	0	1
Total Wells	10	40
Percentage	0%	3%

2017	400-Ft Aquifer	Deep Aquifer
Impacted Domestic Wells	0	1
Total Wells	10	40
Percentage	0%	3%



Domestic Well Analysis for Groundwater Level MT *(Corral de Tierra)*

Old Wells and Inaccurate Locations

2015	400-Ft Aquifer	Deep Aquifer
Impacted Domestic Wells	40	19
Total Wells	93	99
Percentage	43%	19%

2017	400-Ft Aquifer	Deep Aquifer
Impacted Domestic Wells	39	19
Total Wells	93	99
Percentage	42%	19%

Monterey: Quality

- *SVBGSA Subbasin Committee Selected:* Option 1: Degraded groundwater quality resulting from direct GSA actions is significant and unreasonable as measured by the number of supply wells, with an analysis of domestic wells and small systems wells impacts, and more information about aquifer-specific or constituent-specific SMCs
  - Minimum threshold = maintain current groundwater quality
  - Measurable objective = same as minimum threshold
- *Definition of Significant and Unreasonable:*
  - Degradation of GW quality, as a direct result of projects or management actions taken as part of GSP implementation, that causes significant and unreasonable impacts on the beneficial uses and users of groundwater, as determined by increases in a chemical constituent that either
    - Results in groundwater concentrations in a public water system supply or domestic well above an established MCL or SMCL, or
    - Leads to reduced crop production.
- *Measurement:* Number of supply wells, monitored for Title 22 constituents in drinking supply wells and on-farm domestic wells, and monitored for agricultural constituents of concern in ag wells
- *MT/MO in Corral area:* Zero additional exceedances of the regulatory standards for groundwater quality constituents of concern known to exist in the Subbasin, as a direct result of projects or management actions taken as part of GSP implementation (e.g. maintain current groundwater impacts)
- *MT/MO Marina/Ord area (Preliminary TC Proposal):* currently no COC in Marina/Ord area and MT/MO are set at zero exceedances of Title 22 constituents
- *Undesirable Result:* On average during any one year, no water quality MT shall be exceeded in water quality Representative Monitoring Wells (RMW) as a direct result of projects or management actions taken as part of GSP implementation

Additional Data

Estimation of Extraction Outside of Water Systems

Table 3 Notes.
1) California Agricultural Production and Irrigated Water Use, Congressional Research Service Report 44093.

Table 3 Estimated Agricultural Water Use for Parcels Outside of Water Purveyors

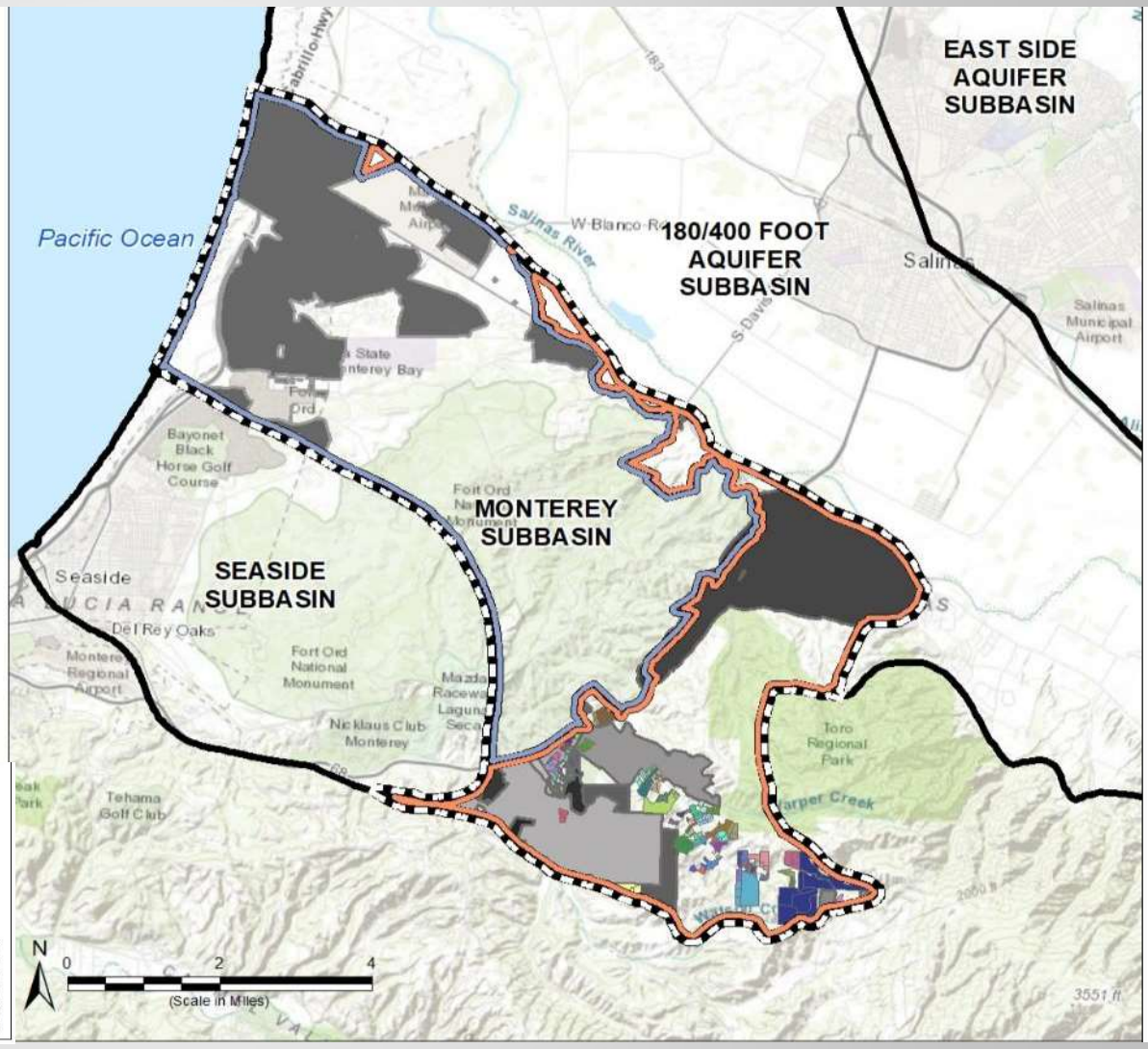
Parcel Type	Total Number of Parcels	Ag Irrigation Area (Ac)	Annual Irrigation Use Factor (AFY/Ac) [1.]	Estimated Annual Irrigation Water Usage (AFY)
Agricultural	9	110	2.5	275

Table 4 Estimate Non-Agricultural Water Use for Parcels Outside of Water Purveyors

Table 4 Notes.
1) Table assumes that irrigation and domestic water service is not provided by a utility company noted previously.
2) Water use based on known water use for similar developments for indoor water use.
3) Golf course numbers still being confirmed

Parcel Type [1.]	(A) Total Number of Parcels	(B) Non-Ag Irrigation Area (Ac)	(C) Annual Non-Ag Irrigation Use Factor (AFY/Ac)	(D=BxC) Estimated Annual Irrigation Usage (AFY)	(E) Annual Domestic Use Factor (AFY/parcel)	(F=AxE) Estimated Annual Domestic Usage (AFY)	(D + F) Estimated Total Annual Water Usage (AFY)
Residential	300	10	2.0	20	0.4[2]	120	140
Golf Course	2	60.92	2.75	168	0.5	1	169
Parks	2	7.82	2.5	20	0	0	19.6
Total	304	78.74		208		121	328.6

Water Systems



Legend

- Monterey Subbasin
- Other Groundwater Subbasins within Salinas Valley Basin

Management Areas

- Marina-Ord
- Corral de Tierra
- Public Water Supply Service Areas
- Small Local and Small State Water Systems

Sources

1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 19 June 2020.
2. Municipal areas shown as public water system service areas dependent on groundwater, obtained from Tracking California https://trackingcalifornia.org/water/download.

Municipal Areas Dependent on Groundwater

Monterey Subbasin
Groundwater Sustainability Plan
June 2020
Figure 3-4

Water System Connections

= *Approximately 1,949*

Based on Wallace Group Memo; Additional connections added here based on SWRCB data

**Number of connections still being confirmed*

Large Water System Water Purveyor	Number of Connections
CAL AM WATER COMPANY - AMBLER PARK	402
CAL AM WATER COMPANY - HIDDEN HILLS	452
CAL AM WATER COMPANY - TORO	418
CAL WATER SALINAS HILLS	1,652

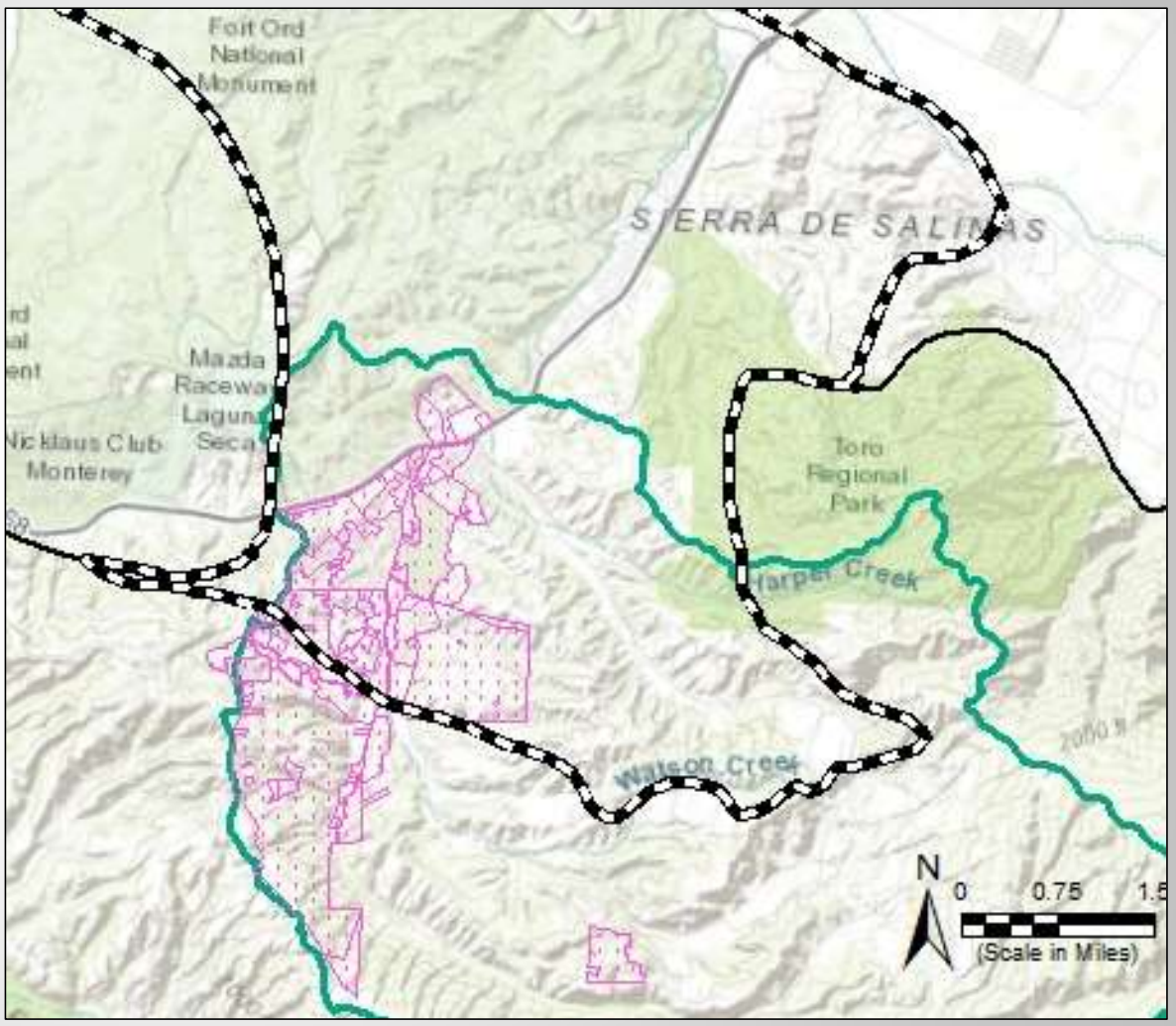
Small Water System Water Purveyor	Number of Connections
BLUFFS WS	44
CALERA CANYON HEIGHTS HOA	17
CORRAL DE TIERRA CONTRY CLUB WS	1
CORRAL DE TIERRA ESTATES	16
CYPRESS CENTER WS	17
CYPRESS COMMUNITY CHURCH WS	4
HORN WS	18
LAGUNA SECA RECREATION AREA WS	1
LAGUNA SECA WC	58
MOUNT TORO RANCHOS MWA	15
ROBLEY PROPERTY MWS	33
SPCA WS	8
TIERRA MEADOWS HOA	21
TIERRA VERDE MWC	16
WASHINGTON SCHOOL WS	1
Z RANCH MWC	27
TOTAL	297

Total Estimated Extraction in Corral de Tierra

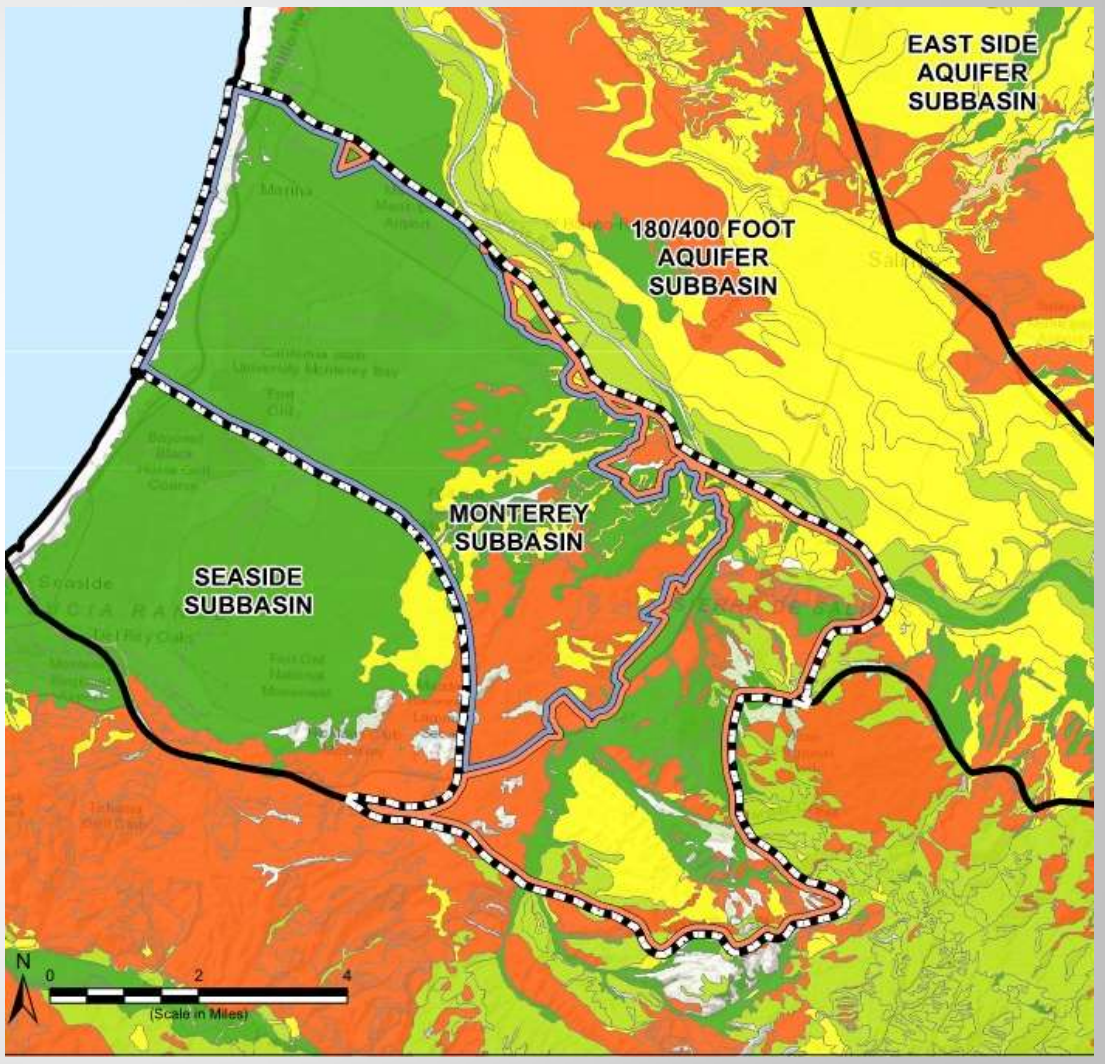
Source	Number of Connections	Groundwater (AFY)
CAL AM WATER COMPANY - AMBLER PARK	402	166.2
CAL AM WATER COMPANY - HIDDEN HILLS	452	122.3
CAL AM WATER COMPANY - TORO	418	160.3
CAL WATER SALINAS HILLS	1,652	1,207.50
SMALL PUBLIC WATER SYSTEMS	297	267.1
AGRICULTURE (see Table 3)		275
RESIDENTIAL (domestic wells)	300	140
GOLF COURSE		169
PARKS		19.6
Total	***3,396***	***2,527.00***

El Toro Planning Area & B-8 Zoning Overlay

		Demand	Area	Acreage
Wallace Group	Total Estimated Extractions (2020)	2,527 AF/Yr	Corral de Tierra	11,500
El Toro Groundwater Study	Build-Out Estimated Demand	2,145 AF/Yr	El Toro Planning	19,000



Hydrologic Soil Groups



Monterey Subbasin

Other Groundwater Subbasins within Salinas Valley Basin

Management Areas

Marina-Ord Area

Corral de Tierra Area

Hydrologic Soil Groups

A: High Infiltration Rate

B: Moderate Infiltration Rate

C: Slow Infiltration Rate

D: Very Slow Infiltration Rate

SSURGO = Soil Survey Geographic Database

Notes

1. All locations are approximate.
2. Hydrologic soil groups are per Source 2.

Sources

1. Basemap is ESRI's ArcGIS Online world topographic map, obtained 21 October 2020.
2. Soil data is obtained from SSURGO (https://gdg.sc.egov.usda.gov/GDGOrder.aspx#).

Hydrologic Soil Groups

Monterey Subbasin
Groundwater Sustainability Plan
August 2020

Figure 4-7

Questions