

# Salinas Valley Basin GSA

## GSP Version 2 Revisions

Presented to SVBGSA Advisory Committee  
July 15, 2021





# General Process for Making Changes

- ▶ Comments on all chapters 1 through 10 have been received, reviewed, and addressed
- ▶ Version 2s are released! These have been considered by Subbasin Committees first, and after the Advisory Committee receives here, the Board of Directors will receive in August
- ▶ GSPs will be released for public comment this fall, after which final revisions will be made prior to Board approval
- ▶ Monterey Subbasin GSP being co-written with MCWD GSA is on its own schedule



# Considerations in Addressing Comments

- 
- Factual inaccuracies
  - Changes that improve the clarity of the GSP
  - Changes that improve the clarity of the GSP that require significant effort
  - Changes to decisions of the Subbasin Committees
  - Policy issues that need to engage the Board
  - Data requests are not directly related to completing the GSP
  - Requests that are not necessary now, but maybe in the future
  - Data requests or policy decisions outside of the scope of the GSA

# Langley Summary of Current Conditions

- Langley Area Subbasin has historically been in overdraft (300 AF/year)
- Underlain by fractured granite bedrock, heterogeneous groundwater conditions
- Given that the Subbasin's has historically been in overdraft, this GSP includes a robust set of potential projects and management actions sufficient to mitigate the overdraft.

## Subbasin Committee Feedback on V2

- *Satisfied with the quality of work and revisions so far.*
- *Approved in concept the addition of a voluntary land following program management action (V3).*
- *Concern that expanding the Water Quality SMC to include groundwater management could lead to legal conflicts, but supportive of expanding to address DWR's 180/400 comment. Still discussing.*

# Forebay Summary of Current Conditions

- Forebay Aquifer Subbasin has not historically been in overdraft, nor experienced chronic lowering of groundwater levels
- From 1980 to 2016, the basin was in overdraft during only 3 years
- Given that the Subbasin's extraction is currently close to the sustainable yield, this chapter includes a robust set of potential projects and management actions that could be undertaken if needed

## Subbasin Committee Feedback on V2

- *Revisions made in V2 make sense (clarity on partnership with ASGSA in the Management Area)*
- *New versions of Chapters 9 and 10 (V3) with associated changes made in other chapters (emphasis on Management Actions) – Released this morning*
- *Concern about projects that include or impact the Forebay and are also beyond the Forebay*

# Eastside Summary of Current Conditions

- Eastside Subbasin has historically been in overdraft, and is projected to still be in overdraft throughout the GSP planning horizon unless projects and management actions bring extraction and the sustainable yield in line (10,000 AF/year).
- Overdraft can be mitigated by reducing pumping or recharging the basin, either through direct or in-lieu means.
- The potential projects and management actions in this chapter are sufficient to mitigate existing overdraft. Supply projects are preferred.

## Subbasin Committee Feedback on V2

- *Revisions in V2 add valuable clarifying content*
- *Comments on specific projects (recharge, voluntary fallowing costs, winter release with ASR) and questions about project prioritization*
- *Questions about how other agencies with authority over water quality intersect with the GSA. Supportive of developing water quality direction based on DWR's comment on 180/400.*
- *Need for modeling to show subbasin interactions to determine project benefits*

# Upper Valley Summary of Current Conditions

- ▶ Upper Valley Aquifer Subbasin has not historically been in overdraft, nor experienced chronic lowering of groundwater levels
- ▶ From 1980 to 2016, the basin was in overdraft during only 5 years
- ▶ However, there are a few areas away from the river where groundwater elevations have been declining
- ▶ Given that the Subbasin's extraction is currently close to the sustainable yield, GSP V2 includes a robust set of potential projects and management actions that could be undertaken if needed. However including these projects is currently under discussion.

## Subbasin Committee Feedback on V2

- *Importance of reservoir releases for groundwater*
- *Concern about projects that include or impact the UV and are also beyond the UV*
- *Question about the necessity of projects if the subbasin is currently sustainable*
- *Support for the keeping projects in the plan*



# Interconnected Surface Water – Updates in multiple chapters

- ▶ Added sections on the locations of interconnected surface water, as identified by the Salinas Valley Integrated Hydrologic Model (SVIHM) in Chapter 4
- ▶ Estimated average annual historical depletion rates and included in Chapter 5
- ▶ Undertook seasonal analysis of surface water - groundwater interaction
- ▶ Revised description of proposed interconnected surface water monitoring network
  - ▶ Chapter 7
  - ▶ Added appendix with further details on monitoring network
  - ▶ Added any new wells needed into Chapter 10



# Interconnected Surface Water – Updates in multiple chapters

- ▶ In response to concern that ISW MTs only applies when there are “average year conditions”, new language was added to the beginning of Chapter 8 to explain how this GSP is written for long-term groundwater management.
- ▶ Future groundwater conditions, are analyzed over a range of 47 potential hydrogeologic years, including wet and dry years, as has been elaborated on in Chapter 6 of v2.
- ▶ To establish groundwater elevations as proxies for ISW, added section that explains the relationship between groundwater elevations and depletion of surface water due to groundwater use



# Interconnected Surface Water – Updates in multiple chapters

- ▶ Revised locally defined Significant and Unreasonable depletion of interconnected surface water to be:
  - ▶ Depletions from groundwater extraction that would result in a significant and unreasonable impact on other beneficial uses and users such as riparian water rights holders, appropriative surface water rights holders, ecological surface water users, and recreational surface water uses.
  - ▶ Depletion from groundwater extraction more than observed in *2015 [or year selected for minimum threshold in each respective subbasin]*, as measured by shallow groundwater elevations near locations of interconnected surface water. While a documented determination of whether past depletions was significant is not available, staying above *2015* depletions was determined to be a reasonable balance for all the beneficial uses and users.

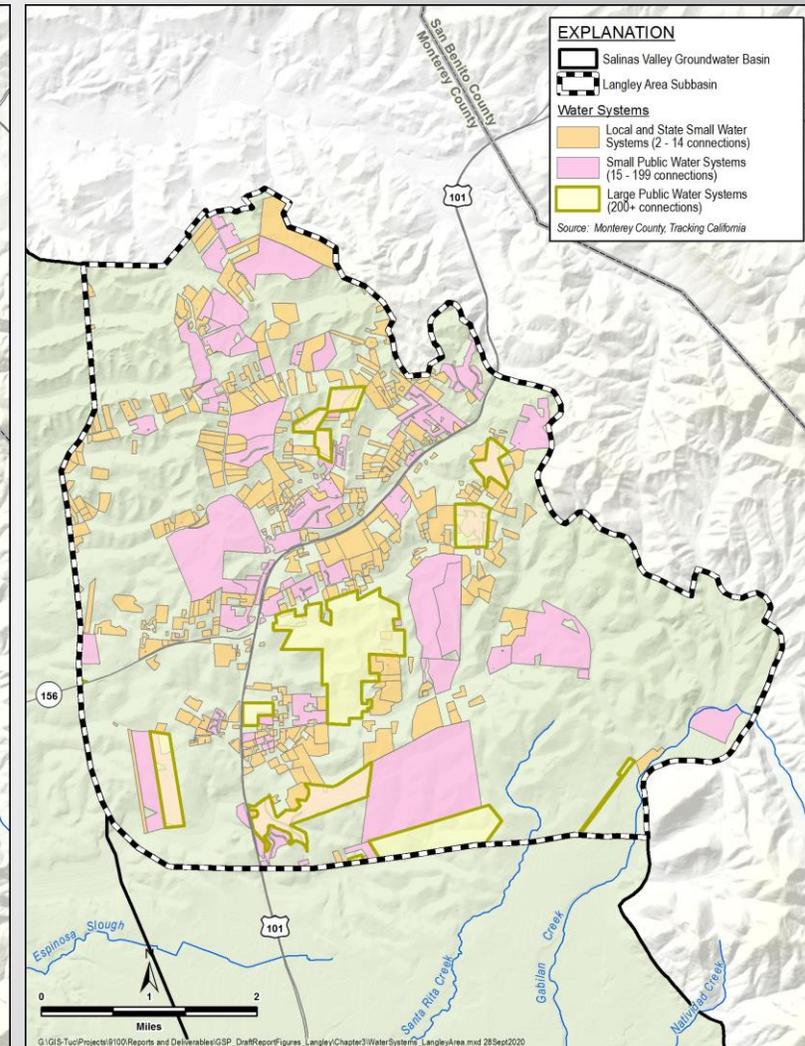
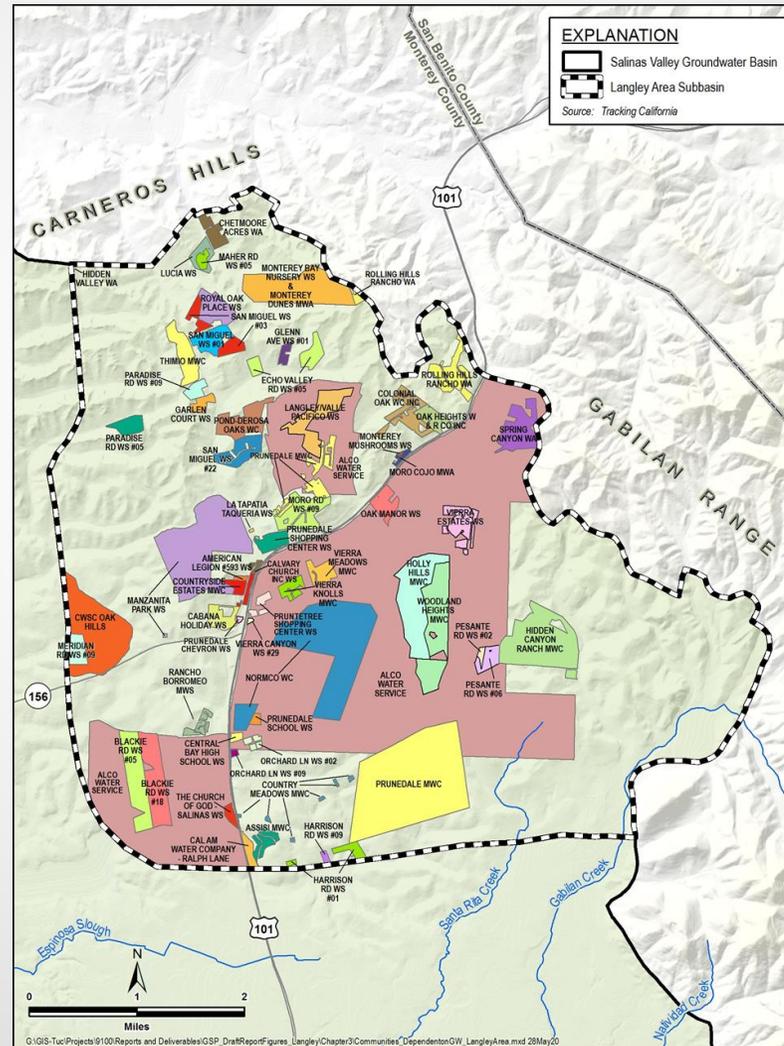


## Interconnected Surface Water – Updates in multiple chapters

- Propose revising measurable objective to non-drought conditions that parallel the Groundwater Level measurable objective
- When possible (before/after GSP submittal), will add minimum thresholds and measurable objectives for wells that are added to the ISW monitoring network
- Added that SVBGSA will work with MCWRA, NMFS, and other agencies to further evaluate the effect of the ISW measurable objectives, minimum thresholds, and undesirable results on surface water flows and beneficial users

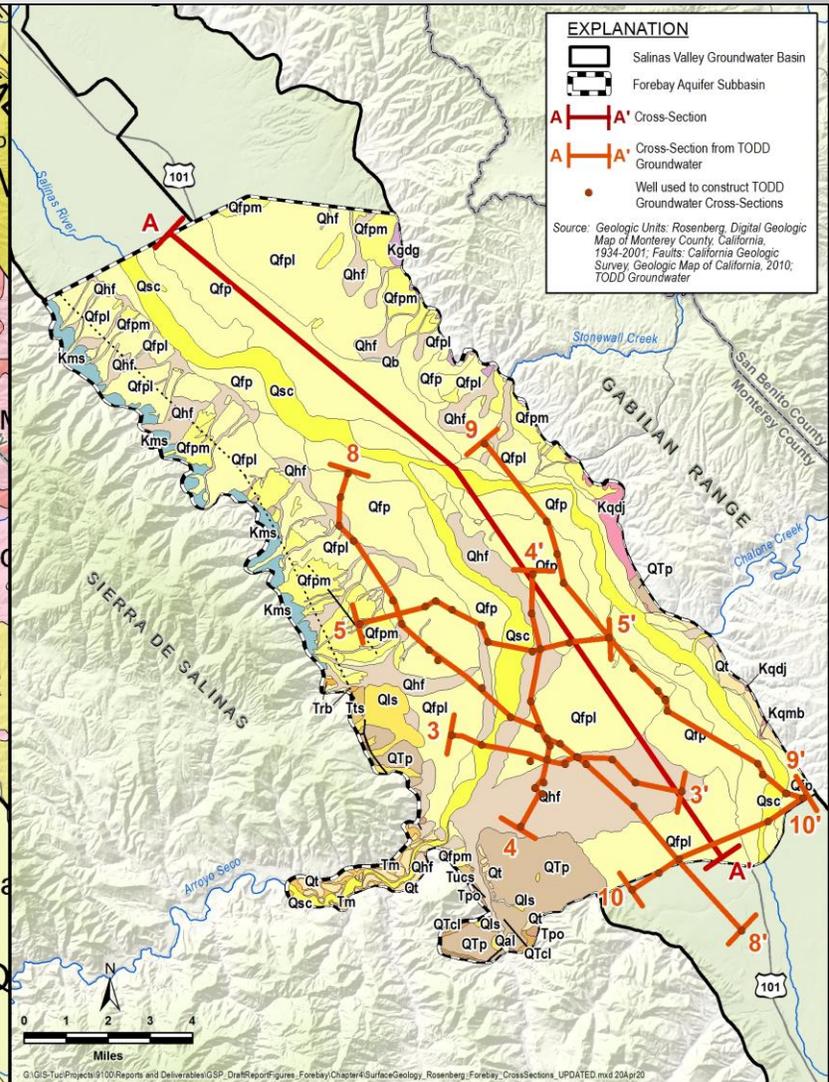
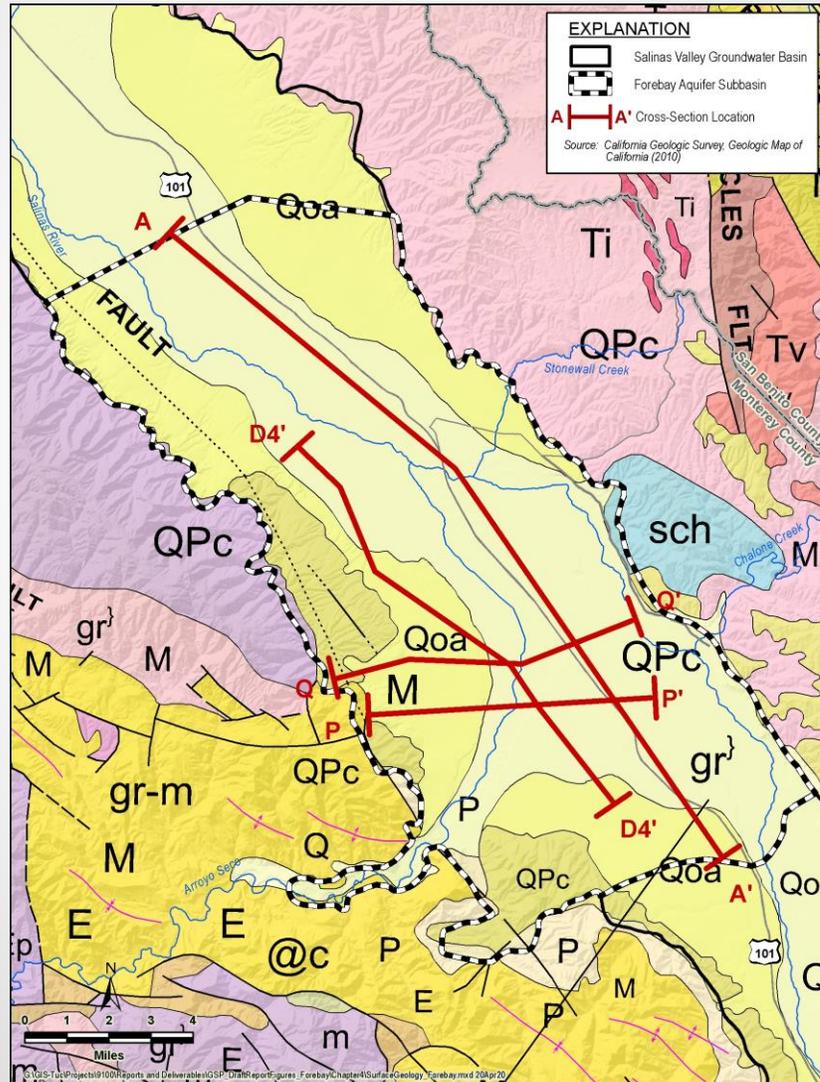
# Chapters 1-3 – Intro, Communication, Basin Setting

- Added DAC map and appendix
- Added “Other” water use category to account for rural residential use
- Updated water system maps
  - Boundaries were updated if necessary (e.g., Alco is not in Langley)
  - Water systems categorized by number of connections
  - List of water systems being added in an appendix
- Added new section: “County Public Policy of Safe and Clean Water”
- UV: Added Chevron’s reverse osmosis plant



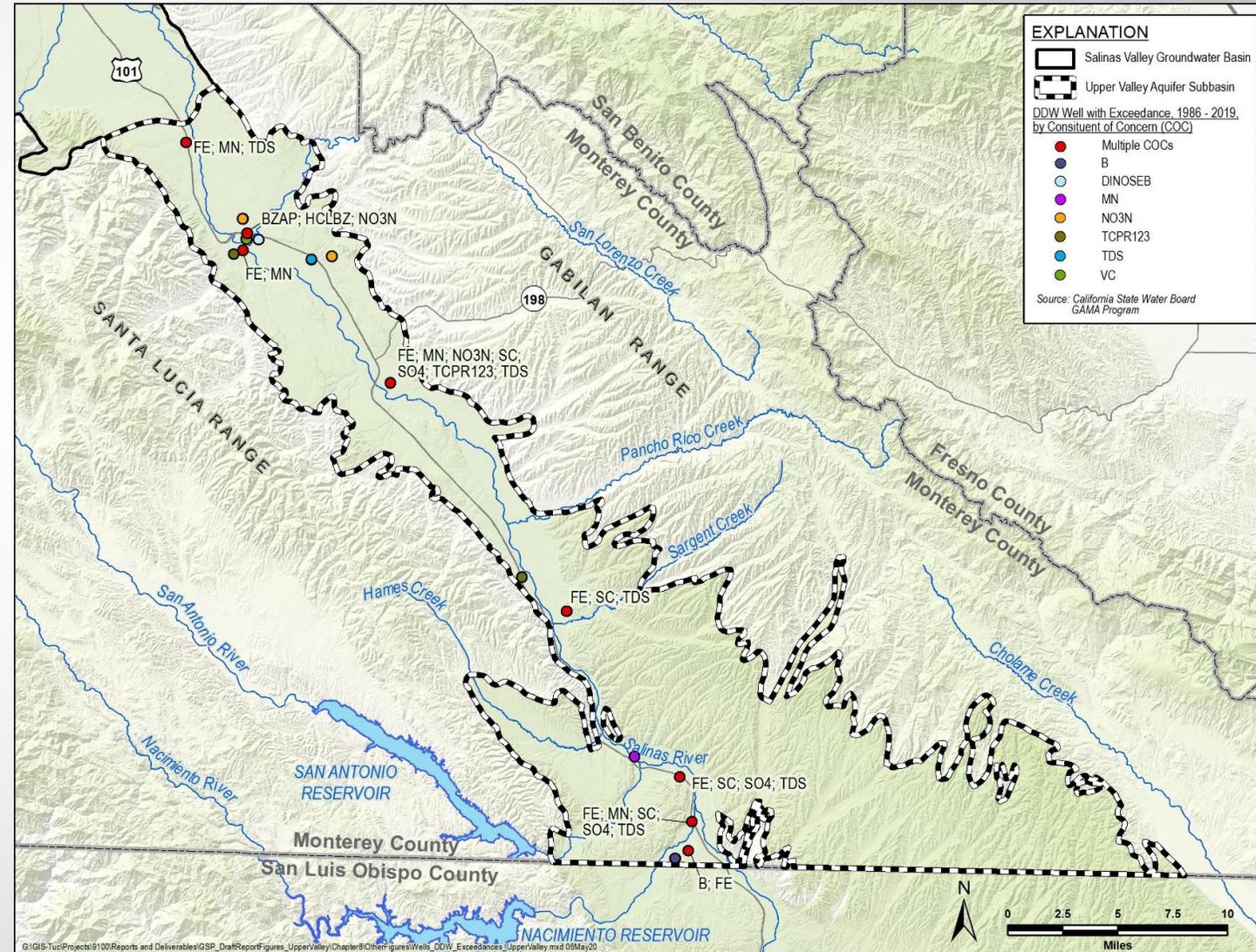
# Chapter 4 – Hydrogeologic Conceptual Model

- Revised surface geology map
- Forebay adjusted to have one principal aquifer
- Added watershed section
- Added section on groundwater-dependent ecosystems



# Chapter 5 – Groundwater Conditions

- Changed groundwater storage map metric from acre-feet to acre-feet/acre (for Eastside and Upper Valley)
- New water quality analysis
  - Expanded to include all Title 22 constituents for drinking water wells
  - Expanded to include all GeoTracker GAMA data for DDW and ILRP wells up to December 2019 not just WY 2019
  - Added appendices with maps of wells with existing Constituents of Concern exceeding standards



# Relationship between Groundwater Levels and Quality

- ▶ V2 includes revisions in Chapter 5 Groundwater Conditions to clarify the relationship between groundwater levels and quality.
  - ▶ Relationship varies based on the constituent, such as constituent depth dependence. Groundwater pumping can affect groundwater quality, but quality also depends on aquifer properties, distance to contamination, constituent characteristics and transport rate, and the time at which contaminants entered the subsurface.
- ▶ V2 includes clarification in Chapter 8 SMC on how the chronic lowering of groundwater levels minimum threshold could affect groundwater quality:
  - ▶ 1. Changes in groundwater elevation could **change groundwater gradients**, which could cause poor quality groundwater to flow toward production and domestic 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 levels do not directly lead to a significant and unreasonable degradation of groundwater quality in production and domestic wells.
  - ▶ 2. Decreasing groundwater elevations can **mobilize constituents of concern that are concentrated at depth**, such as arsenic. The groundwater level minimum thresholds are near or above historical lows. Therefore, any depth dependent constituents have previously been mobilized by historical groundwater levels. **Maintaining groundwater elevations above the minimum thresholds assures that no new depth dependent constituents of concern are mobilized and are therefore protective of beneficial uses and users.**

# Chapter 6 – Water Budgets

- Keeping the “current period” of the water budget, but adding text to note how that may affect current water budget numbers
- Forebay : Changed all outflows to negative values to match convention in Eastside and Upper Valley
- Updated water budget results
- Adjusted sustainable yield to reflect Groundwater Extraction Management System (GEMS) data of known extraction

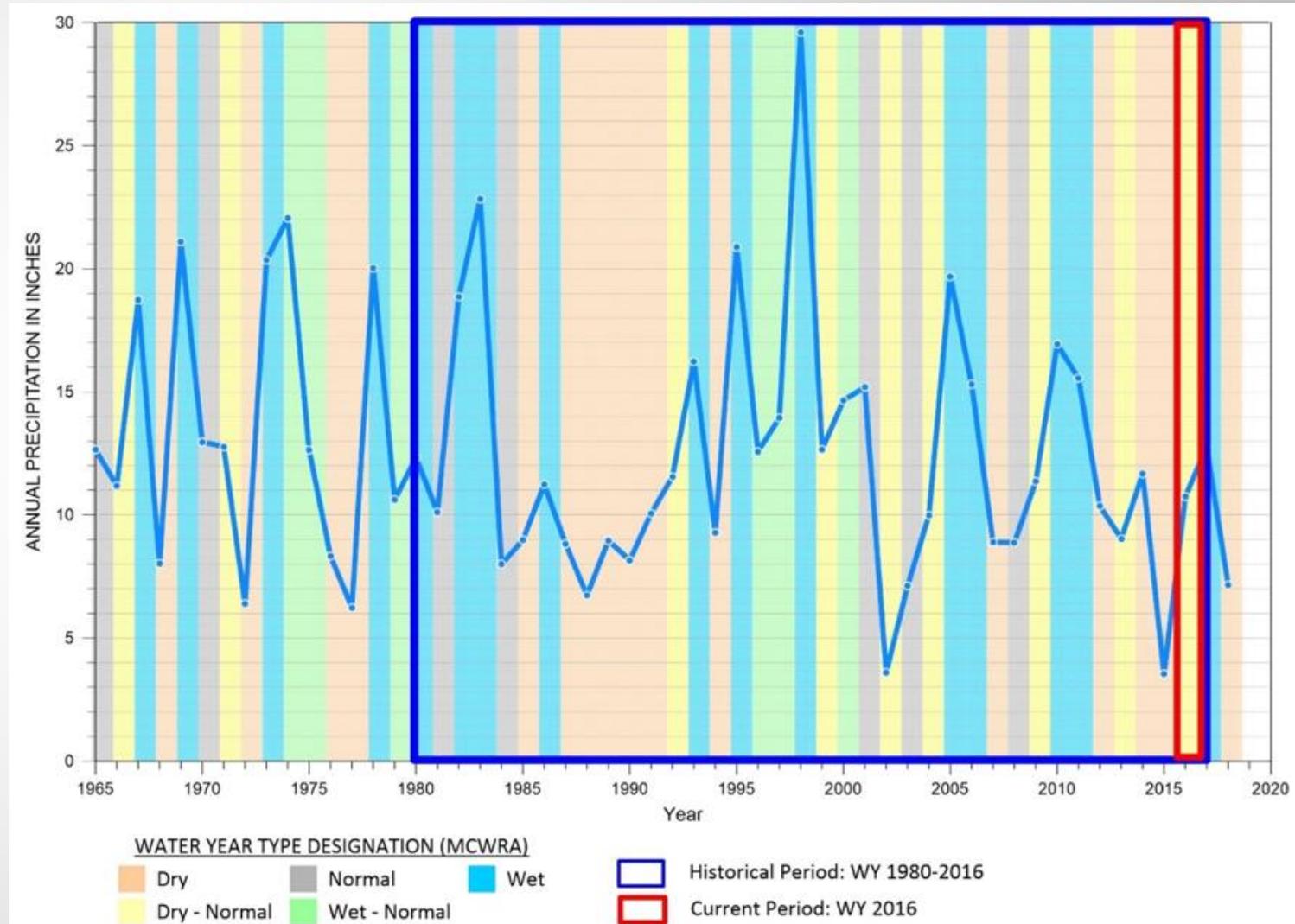


Figure 6-3. Climate and Precipitation for Historical and Current Water Budget Time Periods in Forebay

# Chapter 6 – Water Budgets

Subbasin or Management Area	Line Item	Model Estimate (WY 1980-2016)	Low GEMS Estimate* (WY 1995-2016)	High GEMS Estimate* (WY 1995-2016)	Model Estimate 2070	GEMS Estimate* 2070
FOREBAY	Total Subbasin Pumping	108,700	151,100	174,500	117,800	179,200
	Change in Storage	1,800	0	0	9,600	0
	Estimated Sustainable Yield	110,500	151,100	174,500	127,400	179,200
ARROYO SECO CONE MANAGEMENT AREA	Total Subbasin Pumping	34,200	44,400	53,000	37,100	55,400
	Change in Storage	-600	0	0	1,600	0
	Estimated Sustainable Yield	33,600	44,400	53,000	38,700	55,400
UPPER VALLEY	Total Subbasin Pumping	91,600	108,500	129,600	90,900	118,800
	Change in Storage	-1,200	0	0	10,800	0
	Estimated Sustainable Yield	90,400	108,500	129,600	101,700	118,800



\*Because the subbasin is not in overdraft, it is impossible to estimate the historical sustainable yield, so the water budget contains a range of +/- 1 standard deviation of the GEMS reported pumping. The GEMS change in storage is set to zero because there has not been a chronic decline in groundwater storage.

# Chapter 6 – Water Budgets

Subbasin or Management Area	Line Item	Model Estimate (WY 1980-2016)	Low GEMS Estimate* (WY 1995-2016)	High GEMS Estimate* (WY 1995-2016)	Model Estimate 2070	GEMS Estimate* 2070
LANGLEY	Total Subbasin Pumping <sup>†</sup>	1,200	800	1,400	1,400	1,200
	Change in Storage	-800	-300	-300	1,000	-300
	Estimated Sustainable Yield	400	500	1,100	2,400	900
EASTSIDE	Total Subbasin Pumping	72,600	79,300	96,700	75,600	86,500
	Change in Storage	-21,700	-10,000	-10,000	-20,400	-10,000
	Estimated Sustainable Yield	50,900	69,300	86,700	55,200	76,500

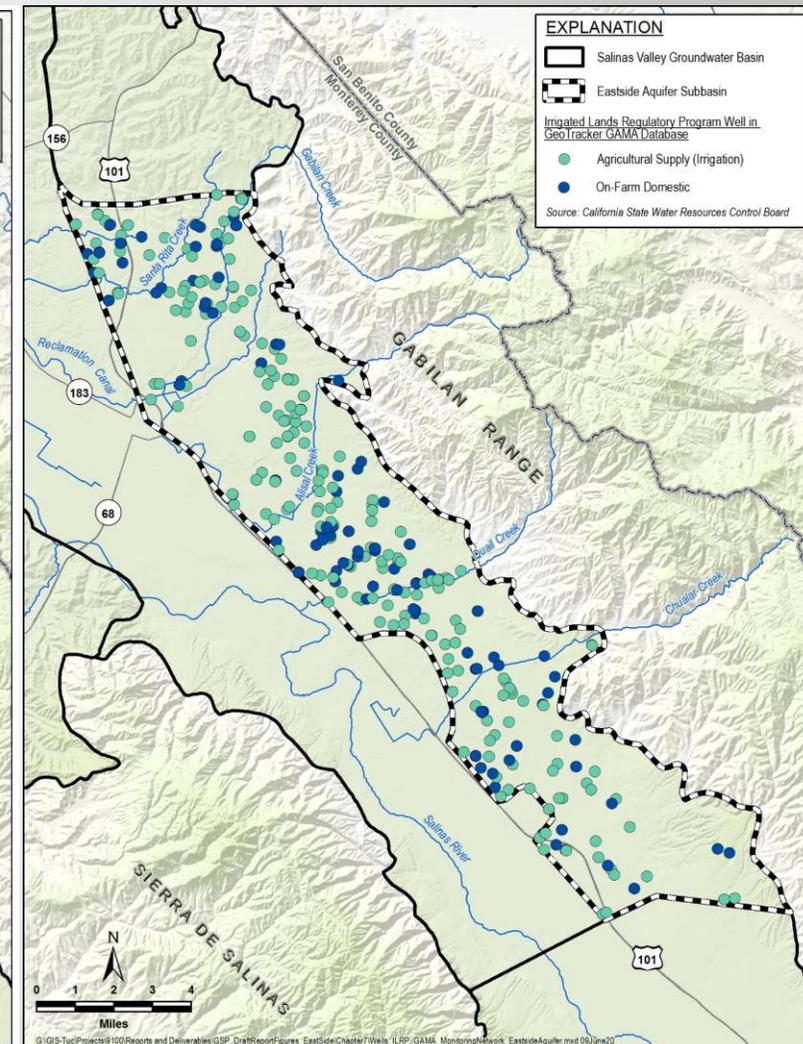
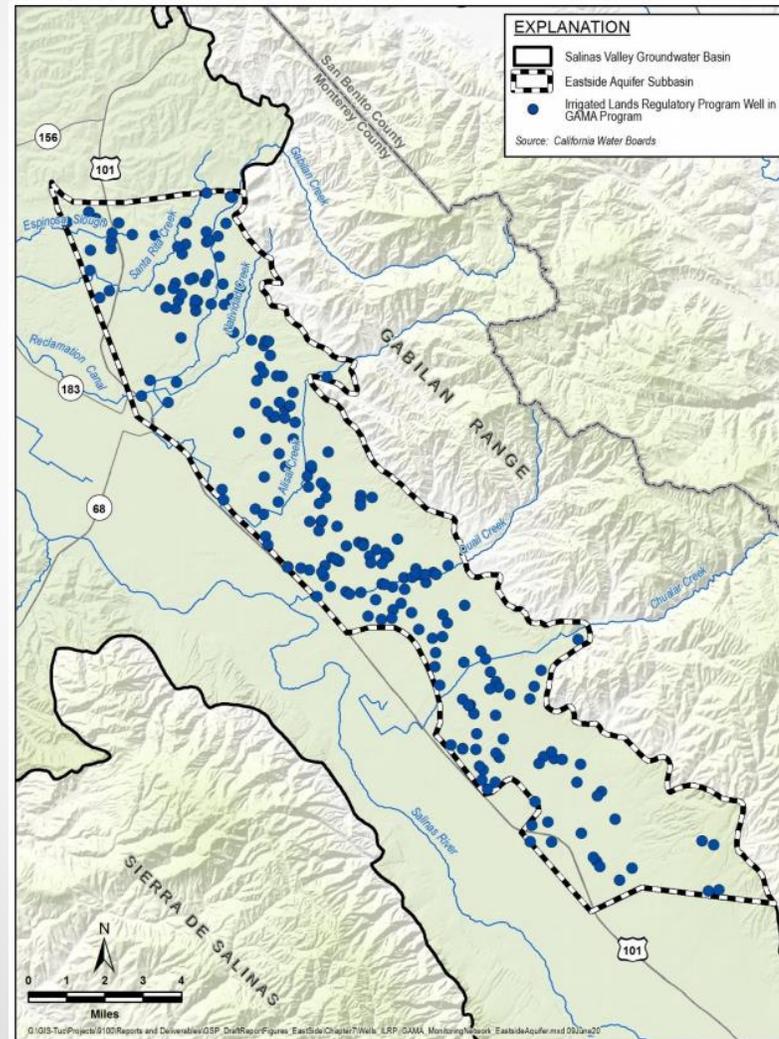


\*Due to uncertainty, the water budget contains a range of +/- 1 standard deviation of the GEMS reported pumping. The GEMS change in storage in Langley is calculated from MCWRA fall groundwater levels. In Eastside, it is an average of three separate methods.

<sup>†</sup>Langley pumping numbers include an extra 600 AF/yr. to account for rural domestic water use.

# Chapter 7 – Monitoring Networks

- Groundwater elevation monitoring network
  - Added well reference points to table listing RMS
  - Added monitoring wells to Langley network (in addition to CASGEM)
  - Added data gap in Forebay network along the Arroyo Seco
- Shifted groundwater extraction to an 'Other Monitoring Networks' section, along with surface water monitoring, since storage now is monitored through groundwater elevations
- Water quality monitoring network
  - Removed destroyed and abandoned wells from monitoring network map for DDW and ILRP wells
  - Distinguished between ILRP on-farm domestic and irrigation wells on map





## Chapter 8 – Sustainable Management Criteria

- ▶ Added ‘Achieving Long-term Sustainability’ section to frame that the GSP is managing groundwater for the long-term
- ▶ Restated undesirable results so they are negative
- ▶ Langley, ES, and UV metric for groundwater storage SMC changed from pumping to groundwater elevations, and proxy established
- ▶ Reviewed and double-checked SMC minimum thresholds and measurable objectives
  - ▶ Revised Langley groundwater level minimum thresholds and measurable objectives based on well-specific elevation assessments.
  - ▶ Revised UV groundwater level minimum thresholds to be 5 feet below 2015 levels
  - ▶ Revised ES interim milestones
  - ▶ Revised ISW measurable objectives to parallel groundwater level measurable objectives for Langley, Forebay, and Upper Valley
- ▶ Added further clarifications to ISW section
- ▶ Added list of all Title 22 constituents monitored in drinking water wells

# Chapter 8 – SMC – Water Quality

- ▶ **Background:** SGMA acknowledges that GSAs are not responsible for all water quality degradation, as other agencies have water quality responsibilities. SGMA does not require GSPs to address groundwater quality impacts present prior to 2015
- ▶ **Current GSP approach:** GSP approach to water quality has been do-no-harm - no additional exceedances of drinking water regulatory standards or basin objectives as a direct result of projects or management actions taken as part of GSP implementation
  - ▶ Water Quality SMC minimum thresholds and measurable objectives are set to zero additional exceedances beyond those observed in 2019, measured by the number of supply wells in monitoring network (public drinking water supply wells, irrigation, and on-farm domestic wells)
- ▶ **DWR's 180/400 determination:** Indicated that this was insufficiently narrow and should include groundwater management
- ▶ **GSPs address or could address this through:**
  - ▶ Groundwater Level SMC minimum thresholds are set at or above historic lows to limit water quality degradation resulting from groundwater management
  - ▶ Groundwater Quality SMC could include impacts from groundwater management and a reference to groundwater levels
- ▶ **Future collaboration:** As included in the GSPs, SVBGSA will work with other agencies responsible for water quality through the Water Quality Partnership



## Langley Chapter 9 – Projects & Management Actions

- ▶ All subbasins - adjusted implementation actions to be:
  - ▶ Dry well notification system
  - ▶ Water quality partnership
- ▶ Langley - Added Mitigation of Overdraft section



# ES Chapter 9 – Projects & Management Actions

- 
- Adjusted implementation actions to be:
    - Dry well notification system
    - Water quality partnership
  - Reorganized P&MAs
  - Added updated groundwater storage benefits and unit costs based on model results
  - Updated Mitigation of Overdraft section



# Forebay Chapter 9 – Projects & Management Actions

- Changed “achieving/attaining/reaching” sustainability to “maintaining” sustainability
- Reorganized chapter to list management actions first
- Winter Release with ASR – added analysis that shows more consistent releases during multi-year droughts
- Interlake Tunnel and Spillway Modification – updated to include Spillway Modification in the cost (\$180mil) and recharge benefit (32,000 AF/yr) along the full Salinas River
- Added new Forebay projects:
  - Changed Forebay Pumping Restrictions TAC to Forebay SMC TAC that is similar to the UV SMC TAC
  - Added Rural Residential Water Quality Program
  - Added Sustainability Reoperation Feasibility Study
  - Added Arroyo Seco Watershed Protection Policy



# UV Chapter 9 – Projects & Management Actions

- ▶ Changed “achieving/attaining/reaching” sustainability to “maintaining” sustainability
- ▶ Winter Release with ASR – added analysis that shows more consistent releases during multi-year droughts
- ▶ Interlake Tunnel and Spillway Modification – updated to include Spillway Modification in the cost (\$180mil) and recharge benefit (32,000 AF/yr) along the full Salinas River





## Chapter 10 – Implementation

- Forebay and UV - explicitly noted that stakeholders do not prefer to fund projects through a water charges framework or water marketing
- Added:
  - SVBGSA and ASGSA will jointly manage the Forebay Subbasin via the Implementation Agreement. In close collaboration with MCWRA, SVBGSA will also work with other local, state, and federal agencies, to meet the Forebay Subbasin sustainability goals as detailed in this GSP. This includes working with the CCRWQCB, Monterey County Health Department, and other agencies on water quality, and the National Marine Fisheries Services on protection of steelhead trout



Questions?





# General comments on V1

- Concern about having accurate pumping information
- Concern about WY 2016 being the representative current period
- The need to “maintain” not “reach” sustainability in Forebay and Upper Valley
- Request to be more specific about water quality monitoring network and include small state and local water systems
- Questions regarding relationship between groundwater levels and quality, and potential water quality impacts of projects
- Note that GSPs should not conflict with Ag Order
- Request to focus solely on the Subbasin, not the entire Salinas Valley
- Preferences for specific projects & management actions, including addition of river maintenance and no pumping allocations in the Forebay and UV
- Notes regarding jurisdictional authority and where action will need to occur through collaboration with MCWRA (reservoir infrastructure and GEMS)
- Comments regarding ISW in relation to protecting steelhead trout