Appendix 2-C

Summary of Written Comments and Responses

Number	Chapter	Date Received	Commenter	Comment	Format	Action
1	3	7/10/2020	Heather Lukacs, Community Water Center	See Appendix 2-D	Email	Table 3-1 focuses on municipal water systems, and Figures 3-4. 3-6 through 3-8 show well type densities. Water budgets are discussed in more detail in chapter 6. Water budget assumptions are described in chapter 6.
2	NA	7/16/2020	Heather Lukacs	See Appendix 2-D	Email	This table is not included in the Monterey Subbasin.
3	1-4	11/17/2020	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	Email	See response document in Appendix 2-E.
4	1 to 5	1/8/2021	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	Email	See response document in Appendix 2-E.
5	9	3/8/2021	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	Letter	1. All projects described in both the agenda packet memorandum as well as Chapter 9 are conceptual projects at this point. If projects are considered for implementation, they will undergo more rigorous analysis, which will include modeling to determine impacts. 2. More data will be obtained during implementation, including additional pumping data, and recycled water use data. These data will be included in annual reports and GSP updates as they become available during implementation. 3. The SVBGSA will partner with MCWRA to develop a plan to address de minimis extraction.
6	6	3/10/2021	George Fontes, Salinas Basin Water Alliance	See Appendix 2-D	Email	Water budgets based on modeling took more time than anticipated, and subsequently the allocations policies were presented as conceptual approaches that could be later applied to budgets once they were available. Several subbasins have opted to not include allocations as a management action in their GSP. Additionally, there are multiple ways to estimate extraction throughout the basin, and each of these methods comes with uncertainty and an acknowledgment of data gaps. The water budgets being developed from the model are using the best available data and information, as well as with strong partnership with the USGS. Additional data will be collected during implementation, and the water budgets will be updated. SVBGSA looks forward to continued collaboration with stakeholders such as the Salinas Basin Water Alliance.
7	Whole GSP	3/22/2021	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	Letter	SVBGSA hosted an Allocations Workshop on November 18, 2020, and the Corral de Tierra management area committee discussed and voted on an allocations-demand management strategy for allocations. They approved an approach based on a per connection allocation for small parcels and a per acreage for large parcels. The hybrid per connection/per acreage allocation structure estimates de minimis extraction and subtracts it from the overall sustainable yield. This is discussed in greater detail in Chapter 9, Section 9.4.8 as the first project for the Corral de Tierra area. This GSP acknowledges the hydrogeologic connection between the Corral de Tierra and Laguna Seca areas, and the need for continued collaboration with the Seaside Watermaster during Implementation. The modeling teams for the MBGWFM and Seaside models will continue to improve their models to better align active layers and hydrogeologic conceptualization based on additional data gathered during implementation. Further, the MBGWFM and this GSP acknowledge that under a 'no pumping' project scenario, water levels in the Corral de Tierra area will continue to decline. This will be addressed more completely during Implementation with stakeholders as SVBGSA considers projects and continued collaboration with regulatory partners such as MCWRA and Monterey County.
8	4 and 5	4/5/2021	Hydrogeologic Working Group	See Appendix 2-D	Letter	See response document in Appendix 2-E.

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9	9	4/21/2021	George Fontes, Salinas Basin Water Alliance	See Appendix 2-D	Email	We use the best available data and science to develop these GSPs, per SGMA. Data acquisition will also come during implementation to better understand groundwater relationships between subbasins, project impacts, and changes over time for improved management. Projects and management actions must be in the GSP to meet current conditions using the best available information as they are. Projects can be updated with updated data during implementation, and with more detailed scoping.
10	NA	4/22/2021	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	Letter	Text in the GSP has been updated per the email.
11	1 to 8	4/23/2021	Community Water Center	See Appendix 2-D	Edits	-Chapter 2: A map of all DACs and a DAC appendix are added to Chapter 2. A map with all state and local small water systems for which the GSA has boundaries for is included in Chapter 3, Figure 3-4. -Chapter 4: Text about the effect of groundwater pumping on groundwater quality was added to Chapter 5, Section 5.4.3: the "Distribution and Concentrations of Diffuse or Natural Groundwater Constituents" section. A discussion on the effect of lowering groundwater elevation on groundwater quality is included in Chapter 8 in the "Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators" section for groundwater elevations. -Chapter 5: - Nitrate is not identified as a constituent of concern for this subbasin at this time. Water quality data for DDW wells and ILRP on-farm domestic and irrigation supply wells were used to make maps showing the spatial distribution of water quality exceedances of Title 22 or Basin Plan standards from 2013 to 2019 are now included in a new Chapter 5 Appendix. - The relationship between declining water levels and arsenic levels was evaluated for the Corral de Tierra area as presented in the August 2021 Subbasin Planning Committee Meeting. There is no established relationship at this time, and SVBGSA has included an arsenic-specific implementation action in Chapter 9 to understand if a relationship exists. Table 8-6 lists all the constituents for which data is available for the 3 types of wells in the monitoring network (DDW wells, ILRP on-farm domestic, and ILRP irrigation supply wells). Table 5-3 lists all the constituents that have had an exceedance in these 3 sets of wells, while Table 8-6 includes all the constituents that were included in the analysis that have been sampled for historically in each set of wells. -Chapter 6: The sustainable yield derived from the model will be evaluated during Implementation with additional data. This GSP uses the central tendency climate scenario recommended by DWR. Although DWR encourages evaluation of the other extreme climate scenarios, they are not required and would not likely change the management approach at this time, so they are not currently included. Climate change assumptions will be reevaluated as part of the 5-year update. -Chapter 7: - Groundwater Elevations: RMS wells were chosen based on geospatial distribution and well depth. Additionally, the network is dependent on the wells that are already monitored by MCWRA. This was done to avoid any overlap in monitoring of groundwater elevations. Thus, the types of wells that SVBGSA has access to is dependent on the wells that MCWRA has permission to monitor. - Water Quality: Small public water systems wells, regulated by Monterey County Health Department, include both state small water systems that serve 5 to 14 connections and local water systems that serve 2 to 4 service connections. SVBGSA had originally planned to work with the County to add data from small and local water systems into the monitoring network. These wells are not in the current proposed monitoring system because well location coordinates, construction information and quality data are not easily accessible. The Monterey County Health Department monitors water quality in the state small and local water systems and their data is not readily transferable. In addition, there is sufficient other available data to characterize the basin. There were no water quality data gaps identified per SGMA requirements for GSPs as there is adequate spatial coverage to assess impacts to beneficial uses and users. -Chapter 8: - Groundwater Elevations: Domestic well analyses were conducted for the minimum thresholds and measurable objectives. Wells that did not have accurate locations were not included, because water levels vary greatly throughout the Subbasin, thus, it is unlikely that the water level for the centroid of a PLSS section can accurately represent all wells that have the centroid of the section as their location. - Water Quality: Subbasin planning committees determined the approach to setting SMC.

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12	1 to 4	4/26/2021	Tamara Voss, Monterey County Water Resources Agency	Internal Comments, Not Provided	Edits	Edits have been added to Chapter 1-4 as appropriate. Please note that the existing hydraulic conductivity data do not distinguish between the 180-Foot and the 400-Foot aquifers, thus, they are not distinguished on Figure 4-21.
13	5	4/26/2021	Tamara Voss, Monterey County Water Resources Agency	Internal Comments, Not Provided	Email	Edits have been added to Chapter 5 as appropriate. Please note that due to the connectivity of the lower 180-ft and the 400-ft aquifers, the existing information is insufficient to distinguish the exact screening aquifer of most of those wells such that the wells could be visualized differently in Figures 5-13, 23, and 28. Future updates to the GSP will consider revising these figures when more information is available. Although there are no additional wells to the southeast of MW-7 on Cross Section A-A', it is not a data gap as that area is outside of the Monterey Subbasin.
14	3	4/27/2021	Margaret-Anne Coppernoll	See Appendix 2-D	Letter	Different crops have different irrigation requirements, and many agricultural operations use a myriad of irrigation technologies. Monterey County Farm Bureau will have more information about this. MCWRA has the authority to pursue this and SVBGSA will actively collaborate with MCWRA to find pathways forward to account for and manage all groundwater extraction.Water quality is described in Chapter 5. Agencies that test and report water quality are aware of changing water testing recommendations from the EPA and other entities.
15	9	4/28/2021	Community Water Center	See Appendix 2-D	Email	Several of the recommendations from this letter were implemented and tailored in subsequent GSPs.
16	7	5/10/2021	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	Letter	See response document in Appendix 2-E.
17	9	5/11/2021	Fred Nolan, Public Commentary (Date based on post mark)	See Appendix 2-D	Letter	Recycled water is an important component in reaching and maintaining sustainability. Recycled water projects are detailed in Chapter 9, and will be explored further during implementation.
18	8	5/12/2021	Norman Groot, Salinas Basin Agricultural Water Association	See Appendix 2-D	Edits	The SVBGSA does not set water quality objectives for farming operations, and fully acknowledges and supports Ag Order 4.0. Additionally, the water quality SMC primarily focuses on a 'do no harm' approach, whereby groundwater management implemented by SVBGSA will be evaluated for negative impacts to water quality, but no groundwater management implementation will not be evaluated for negative impacts. In this way, existing water quality programs and standards are included in the GSPs, and the SVBGSA can direct its resources to GSP implementation with stakeholders in the Basin.

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19	7	5/27/2021	Tamara Voss, Monterey County Water Resources Agency	Internal Comments, Not Provided	Letter	Edits have been added to Chapter 7 as appropriate. Please note that wells behind the SWI front will be included in the monitoring network but not as RMS, since no SMC is appropriate for these wells. However, should the situation in the Monterey Subbasin change or worsen, additional RMS will be added in the future annual assessment. MCWD Deep Aquifers production wells are not added to the RMS network since production wells are not recommended as RMWs per GSP guidelines. The data gaps figures reviews the seawater intrusion and GWE monitoring network together as these two issues are closely correlated. Similar with reviewing the lower 180-ft/400-ft wells together.
20	8	7/12/2021	John Farrow, M. R. WOLFE & ASSOCIATES, P.C. (Landwatch)	See Appendix 2-D	Email	See response document in Appendix 2-E.
21	8	7/13/2021	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	Email	See response document in Appendix 2-E.
22	8	7/20/2021	James Sang, Public Commentary	See Appendix 2-D	Email	This letter was addressed in a longer form response. In summary: Infiltration and recharge to get water from the surface to the aquifer are complex mechanisms and not easily managed for a whole basin. Rainwater has the opportunity to infiltrate the soil at many places at the land surface, however this infiltrated water does not always readily translate into direct recharge to the aquifer. The recommendations provided here may be easily incorporated/reflected into the Eastside GSP projects of (A1) Managed Aquifer Recharge of Overland Flow, (A2) Floodplain Enhancement and Recharge, the Eastside Management Action of (E1) Conservation and Agricultural BMPs, and the Eastside Implementation Action of (G5) Support Protection of Areas of High Recharge. Iterations of these projects are found in several other GSPs.
23	8	7/30/2021	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	Email	See response document in Appendix 2-E.
24	NA	8/12/2021	Salinas Valley Water Coalition	See Appendix 2-D	Email	SVBGSA is currently working on reconvening the 180/400-Foot GSP Subbasin committee to discuss implementation. The content of the Integrated Implementation Plan is still under development, but is not currently anticipated to include management actions and projects. The SVIHM is the best available tool to determine water budgets at this time, and future results will be used to update the GSPs when available. The paragraph regarding the development of projects and management actions for the 180/400-Foot Aquifer Subbasin GSP has been deleted. The support for the 11043 permit and seawater intrusion barrier projects is noted.
25	6	8/12/2021	Stephanie Hastings, Salinas Basin Water Alliance	See Appendix 2-D	Email	For now, all additional simulations and analysis of intersubbasin flow (beyond what’s in the water budgets) will be considered by the integrated implementation committee after GSP submittal.

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26	NA	8/12/2021	Stephanie Hastings, Salinas Basin Water Alliance	See Appendix 2-D	Letter	Intersubbasin subsurface flow is included in the current water budgets. While the underestimated pumping in the SVIHM may affect the intersubbasin flow, the SVIHM is still the best available tool for the development of water budgets. Additional simulations and analysis of intersubbasin flow (beyond what's in the water budgets) will be considered by the integrated implementation committee after GSP submittal.
27	9	8/23/2021	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	Email	See response document in Appendix 2-E.
Comments above were received prior to the full public release of the GSP. Several comments led to revisions in the chapters.						
Comments below are on the publicly released review version of the GSP.						
28	6	9/6/2021	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	Email	See response document in Appendix 2-E.
29	10	9/6/2021	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	Email	See response document in Appendix 2-E.
30	Whole GSP	10/8/2021	Norman Groot, Farm Bureau Monterey	See Appendix 2-D	Email	Thank you for your support and input. The Integrated Implementation Plan will be written to with the goal of achieving sustainability in the entire Salinas Valley Basin and the Integrated Implementation Committee will focus on achieving sustainability in an integrated manner across the Valley.
31	Whole GSP	10/14/2021	John Farrow, LandWatch	See Appendix 2-D	Email	A1. While the 180/400 looked at projects and management actions that involved the whole Valley, the focus was on the 180/400. During subbasin committee meetings, members agreed that while any projects and management actions will be evaluated in a valley-wide light, only the plans that would primarily help that subbasin reach or maintain sustainability should be included in the plan. To ensure projects and management actions are selected and implemented in an integrated manner, SVBGSA established the Integrated Implementation Committee. While the subbasin GSPs were developed through subbasin planning committees, GSA staff and consultants ensured the projects and management actions, as well as the plans, are not in conflict with each other. Additional steps needs to be completed before projects, management actions, or the water charges framework move forward, and the text of this GSP has clarified that the use of the word "will" is reflective of what will occur if/when a project or management action moves forward. The 180/400 GSP nor DWR's review of it commit SVBGSA to anything in other subbasins. A2. Not all the subbasins need all the projects or management actions that are planned in other subbasins. The projects included in the Eastside, Langley, Forebay, Upper Valley, and Monterey GSPs are not dependent on the water charges framework for funding. They took a different approach and described all potential funding mechanisms due to the recognition that the appropriate funding mechanism varies according to the specific project. A3. The Upper Valley and Forebay Subbasins are already sustainable and therefore the GSPs fewer projects and management actions than some other subbasins. Each GSP focuses on the specific projects or management actions that contribute to maintaining/achieving sustainability in that respective subbasin; however, the GSPs acknowledge that the impacts of any project or management action, regardless which subbasin it originated for, will be evaluated for the whole valley. Benefits assessments will

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						determine who funds projects and management actions, if funded through a 218 vote, regardless of subbasin. A4. The projects for the Eastside, Langley, and Monterey Subbasins were determined by the Subbasin Planning Committees. Each subbasin is unique and while there are some projects that are currently conceptualized as being multi-subbasin, the details are to be determined during GSP implementation. Project costs are still being refined but the GSP provides initially estimates. The Subbasin Implementation Committees and Integrated Implementation Committee will determine if any of these projects will be used to achieve or maintain sustainability and will subsequently refine the scoping, costs, and funding approach. B. See response to M. R. WOLFE & ASSOCIATES, P.C. letter dated July 19, 2021 (comment letter No. 19). D. SVBGSA in coordination with legal counsel has developed improved water quality SMC language to be included in the final draft of the GSP, which notably includes regulation of groundwater extraction. This language is in response to DWR's comments about the water quality SMC language in the 180/400-Foot Aquifer Subbasin GSP. This GSP also includes the Water Quality Coordination Group (formerly Water Quality Partnership) to elaborate on how SVBGSA will work with other agencies responsible for aspects of water quality.
32	Whole GSP	10/15/2021	Tyler Sullivan, California Coastkeeper Alliance	See Appendix 2-D	JotForm	1. Comment noted. 2 and 3. While the 180/400 looked at projects and management actions that involved the whole Valley, the focus was on the 180/400. During subbasin committee meetings, members agreed that while any projects and management actions will be evaluated in a valley-wide light, only the projects that would primarily help that subbasin reach or maintain sustainability should be included in the plan. To ensure projects and management actions are selected and implemented in an integrated manner, SVBGSA established the Integrated Implementation Committee. While the subbasin GSPs were developed through subbasin planning committees, GSA staff and consultants ensured the projects and management actions, as well as the plans, are not in conflict with each other. SVBGSA will look at climate change assumptions as part of 5-year update. The GSP includes both projects and management actions. Subbasin committees preferred to pursue projects prior to pumping reductions; however, the Plan does include the potential for demand management if needed. SVBGSA is aware of its legal responsibilities and has developed plans that include sufficient options to meet sustainability goals. 4. Under SGMA, what constitutes 'significant and unreasonable' conditions are locally defined and balance uses and users. The subbasin committee established the SMC. According to the Belin article, the Salinas Valley constitutes an 'yellow light' - there are no ESA-related in-stream flow requirements, but impacts from groundwater extraction on both ESA-protected steelhead and other GDEs should be evaluated to see if there are adverse impacts. This GSP no longer relies on the biological opinion, including for water budgets. SVBGSA is only responsible for depletion of interconnected surface water due to groundwater extraction, not for reservoir releases or surface water flows. In addition to working with NMFS to determine what constitutes an adverse impact to steelhead in relation to groundwater extraction, this GSP includes both supply-side and demand-side management options to maintain sustainability. In particular, following each annual report, the SMC TAC will evaluate sustainability and recommend actions if necessary. 5. After careful consideration and consultation with attorneys, the final GSP includes revised water quality undesirable results text that addresses DWR's comments on the 180/400-Foot Aquifer Subbasin GSP. The Partnership (now called the Coordination Group), includes space to coordinate with the CCRQCB, as suggested. SVBGSA intends to establish that Coordination Group during the first two years of GSP implementation. 6. SVBGSA has made a concerted effort to address DAC issues and involve DACs in decision making. SVBGSA has met with CWC several times, and has also incorporated several of their suggestions into the GSPs. In a discussion regarding groundwater levels, at a workshop one DAC community member highlighted that the farmworkers depend on agriculture for their livelihoods in this basin, and

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						they don't want to set groundwater level goals at a level that will significantly harm agriculture, so there must be a balance. SVBGSA has sought that balance, involving DACs all the way up to their permanent seat on the Board of Directors. Additionally, SVBGSA worked to assess the needs and barriers to DAC involvement and developed the DAC Engagement Strategy to guide outreach and involvement going forward. The GSP addresses the Human Right to Water and highlights how in Ch 3, 8, and 10.
33	Whole GSP	10/15/2021	Heather Lukacs, Community Water Center	See Appendix 2-D	Email	See responses to letters by CWC and San Jerardo dated 7/10/20, 4/23/21, 4/28/21, and 6/17/21. SVBGSA in coordination with legal counsel has developed improved water quality SMC language to be included in the final draft of the GSP. This language is in response to DWR's comments about the water quality SMC language in the 180/400-Foot Aquifer Subbasin GSP. In addition, during the public comment period, an analysis on the Central Valley on groundwater extraction during droughts and nitrates was released. During GSP implementation, SVBGSA can consider this new analysis and whether it has potential applicability in the Salinas Valley. SVBGSA will look at climate change assumptions as part of 5-year update.
34	Whole GSP	10/15/2021	Douglas Deitch, Monterey Bay Conservancy	See Appendix 2-D	Email	1. SVBGSA has funded the Deep Aquifers Study and is co-funding the development of a Seawater Intrusion Model with MCWRA. The SVOM climate change simulation include sea level rise. DWR Climate Change guidance recommends using values of +15 cm for 2030 projected conditions and +45 cm for 2070 projected conditions. 2. SVBGSA is undertaking a study of the Deep Aquifers to better understand the Aquifers, their current condition, and management options. This is distinct from the Monterey One Water ASR wells, which are located in the Seaside Basin.
35	Whole GSP	10/15/2021	Elizabeth Kraft, MCWRA	See Appendix 2-D	Email	SVBGSA appreciates the support for the conceptual projects and management actions within the GSP, and during GSP implement will work with the MCWRA on the refinement and implementation of any that involve MCWRA infrastructure or water management. GSP text was revised as suggested.
36	Whole GSP	10/15/2021	Stephanie Hastings, Salinas Basin Water Alliance	See Appendix 2-D	Email	I. SVBGSA replaced the Integrated Sustainability Plan for the Integrated Implementation Plan. The Integrated Implementation Committee will outline the implementation of the 6 GSPs in the Salinas Valley Basin and address questions of groundwater relationship between the subbasins. This Committee will help ensure all subbasins get to sustainability. II. A. The SVIHM is the best available tool to compute water budgets for the subbasins in the Salinas Valley. The 180/400-Foot Aquifer Subbasin GSP will be updated using the SVIHM to be consistent with the rest of the subbains in the 2-Year Update currently underway. The SVIHM was used to develop water budgets for the Langley, Eastside, 180/400, Forebay, and Upper Valley using the same model simulations so that they would be consistent. The Monterey Subbasin used a different model due in part to poor calibration of the SVIHM in the Monterey Subbasin; however, it adopted boundary conditions from the SVIHM to increase compatibility and the Monterey Subbasin GSP includes an implementation action to integrate the Monterey Subbasin Model into the SVIHM when it is released. SVBGSA ran a no pumping scenario with the SVIHM to determine locations of surface water depletion due to pumping; however, it is a static model that does not shed light on how intersubbasin flow would have changed. It is a static dataset that reflects how reservoirs were actually operated, not how they would have been operated with no pumping. The Integrated Implementation Committee will consider the flow and relationship between subbasins early in 2022. II. B. 1. a & b. Sustainable yields were defined according to SGMA regulations. The water budgets measure inflows and outflows of the groundwater system, and both interbasin flow and groundwater extraction are accounted for. Minimum thresholds are meant to be prevented to avoid undesirable results. If each subbasin avoids their minimum thresholds, then neighboring subbasins will likely not be prevented from reaching or maintaining sustainability. The GSP does not dispute that its conditions affect adjacent subbasins; however, it does not prevent them from reaching sustainability. The sediment relationships between the 180/400-Foot Aquifer Subbasin, and the adjacent Langley/Eastside Subbasin demonstrate a dynamic environment where different sediments were deposited over time and subsequently, impact groundwater flow. The boundary with the Eastside Subbasin generally represents the furthest extents of the alluvial fans, which are characterized by clays and other fine sediments. These sediments frequently act as an impediment to flow, if not fully a barrier in certain locations. Subsequently, the gradient relationship is not the only influence to

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						groundwater flow between the 180/400-Foot and Eastside Subbasins, and needs to be considered along with all subsurface characteristics. While there is a relationship between the groundwater contours developed for the 180/400 and Eastside Subbasins, the contours themselves are not fully representative of flow between the subbasins. As the model is further refined with additional and expanded data during Implementation, the SVBGSA and stakeholders will have a clearer view of the groundwater flow relationships, particularly as they relate to the recorded sediments in this area. The boundary with the Langley Subbasin was selected based on topographical changes, and the GSP fully acknowledges there is no hydrogeologic boundary that coincides with the administrative boundary. The key characteristic of the Langley Subbasin is the Aromas Sands, which are very permeable. Despite this connection and high permeability along with lowered groundwater elevations, the seawater intrusion front is not advancing in the direction of the Langley Subbasin. Subsequently, it would be premature to conclude that groundwater elevations in the Langley Subbasin are inducing or facilitating seawater intrusion in the 180/400-Foot Aquifer Subbasin. The groundwater flow relationship between the Langley and the Eastside Subbasins is largely uncharacterized as a result of a lack of data both about the sediment changes and the groundwater elevations in the area. This is a data gap that will be addressed during implementation. It is important to note that the 180/400-Foot Aquifer Subbasin GSP includes a plan in place to halt and reverse seawater intrusion and increase groundwater elevations, which will also serve to prevent adverse seawater intrusion impacts to the Eastside Subbasin. Both the Eastside Subbasin and the Langley Subbasin have developed projects and management actions to raise groundwater levels in their subbasins. The SMC were largely developed to be both achievable, as well as provide for operational flexibility during future droughts. Furthermore, these subbasins will be a part of the Integrated Implementation Plan, which will work to address seawater intrusion through a variety of strategies, which include increasing groundwater elevations. Additionally, the SWIG has been meeting regularly to learn and strategize projects to address seawater intrusion. The subbasins under the SVBGSA will be integrated during implementation, data acquisition, further data development, and coordinated stakeholder engagement. II. B. 1. c. Subbasin Planning Committees for each subbasin chose how they wanted to measure reduction in groundwater storage. The definition of storage for groundwater is expressly based on a change in pressure heads, or groundwater elevations, within an aquifer. Freeze and Cherry, in their seminal 1979 textbook Groundwater state, “The specific storage Ss of a saturated aquifer is defined as the volume of water that a unit volume of aquifer releases from storage under a unit decline in hydraulic head.” Hydraulic head is the sum of all pressures acting on water in the subsurface, which in unconfined aquifers, is generally summarized as elevation. Therefore, given the direct relationship between groundwater elevations and specific storage, groundwater elevations are appropriate as a proxy for storage. This is also explained in chapter 4.4.2 of the GSP, and a reference to that section has been added into Ch 8. Using the groundwater elevations as a proxy for storage is a reasonable alternative in Subbasins with less GEMS data available for estimating groundwater production. Additionally, the Langley, Eastside, Forebay, and Upper Valley Subbasins are characterized as having one principal aquifer, instead of multiple. This allows for the estimation of storage based on groundwater levels, since it is assumed that the groundwater is generally all connected in those Subbasins, and groundwater elevations are subsequently representative of groundwater conditions. II. B. 2. A description of how minimum thresholds will affect adjacent subbasins were provided per GSP Regulations. The Forebay and Upper Valley Subbaisn Planning Committees defined how the SMC for all sustainability indicators in their subbasins will be measured. The SMC in the Forebay and Upper Valley are set at similar levels to the other subbasins and will not prevent adjacent subbasins from reaching sustainability. Text was added to clarify how the minimum thresholds were developed based on the significant and unreasonable statement and why they are not in conflict. II. B. 3. SVBGSA has considered the interest of all beneficial users in the Salinas Valley. The GSA does not "allocate the burden of sustainability" nor undertake any actions that threaten or impinge on water rights.

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						III. Projects and management actions were chosen by Subbasin Planning Committees, and are sufficient to maintain or achieve sustainability. the project mentioned was not brought up in any of the Subbasin Committee discussions on projects and management actions; however, the GSP does not preclude additional projects to be considered in the future. The Integrated Implementation Committee will determine which projects will be used to maintain or achieve sustainability in the Salinas Valley.
37	Whole GSP	10/15/2021	Audubon California, Clean Water Action, Clean Water Fund, Local Government Commission, The Nature Conservancy, Union of Concerned Scientists, and Community Water Center	See Appendix 2-D	JotForm	1. A. DACS and Drinking Water Users: Average domestic well depths were added to Section 3.3 and the populations of identified DACs were added to Figure 2-3 in Chapter 2. Interconnected Surface Water: Depth-to-groundwater data and areas with shallow groundwater shown on Figures 5-35 and 5-36 were derived by subtracting groundwater contours from land surface DEM data, in accordance with best practices. Groundwater contours and location of wells used to prepare these contours are shown on figures under Section 5.1.2. The depth-to-water data was reviewed with the surface water features shown on Figure 4-23 to identify potential ISW locations. The GSP has made an assumption that groundwater within 20 feet of land surface may be connected to surface water based on streambed incision in the Salinas River Valley. More data is needed to improve the ISW analysis as discussed in 5.6.2. This data could be amplified by the ISW monitoring network once it is fully developed including the proposed new wells. The monitoring network is set to measure shallow groundwater elevations near areas of interconnection that will be used to measure SMC. GDEs: Depth-to-groundwater data was compared with the NC dataset shown on 5-37 to identify potential GDE locations within the subbasin and discussed under Section 5.7. However, due to the uncertainty in shallow groundwater data, the GSAs may field verify these potential GDEs during GSP implementation. A higher depth-to-groundwater threshold may be considered if/when the GSAs verify that valley oaks are present. Text was added to re-emphasize that rooting depth data are limited. GSP Regulations do not require a complete list of fauna and flora in the Subbasin. However, discussion of threatened and endangered species within the Monterey County and potentially within the subbasin has been added. As discussed in Section 5.7.2., Fort Ord communities are located within the Fort Ord Munition Response Area where munition investigation activities that may disturb these wetlands have been carried out by FORA and the Army. These communities as well as other natural resources within the former Fort Ord are being managed and monitored by the USACE, FORA, and ESCA Remediation Response (RP) Team. 1. B. The Communication and Public Engagement Plan can be updated with more detail on the extensive outreach that has been carried out. When appropriate, DAC and environmental stakeholder feedback has been incorporated into the GSP - see responses to those comments. 1. C. DACS and Drinking Water Users: There is one recognized DAC within the Subbasin shown on Figure 2-1, located within the Marina-Ord Area and served by MCWD's municipal system. The impact of chronic lowering of groundwater level minimum thresholds on domestic well analysis uses PLSS section location data, as well as historical groundwater elevation data. The reasons for the exclusion of wells are outlined in the GSP in Section 8.7.3.2. The wells used for the domestic well analysis were first derived from the OSWCR database which includes wells that are abandoned or destroyed. Wells were first filtered by identifying the wells that had construction data. Then wells that were drilled prior to 1995 were filtered as more water systems started coming online replacing domestic wells. This left 19 wells with requisite data and constructed within a reasonable time frame to be considered subject to GWL impacts. Chapter 9 outlines an implementation action, Water Quality Partnership, that specifically addresses the unique role of the GSAs to play a convening role in addressing water quality concerns while engaging key partners and local stakeholders. Regarding degraded water quality, Chapter 8 contains sufficient description of the minimum thresholds, measurable objectives, and undesirable results on "beneficial uses and users of groundwater or land uses and property interests" (354.28(b)(4), 354.26(b)(3)). Minimum thresholds and measurable objectives were developed by the GSAs' Subbasin Planning Committees to meet the needs and concerns of local stakeholders, which included specific additional text regarding arsenic in the Corral de Tierra Area. Minimum thresholds and measurable objectives are based on Title 22 drinking water standards and Basin Plan irrigation water quality objectives. The Subbasin Planning Committees agreed to the minimum thresholds and measurable objectives.

Number	Chapter	Date Received	Commenter	Comment	Format	Action
						GDEs and ISW: The impacts on all beneficial uses and users were considered in establishing this SMC. What is significant and unreasonable is locally defined, balancing all uses and users. The effect of undesirable results on beneficial users are discussed in Section 8.12.3.4 of the GSP. As discussed in Section 8.12.1, the Subbasin does not have large areas where ISW occurs, and areas of identified ISW are located within areas of potential GDEs. Therefore, the SMCs for ISW also focus on managing groundwater impacts for GDEs. Shallow groundwater elevation as proxy has been used to establish the MT and MO for ISW. SMCs for chronic lowering of groundwater levels are set to be consistent with SMCs for ISW. 2. This GSP meets SGMA regulations with its use of DWR-recommended 2030 and 2070 climate scenarios for the future water budgets, including the base for the sustainable yield. Use of extremely wet and dry scenarios is not required. SVBGSA will reevaluate appropriate climate scenarios to use prior to the 5-year Update. Incorporation of climate change scenarios into project and management action benefits will be done as part of project feasibility and scoping for those selected to move forward. 3. The monitoring networks are to monitor groundwater conditions across the subbasin for all beneficial uses and users, not be prioritized for certain users. Additionally, monitoring networks were developed following DWR BMPs. Monitoring of shallow groundwater elevations near areas of interconnected surface water is sufficient to assess significant and unreasonable impacts to beneficial users. SGMA requires monitoring groundwater conditions that may impact beneficial uses and users, not monitoring the users themselves. The groundwater elevation and water quality monitoring networks are adequate and sufficient to monitor changing conditions in the principal aquifer. Monitoring networks do not need to cover every part of the Subbasin, the areas highlighted in Attachment E are represented by the current monitoring network, which uses existing sites and data collection programs. The current monitoring network will also be expanded during implementation as described throughout the GSP. 4. The projects and management actions chosen by the GSAs and Subbasin Planning Committees are the ones that are included in the GSP. The GSAs may consider this program in the future if it so chooses. Degradation of water quality due to GSA impact will be monitored as outlined in the GSP. As the GSP states, avoiding water quality impacts will be considered as part of project selection and design. Project-specific monitoring will be established as needed to ensure projects don't cause minimum thresholds to be exceeded. Recharge project locations and site specifications have not been completely developed yet but this will be considered. The climate resilience of specific management actions will be considered during project selection and design.
38	6	10/20/2021	Robert Jaques, Seaside Basin Watermaster	See Appendix 2-D	JotForm	Edits are incorporated with modifications.
39	9	10/21/2021	Erika Marx, US Army Garrison Presidio of Monterey	See Appendix 2-D	Email	Comment noted. The basin GSAs will continue to coordinate with the Army on stormwater and groundwater management. Information on decommission of the stormwater outfall has been added to Chapter 9.
40	9	10/30/2021	James Sang	See Appendix 2-D	Letter	There are multiple proposed solutions to help bring the Monterey Subbasin, and specifically the Corral de Tierra. The proposed projects and management actions have been evaluated to provide an initial understanding of the level of investment needed to begin working towards sustainability in this area. The Subbasin committee has worked with GSAs' staff and GSAs' consultants to develop these options over the course of developing the GSP. The GSAs' have looked for more cost-effective options, however options for this area are limited and costly. This area is unique in its geography and historical groundwater conditions, which adds to the level of complexity and investment required to bring it to sustainability. Multiple projects and management actions will be required, and these all come with associated costs. Several of the listed projects specifically address enhancing recharge. Recharge is dependent on soils, subsurface conditions, and groundwater conditions; it can occur in both short and long-term timeframes. The GSAs are looking at as many feasible recharge-focused actions as possible, and will enlist the assistance of all groundwater users in the area from the domestic well-owners to the municipal water providers and agricultural users.

Number	Chapter	Date Received	Commenter	Comment	Format	Action
						The sustainable yield calculations are based on best available data, and will be refined as more data are collected during implementation. Furthermore, implementing projects and management actions will begin immediately upon submitting the GSP to DWR. The GSAs understand there is no time to waste for getting the Monterey Subbasin to sustainability. The GSP is written to comply with SGMA, and be accepted by DWR. The groundwater quality concerns from former Fort Ord and in the Corral de Tierra area are well documented in the GSP in Chapter 5. There are existing programs to remediate these concerns as detailed in Chapters 3 and 7, and implementation activities will be designed with water quality impacts in mind, as detailed in Chapters 8, 9 and 10. Cal-Am's extractions from the Carmel River Basin is a separate issue as it provides water for the Monterey Peninsula. This is a separate system from the Cal-Am systems in the Corral de Tierra area that depend on groundwater.
41	Whole GSP	11/1/2021	Ngodoo Atume, Audubon California, Clean Water Action, Clean Water Fund, Local Government Commission, The Nature Conservancy, and Union of Concerned Scientists	See Appendix 2-D	JotForm	See response document in Appendix 2-E.
42	6	11/1/2021	Pete Leffler, Luhdorff & Scalmanini, California American Water,	See Appendix 2-D	Letter	See response document in Appendix 2-E.
43	9	11/1/2021	Nisha Patel, City of Seaside	See Appendix 2-D	Email	See response document in Appendix 2-E.
44	9	11/4/2021	Mike McCullough, Monterey One Water	See Appendix 2-D	JotForm	MCWD is in conservation with M1W regarding availability of recycled water. Section 9.4.6 (Project M3) has been revised to reflect most recent information available to MCWD.
45	6B	11/19/2021	Pete Leffler, Luhdorff & Scalmanini, California American Water,	See Appendix 2-D	Email	See response document in Appendix 2-E.

Appendix 2-D

Comment Letters

Monterey Subbasin Groundwater Sustainability Plan Development Comment Letters Received

(1) Heather Lukacs, Community Water Center. 7-10-2020

(2) Heather Lukacs, 7-16-2020

(3) Robert Jaques, Seaside Basin Watermaster. 11-17-2020

(4) Robert Jaques, Seaside Basin Watermaster. 1-8-2021

(5) Robert Jaques, Seaside Basin Watermaster. 3-8-2021

(6) George Fontes, Salinas Basin Water Alliance. 3-10-2021

(7) Robert Jaques, Seaside Basin Watermaster. 3-22-2021

(8) Hydrogeologic Working Group. 4-5-2021

(9) George Fontes, Salinas Basin Water Alliance. 4-21-2021

(10) Robert Jaques, Seaside Basin Watermaster. 4-22-2021

(11) Heather Lukacs, Community Water Center & H. Amezquita, San Jerardo Cooperative. 4-23-2021

(14) Margaret-Anne Coppernoll. 4-27-2021

(15) Community Water Center. 4-28-2021

(16) Robert Jaques, Seaside Basin Watermaster. 5-10-2021

(17) Fred Nolan. 5-11-2021

(18) Norman Groot, Salinas Basin Agricultural Water Association. 5-12-2021

(20) John Farrow, M. R. Wolfe & Associates, P.C. on behalf of LandWatch. 7-12-2021

(21) Robert Jaques, Seaside Basin Watermaster. 7-13-2021

(22) James Sang. 7-20-2021

(23) Robert Jaques, Seaside Basin Watermaster. 7-30-2021

(24) Salinas Valley Water Coalition. 8-12-2021

(25, 26) Stephanie Hastings, Salinas Basin Water Alliance. 8-12-2021

(27) Robert Jaques, Seaside Basin Watermaster. 8-23-2021

(27) Robert Jaques, Seaside Basin Watermaster (Chapter 6). 9-6-2021

(28, 29) Robert Jaques, Seaside Basin Watermaster (Chapter 10). 9-6-2021

(30) Norman Groot, Monterey County Farm Bereau. 10-08-2021

(31) John Farrow, M. R. WOLFE & ASSOCIATES, P.C. (Landwatch). 10-14-2021

(32) California Coastkeeper Alliance. 10-15-2021

(33) Community Water Center. 10-15-2021

(34) Douglas Deitch, Monterey Bay Conservancy. 10-15-2021

(35) Elizabeth Krafft, Monterey County Water Resources Agency. 10-15-2021

(36) Stephanie Hastings, Salinas Basin Water Alliance. 10-15-2021

(37) The Nature Conservancy and Others. 10-15-2021

(38) Robert Jaques, Seaside Basin Watermaster. 10-20-2021

(39) Erika Marx, US Army Garrison Presidio of Monterey. 10-21-2021

(40) James Sang. 10-30-2021

(41) Pete Leffler, Luhdorff & Scalmanini, California American Water. 11-1-2021

(42) Nisha Patel, City of Seaside. 11-1-2021

(43) Ngodoo Atume, Audubon California, Clean Water Action, Clean Water Fund, Local Government Commission, the Nature Conservancy, and Union of Concerned Scientists. 11-1-2021

(44) Mike McCullough, Monterey One Water. 11-4-2021

(45) Pete Leffler, Luhdorff & Scalmanini, California American Water. 11-19-2021

Gmail

Emily Gardner <gardnere@svbgsa.org>

Recommendations for Langley and other subbasin GSPs related to drinking water users

6 messages

Heather Lukacs Fri, Jul 10, 2020 at 2:06 PM
To: gardnere@svbgsa.org
Cc: Donna Meyers <meyersd@svbgsa.org>, Gary Petersen <peterseng@svbgsa.org>, Horacio Amezqutia
Thomas R Adcock Justine Massey

Hi Emily, Gary, and Donna,

I appreciate the process allowing for comment on the early drafts of the subbasin GSPs.

Tom, I have included you so that you can see Figure 3-5 that I referenced during my comments at today's meeting - in order to help make sure Alco and Pajaro Sunny Mesa CSD boundaries are accurately represented (see attached), and also because you indicated interest in helping support outreach to water systems.

We at CWC are happy to support in identifying, ground-truthing, and outreach to drinking water users in the Langley Subbasin and other subbasins in the Salinas Valley.

The first step we recommend is to generate a list of the following to support outreach and also to include in Chapter 3 of the draft subbasin GSPs:

- Public water systems - which serve over 15 connections
- State and local small water systems - which serve between 2-14 connections

We at CWC currently have lists for both types of systems from Monterey County Environmental Health (along with contact information for each water system). This information was also used by the GSP consultants in the 180/400 GSP so they should also have these lists with location and water quality information for all water systems in the subbasins.

Next, we recommend creating maps of the location, water quality, and other information of all drinking water supply wells - which came up during today's meeting. For the 180/400 Foot Aquifer GSP, Figure 7-9 Public Water Supply Wells was included together with Appendix 7E (see attached) which has water system names, well construction information, coordinates, and monitoring data range. (see more on this below).

Lastly, these maps and lists can then be shared with local drinking water users who can provide feedback and help groundtruth the information. This could be part of a drinking water workshop - is the information we have accurate? Given this information, is the monitoring network accurate? Are drinking water users collecting other information that could be added to this plan?

I look forward to discussing this and also more specific recommendations (see below) for Chapter 3 of the Subbasin GSPs.

Thank-you,
Heather

Recommendations for Chapter 3 of Subbasin GSPs

- **Revise the description of the plan area to include the type and location of all water systems and private domestic wells that serve drinking water users, their current groundwater quality conditions, and the number of people served.** All public water system service areas and state and local small service areas should 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). Private wells should also be identified as being groundwater-dependent drinking water supplies. 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. Adequately characterizing the public water systems, state and local small water systems, and domestic wells in the GSP is important to set the stage to: (1) better identify areas that are vulnerable to groundwater level, groundwater quality, or seawater intrusion challenges, (2) quantify drinking water demand in the subbasin for both the current and projected water budget, (3) provide a basis for the monitoring network of drinking water supplies, and (4) ensure inclusive and representative engagement of drinking water users in the planning process.

- **Revise Chapter 3 to include a map of the service areas of all of the state and local small water systems in the 180/400 foot aquifer subbasin.** The 180/400 Foot Aquifer GSP mentions 136 small water systems in Chapter 7, page 7-20 of the 180/400-Foot Aquifer GSP (January 3, 2020) which indicates that the consultants have this data. We recommend that this data for all Salinas Valley subbasins be included in a map in Chapter 3 of each GSP, be clearly labelled, and have an associated table with key information. 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 system webpage. 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.
- **Update water system boundaries in Figure 3-5** (Langley, 6/28/2020 GSP) to reflect that Alco no longer operates wells in this area, and update Pajaro Sunny Mesa CSD water system boundaries.
- **List domestic water use and/or rural residential water use under the Water Use Section (Section 3.2.2).** This section indicates that, "Domestic use outside of census-designated places is not considered urban use." Even if the Monterey County Water Resource Agency (MCWRA) does not report rural residential use, it is an important beneficial use and should be listed as a "water use sector." Water use estimates for state and local small water systems could be based on the number of connections served by each water system (which Monterey County has on file).
- **Revise Chapter 3 to include a specific discussion, supported by maps and charts, of the spatial or temporal water quality trends for all constituents that have exceeded drinking water standards and may affect drinking water beneficial users, as required under 23 CCR § 354.16(d).** In the 180/400 Foot Aquifer GSP, 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 were included which indicate that the consultant has this data available. It is important to include all water quality data (both in map and tabular form) for all constituents that will have minimum thresholds later. Water quality is an important part of the basin setting. See map viewer from Greater Monterey County RWMG of all available water quality data for state and local small water systems in Monterey County: http://www.greatermontereyirwmp.org/documents/disadvantaged-community-plan-for-drinking-water-and-wastewater/.

--
Heather Lukacs, PhD
Pronouns: She/Her/Hers
Director of Community Solutions
Community Water Center

[redacted] CA 95076
[redacted] CA 95814
[redacted]

All CWC staff are currently working remotely. Please reach all staff via email and cell phone.

2 attachments

SVBGSA Public Comments Form

Name	Heather Lukacs
Organization	Community Water Center
Email Address	heather.lukacs@communitywatercenter.org
Subbasin	Langley, Eastside, Forebay, Upper Valley, Monterey, Whole Basin, 180/400
Chapter	3
Section	Table 3-2 Existing Well Types
Comments	We request that this table include all Monterey County regulated drinking water systems and clearly distinguish between type of drinking water system. Local small water systems serve 2-4 connections, state small water systems serve 5-14 connections, private domestic wells serve 1 connection. In addition this table should list agricultural and industrial users as separate well types. This distinction is made in Figure 3-6 but not in this Table. It is important to distinguish between well type here in order to set the stage for good water budget estimates, for the monitoring network, and throughout the plan. This data is all readily available to the public and GSA.

From:	bobj83@comcast.net
To:	Patrick Breen
Cc:	Bob Jaques; Georgina King; Tina Wang
Subject:	FW: Wells within MCWD northeast of the Seaside Basin
Date:	Tuesday, November 17, 2020 1:21:40 PM
Attachments:	Salinas_GWL_SWI_2017.pdf Data north of Seaside Basin.docx

Patrick,

Below is an email from Georgina King of Montgomery & Associates, the Watermaster's hydrogeologic consultant. In it she provides her comments after reviewing the water quality and water level data that Tina Wang sent her last year.

There are a couple of recommendations in her email that I would like to have discussed and addressed at an appropriate point in time as you develop the GSP for the MCWD portion of the Monterey Basin. I have highlighted them in yellow.

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

From: Georgina King <gking@elmontgomery.com>
Sent: Tuesday, December 17, 2019 11:47 AM
To: bobj83@comcast.net
Cc: Luis Mendez <lmendez@elmontgomery.com>
Subject: RE: Wells within MCWD northeast of the Seaside Basin

Bob,

I have reviewed and plotted up the water quality data and parts of reports EKI provided. I also looked at MCWRA's recent maps of seawater intrusion (2017).
I have pasted some maps and charts into a Word document Essentially, what we see is that:

1. There is Salinas Valley seawater intrusion quite far south and into the Seaside Basin in the 180 ft aquifer equivalent to formations shallower than the Shallow Aquifer (Paso Robles) in the Seaside Basin. But we know this from the induction logs in the northern Sentinel Wells. The data available and included on our map is from Fort Ord monitoring – all of which is very shallow (180-ft aquifer) and not in our Shallow (Paso Robles) aquifer. As reference for depth,

the FO-9 shallow aquifer in the Paso Robles is screened from 610-650 ft below ground.

2. The 400 ft aquifer which is equivalent to the Shallow Aquifer (Paso Robles) in the Seaside Basin has a similar southern extent to what we have included in the SIAR mostly because there is no data/wells available to update the extent. There has been considerable inland advancement. There are no 400-foot Fort Ord monitoring wells that have data more recent than 2008. Perhaps we should find out if some of these wells can start being sampled by the GSA in that area?

3. FO-10 shallow and deep have had almost 15 feet of groundwater level drop over the past 11 years, most of which has been since the start of the drought in 2012. There must be some pumping in this area that is causing this. I do not have the data to help me figure this out. The GSA is going to have to address this.

4. To conclude, the lack of data available for the 400-ft aquifer (equivalent to Paso Robles aquifer) means we still have a large data gap between the 400-ft aquifer seawater intrusion and the Seaside Basin.

Please call me if you want to discuss this further.

I am also attaching the MCWRA presentation on Groundwater Level and Seawater Intrusion maps as there is some interesting info in there.

Georgina

Georgina King, P.G., C.Hg.

MONTGOMERY & ASSOCIATES
www.elmontgomery.com

MONTEREY COUNTY WATER RESOURCES AGENCY

1947

2017 Salinas Valley

Groundwater Level Contours
&
Seawater Intrusion Maps

TODAY'S ACTION

Consider Receiving the
2017 Groundwater Level Contours and
Coastal Salinas Valley
Seawater Intrusion Maps

Committee Action/Financial Impact

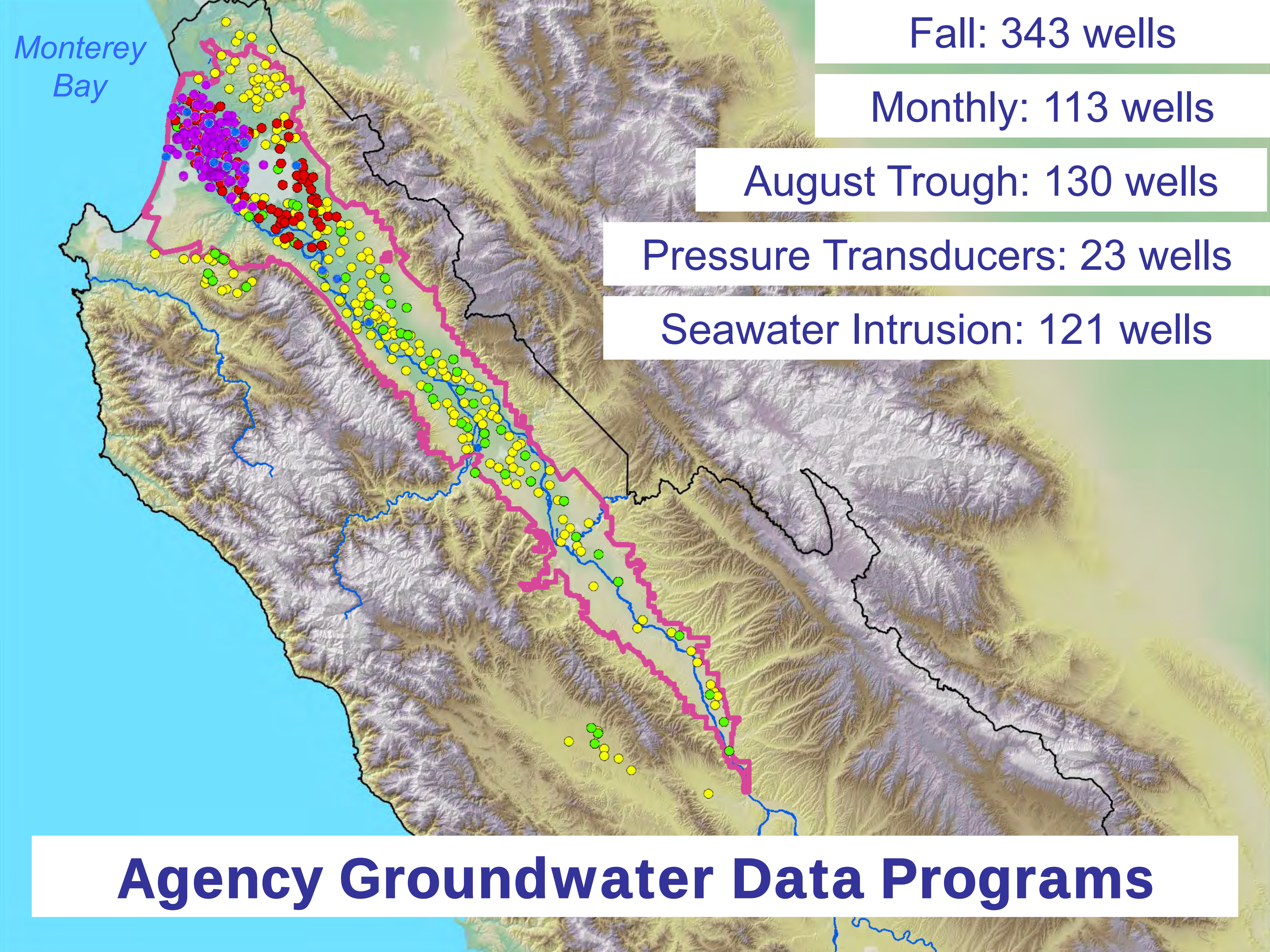
- No previous committee action
- No financial impact from receiving this report

Agency Groundwater Monitoring Programs

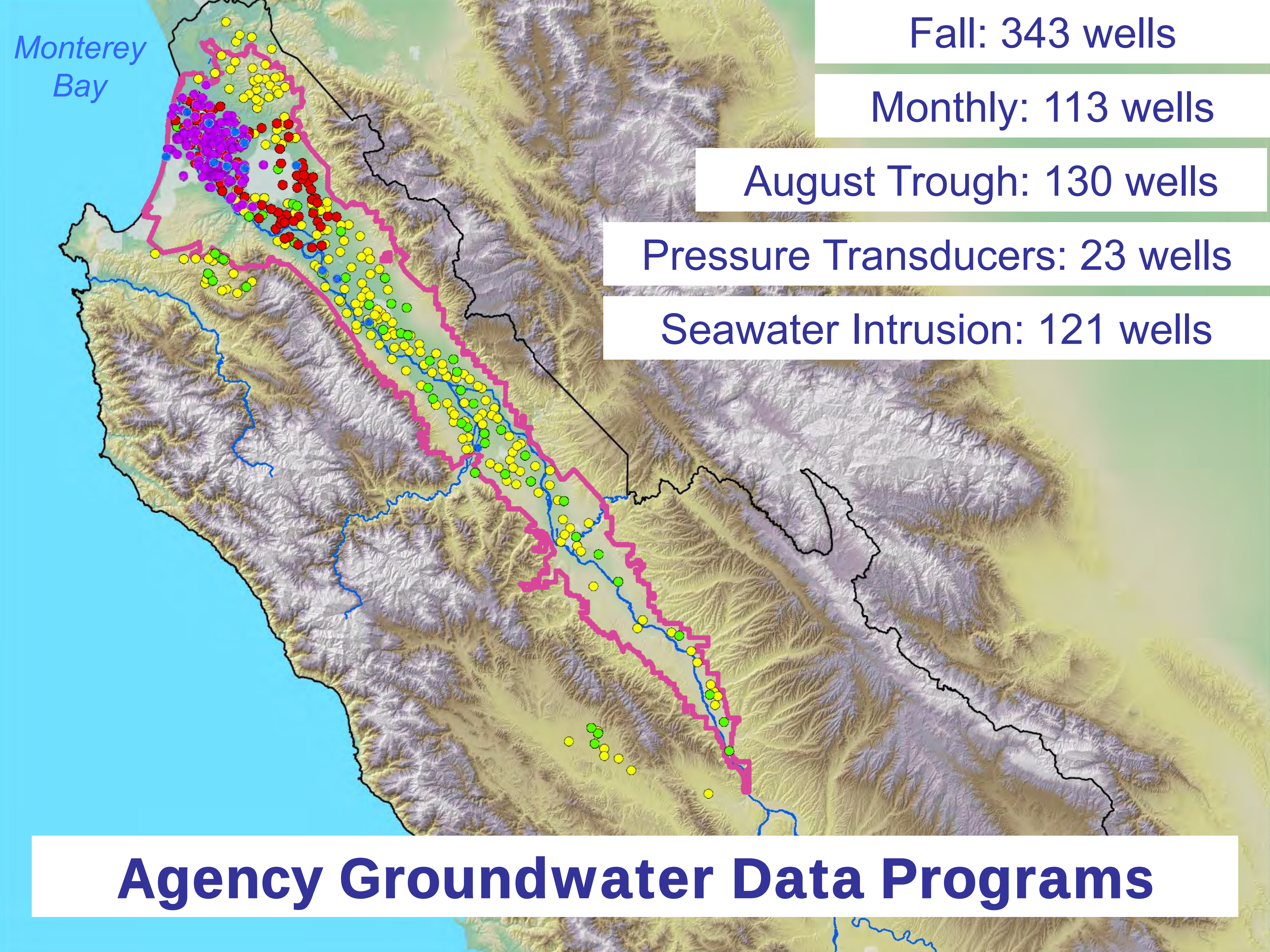
- GWL & WQ data collected & analyzed since 1947

- Purposes:
  - Monitor health of basin
  - Evaluate Agency projects
  - Develop basin management strategies

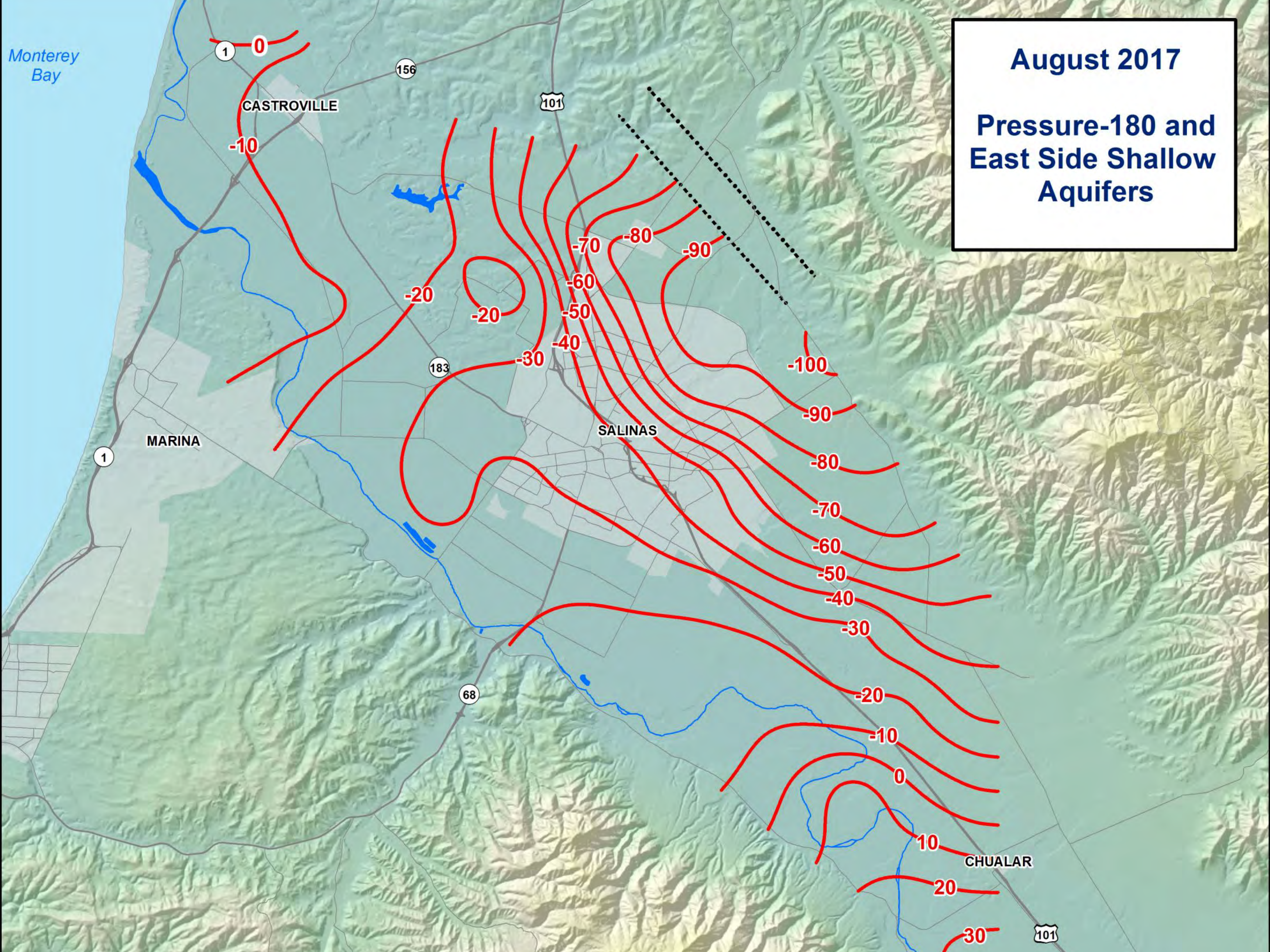
Agency Groundwater Data Programs



Agency Groundwater Data Programs



2017 Groundwater Level Contours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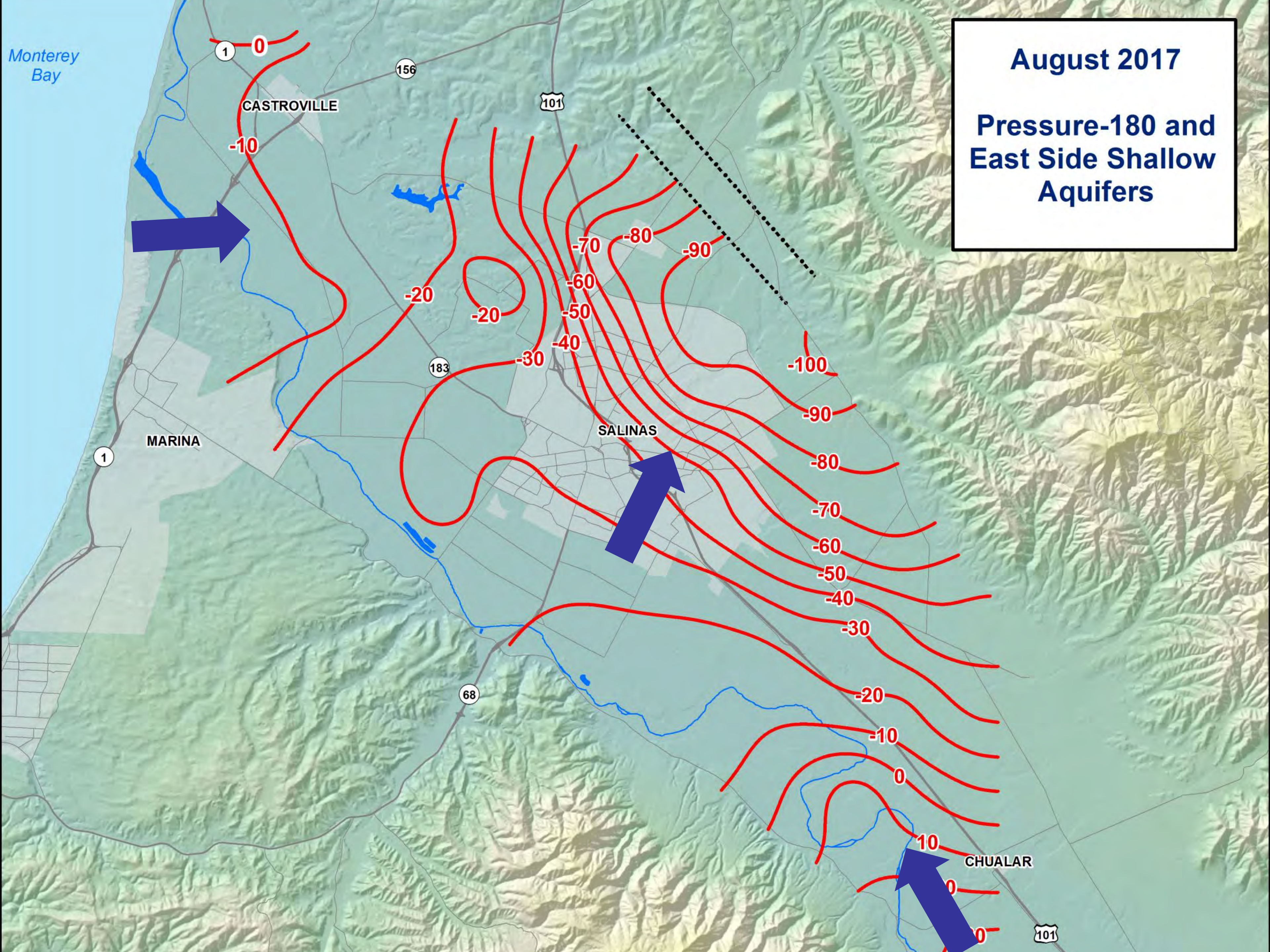
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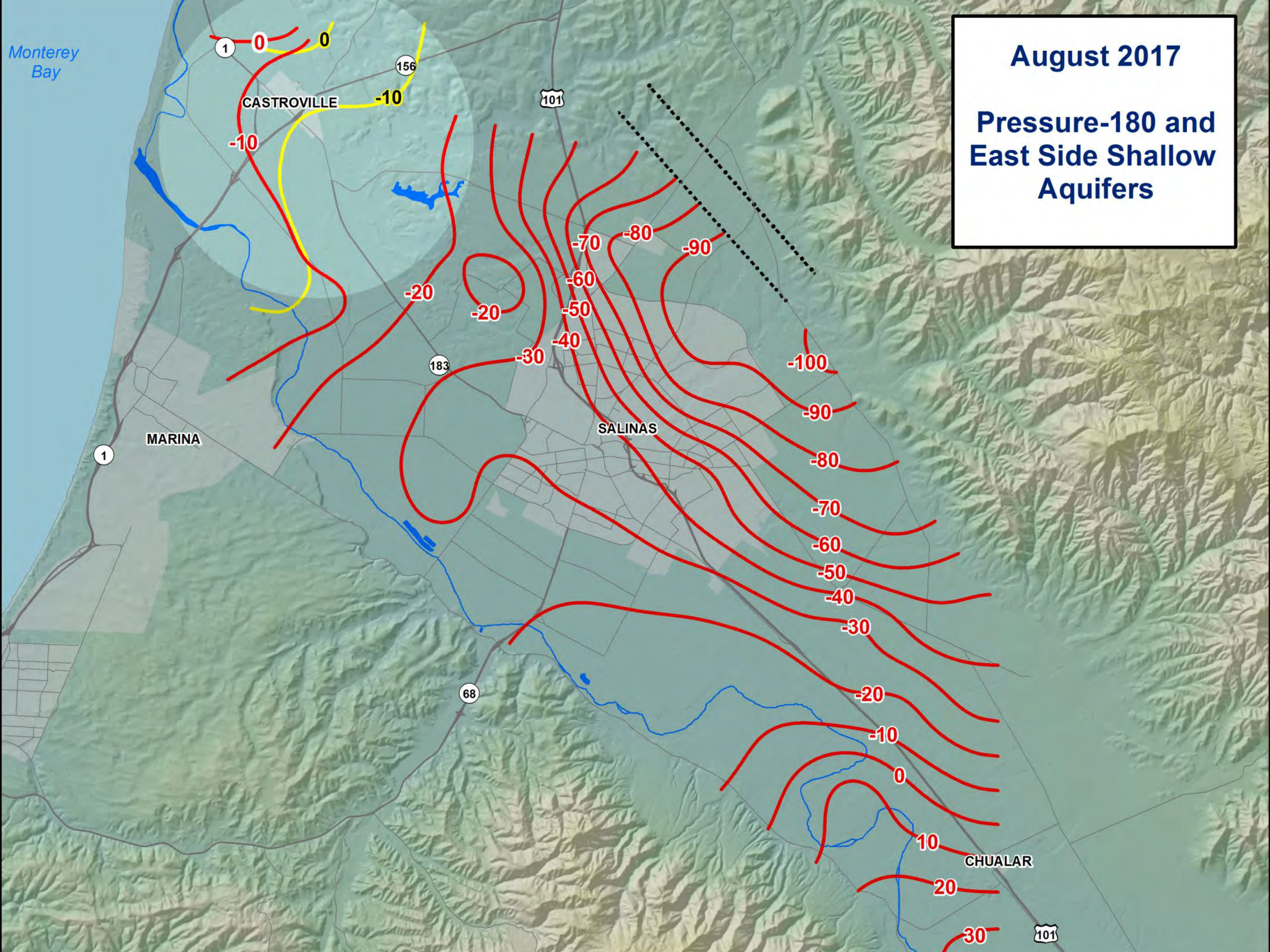
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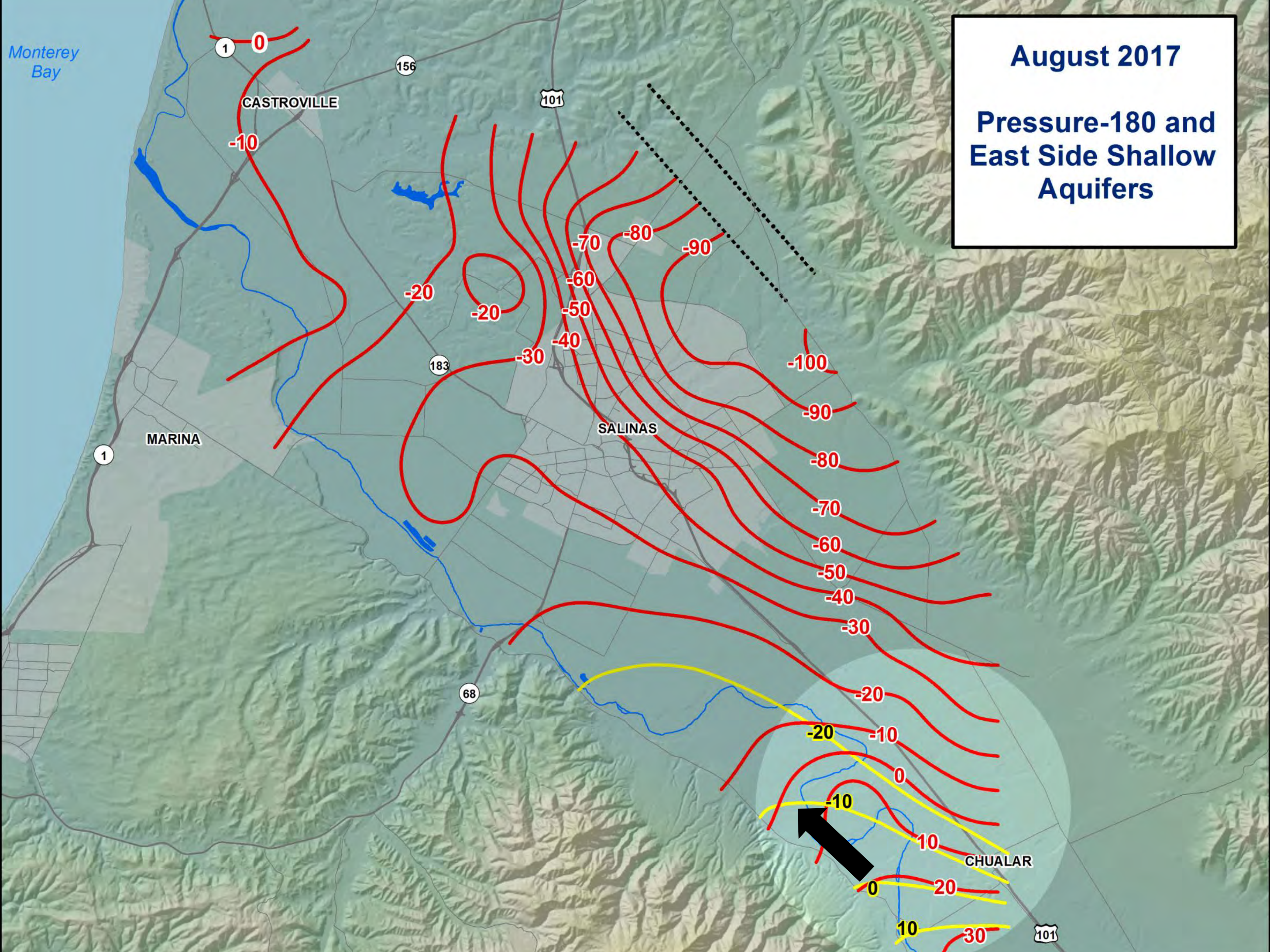
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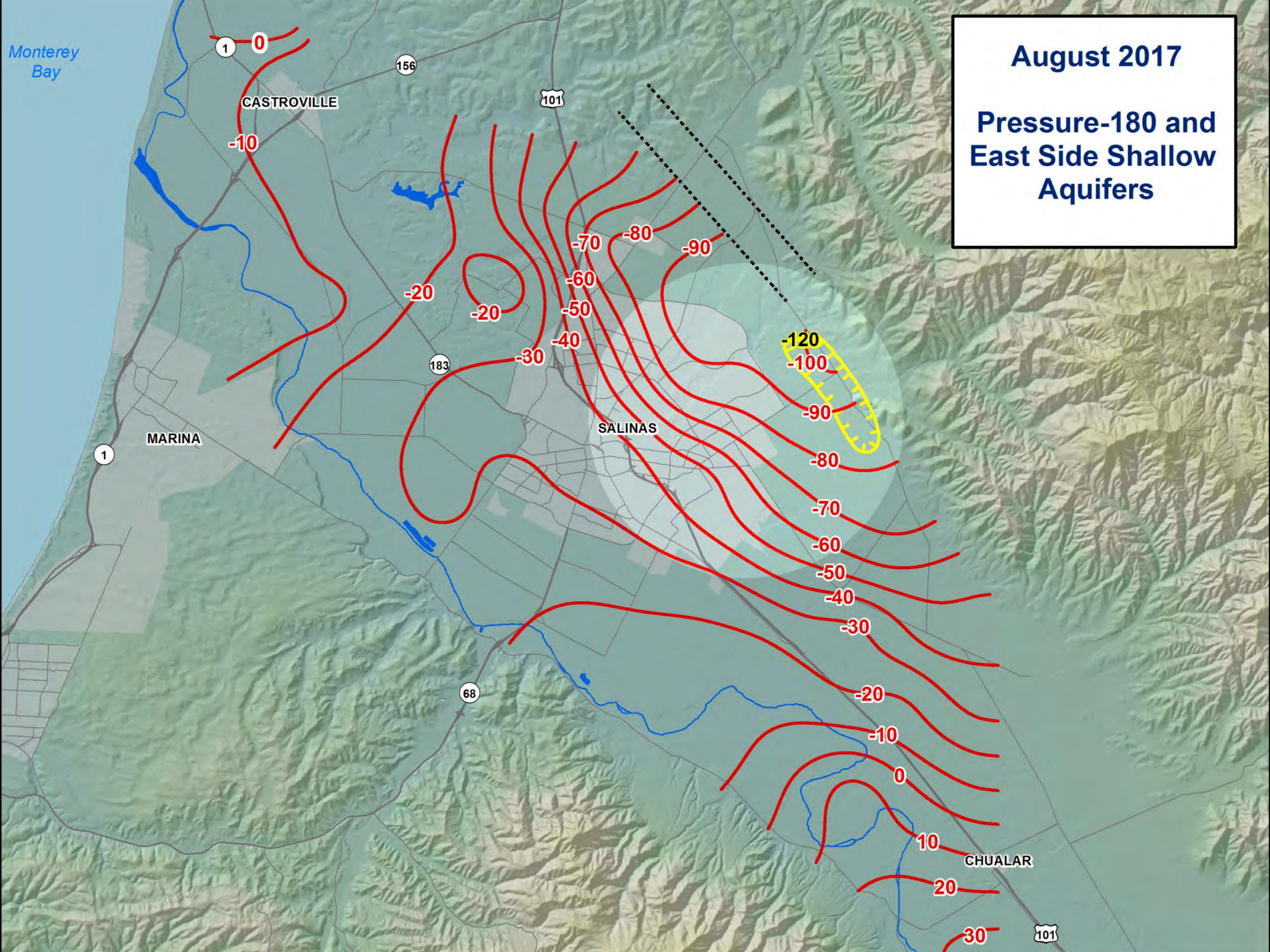
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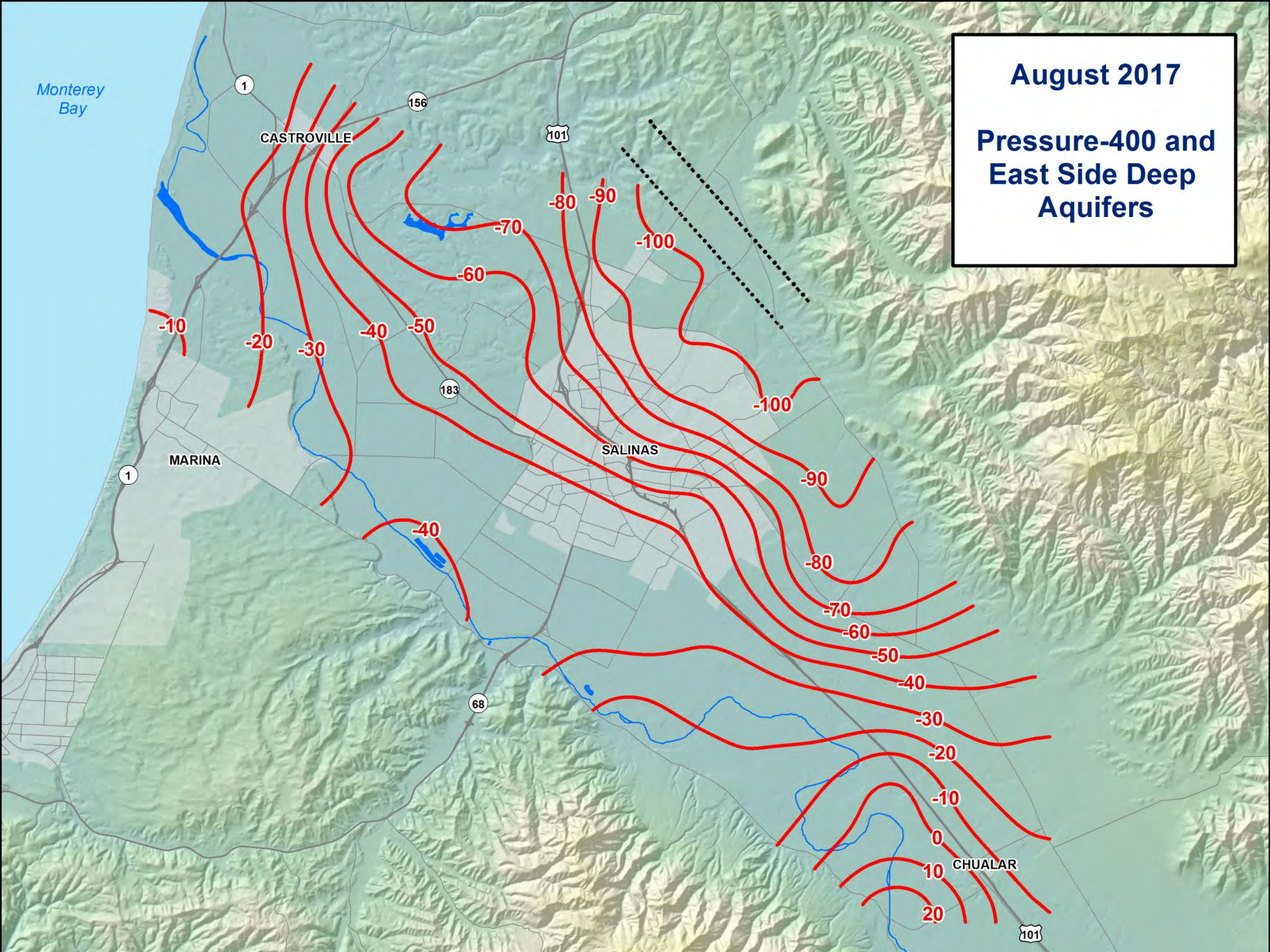

August 2017
Pressure-400 and East Side Deep Aquifers
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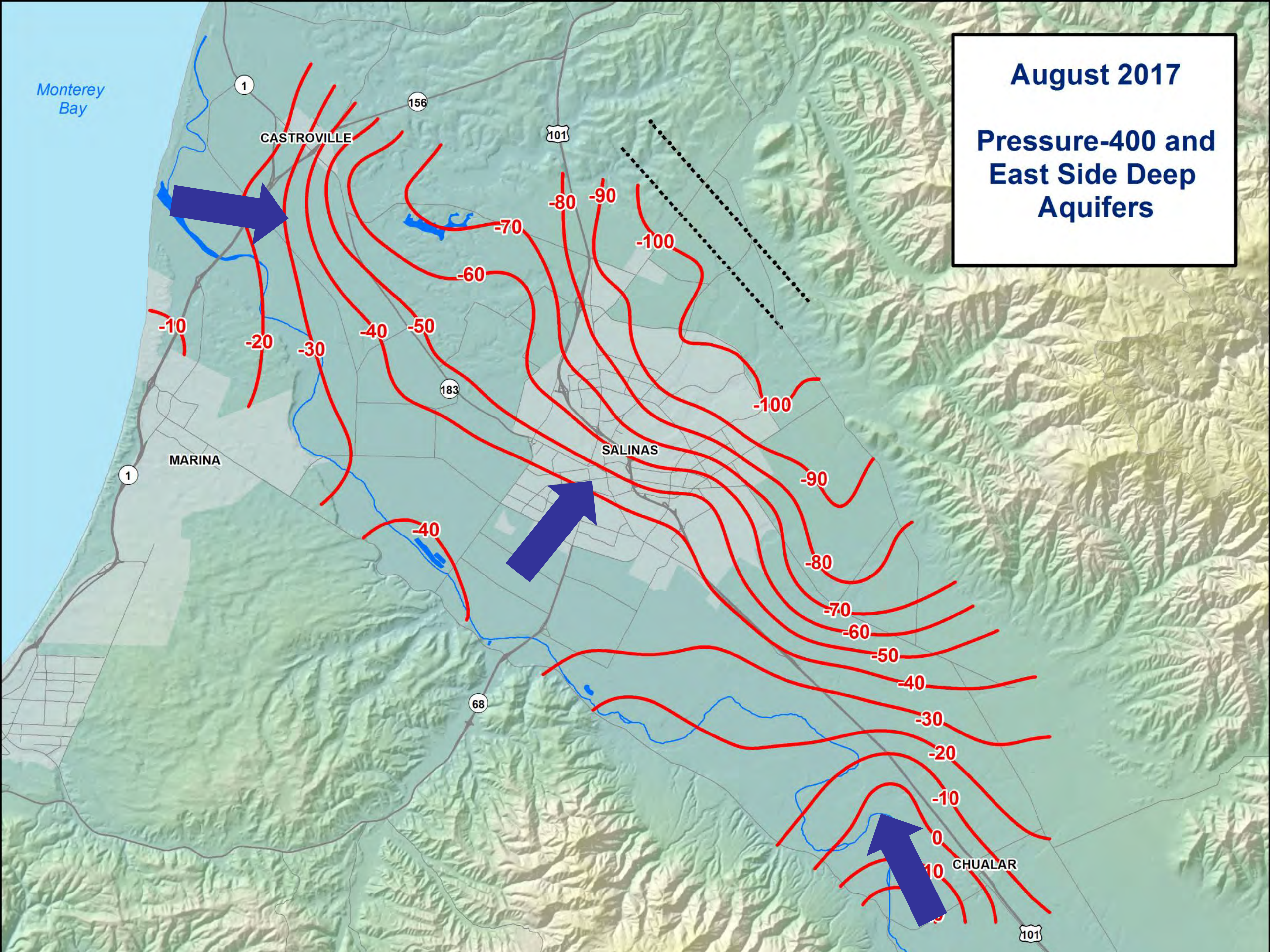

August 2017
Pressure-400 and East Side Deep Aquifers
Monterey Bay
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MARINA
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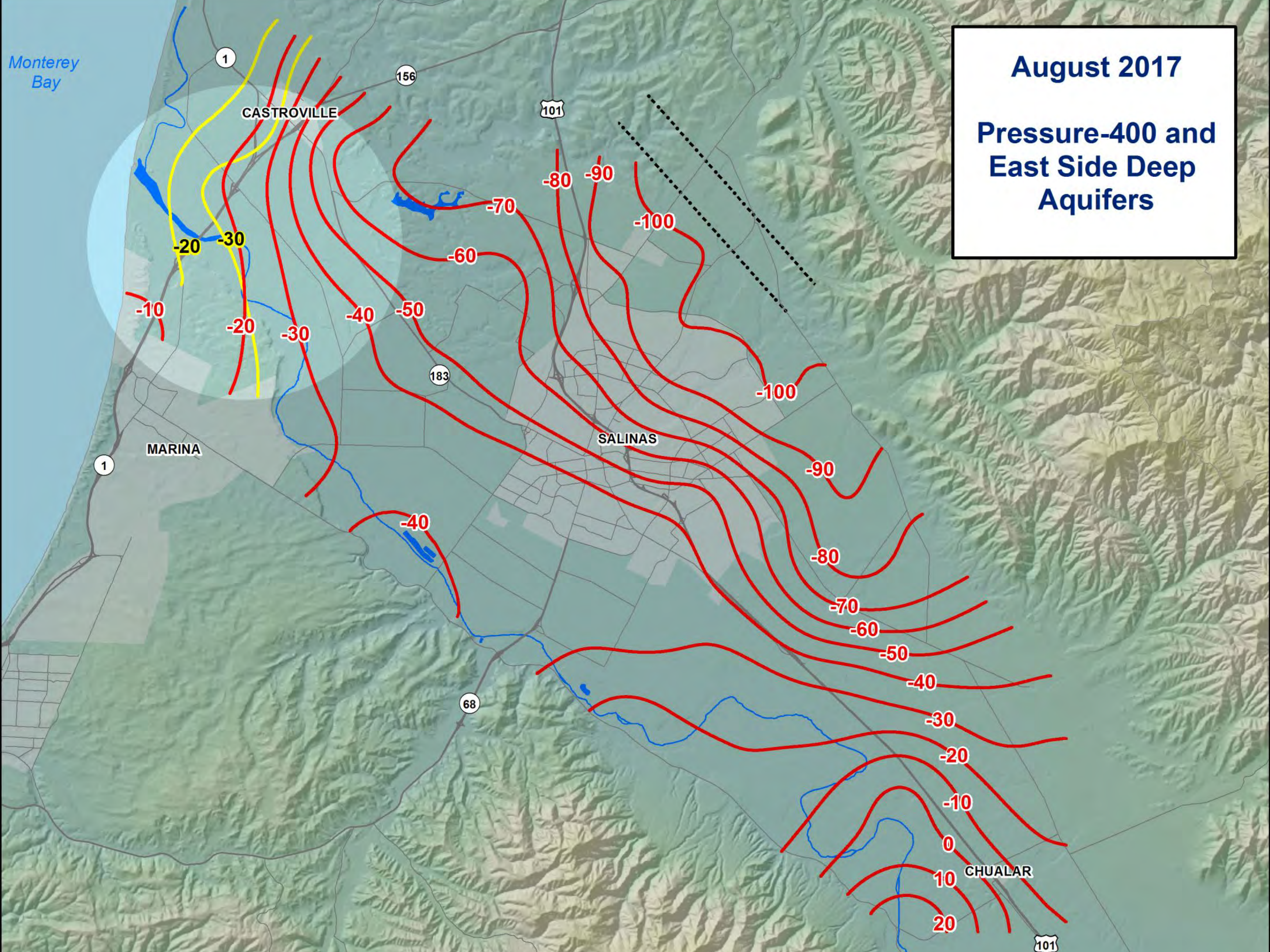
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SALINAS
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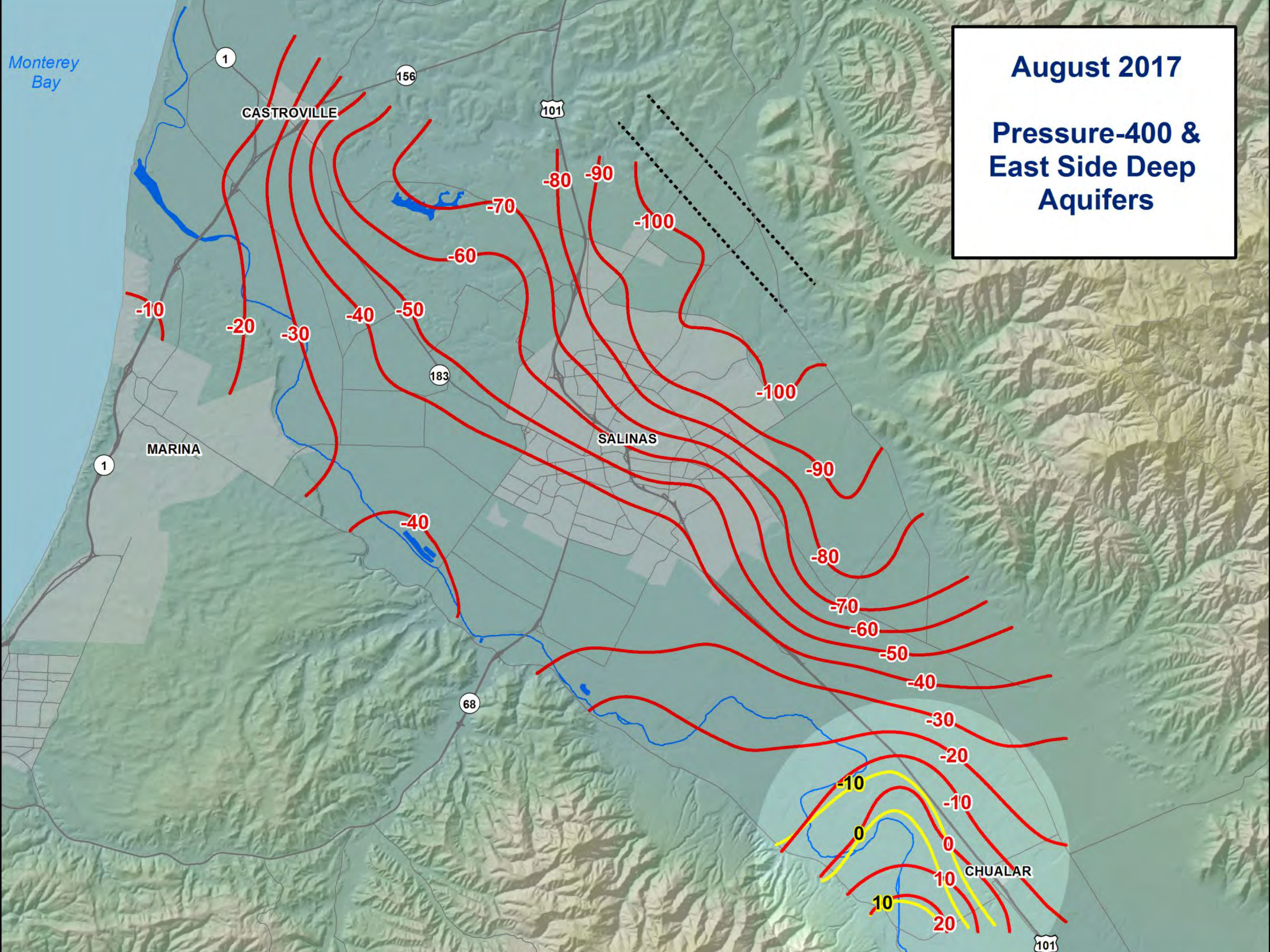
August 2017
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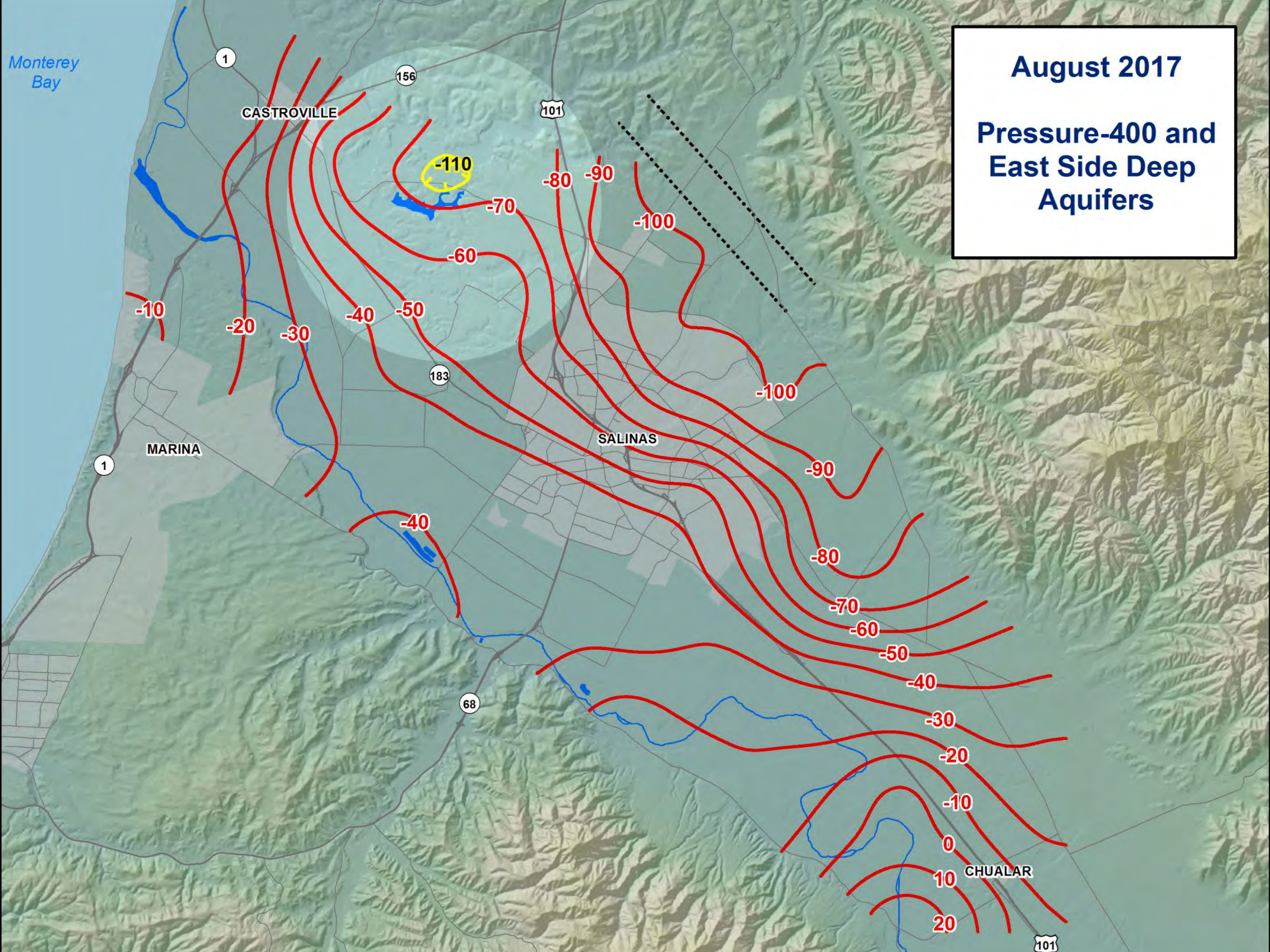
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Pressure-400 and East Side Deep Aquifers
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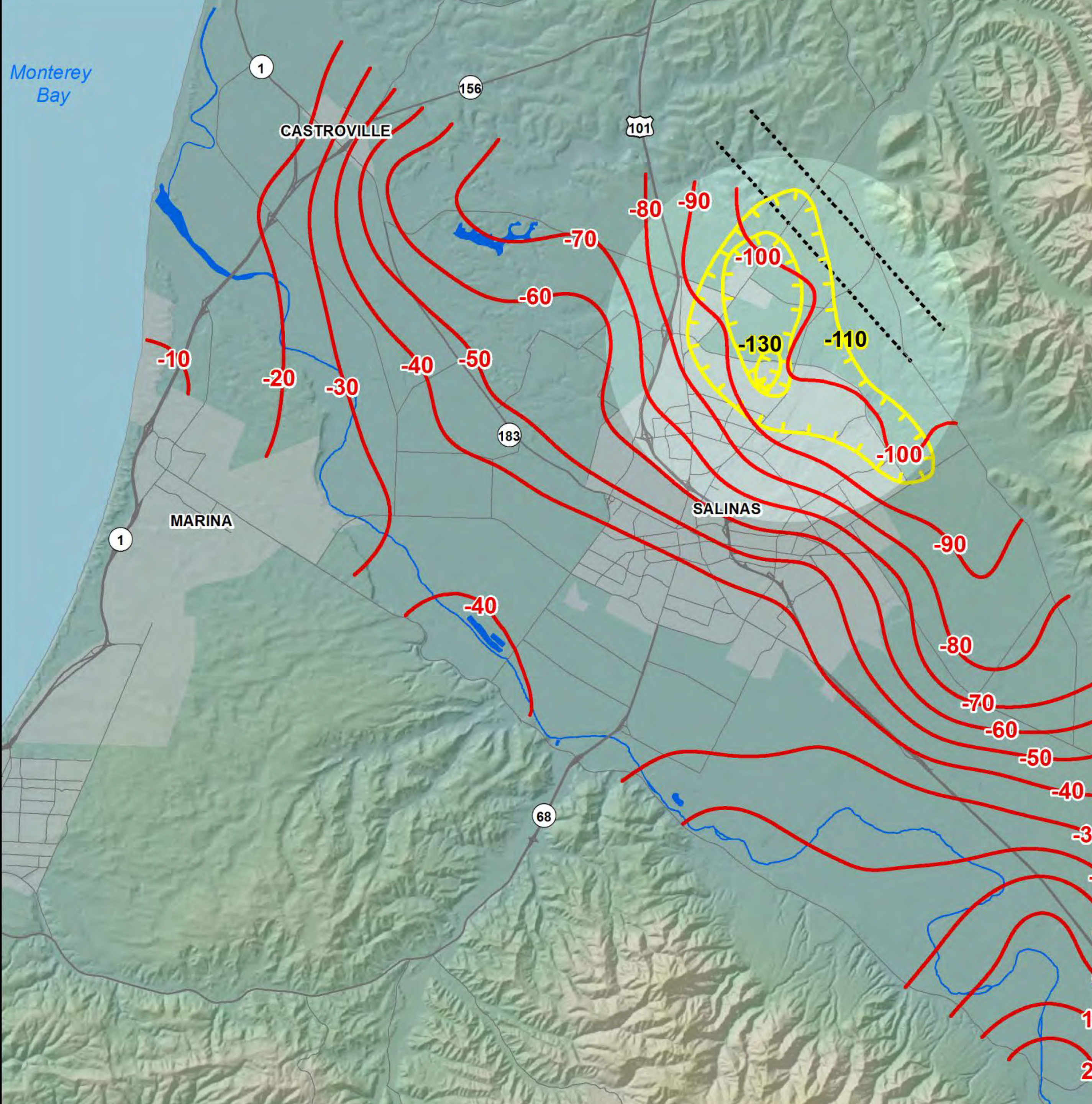
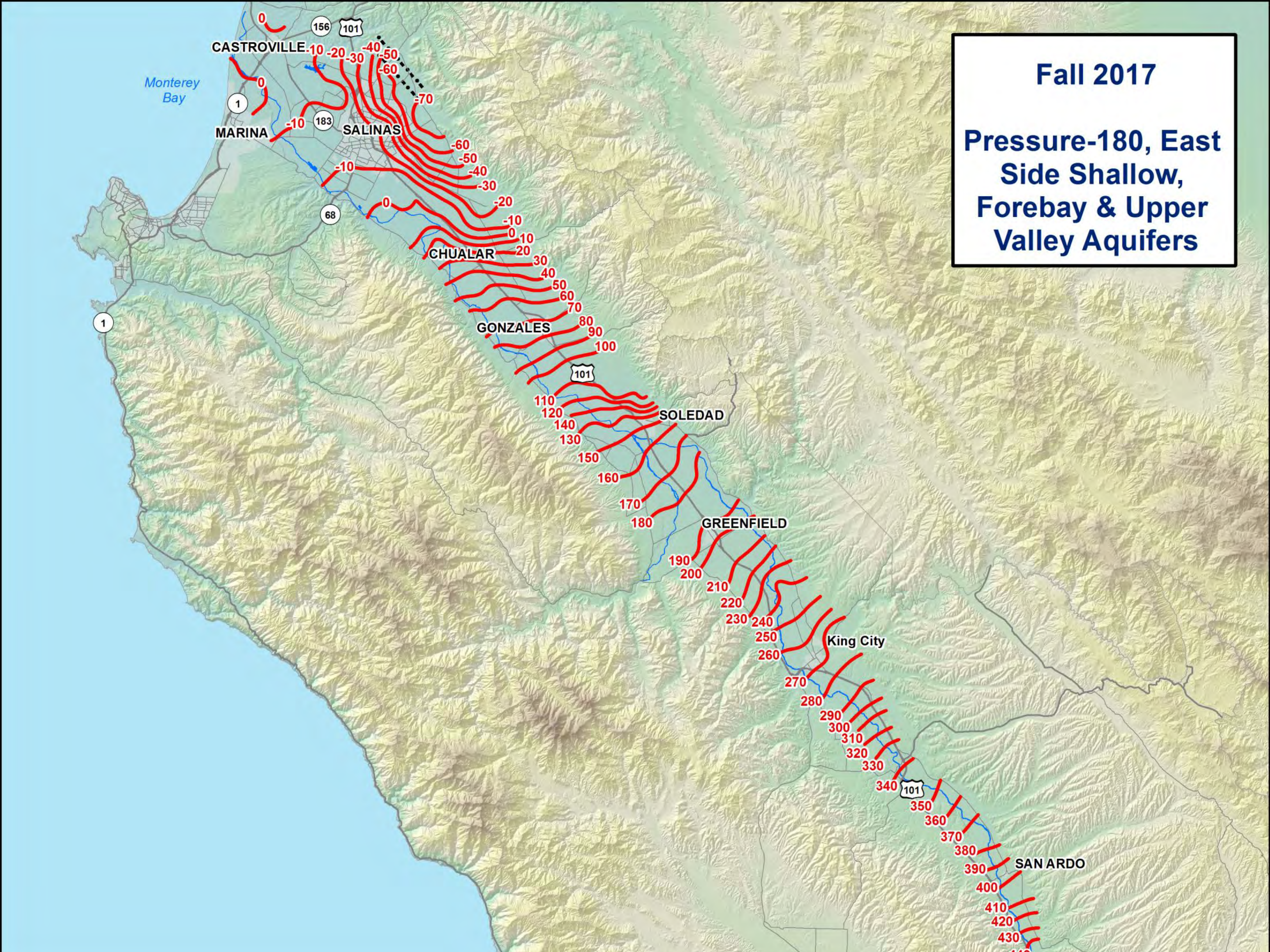


August 2017

Pressure-400 and East Side Deep Aquifers

Summary: 2017 August GWL Changes Since 2015

- P180
  - Coastal GWLs remain below sea level
  - East Side GWLs have risen 20 feet
  - Zero line moved two miles down valley
- P400
  - GWLs are recovering nearly everywhere
  - Coastal GWLs remain below sea level
  - "Espinosa Trough" has disappeared
  - East Side Trough has shrunken; GWLs up 10-30ft
  - Zero line has not moved


Fall 2017
Pressure-180, East Side Shallow, Forebay & Upper Valley Aquifers
Monterey Bay
CASTROVILLE
MARINA
SALINAS
CHUALAR
GONZALES
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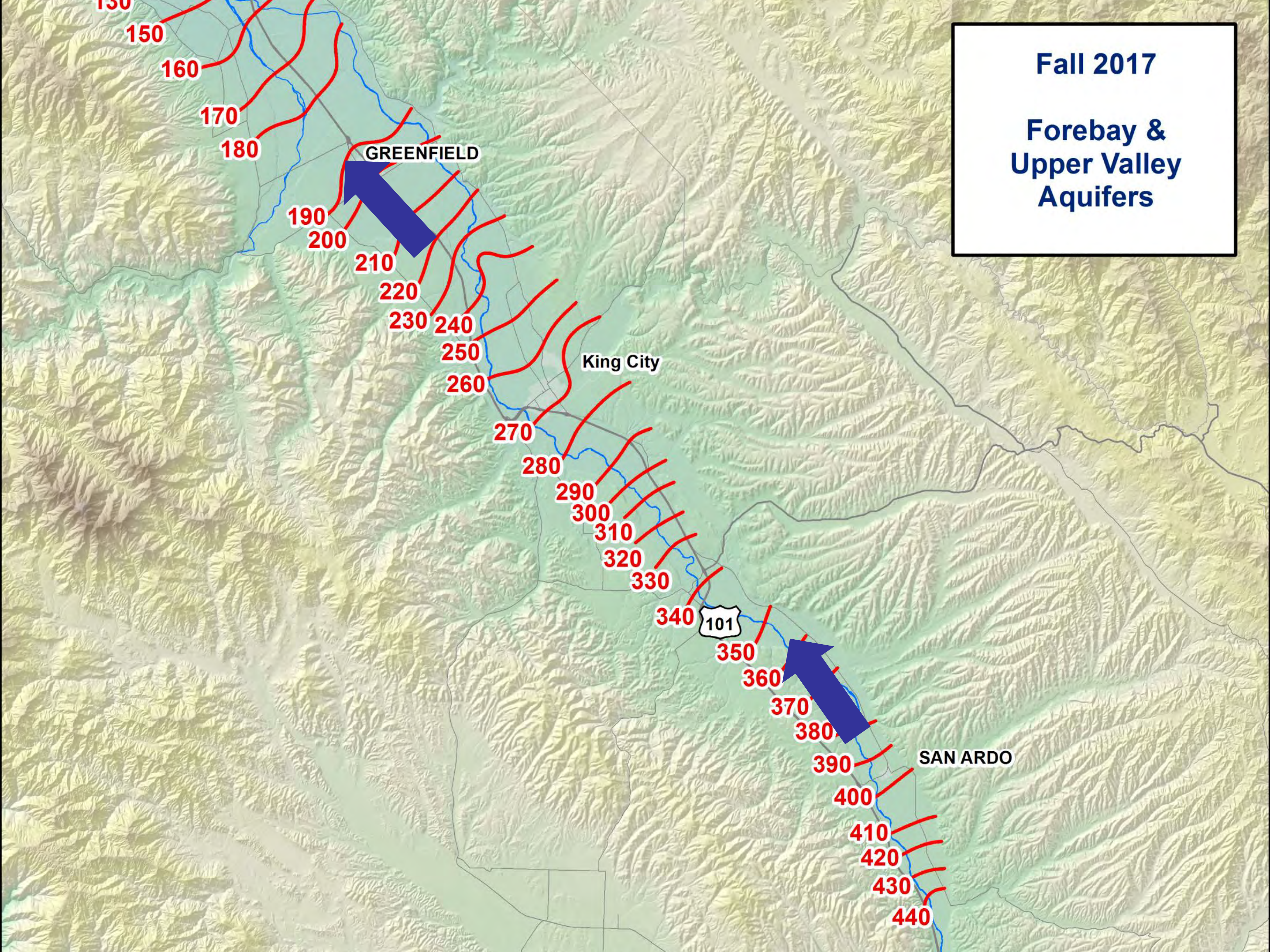
Fall 2017
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King City
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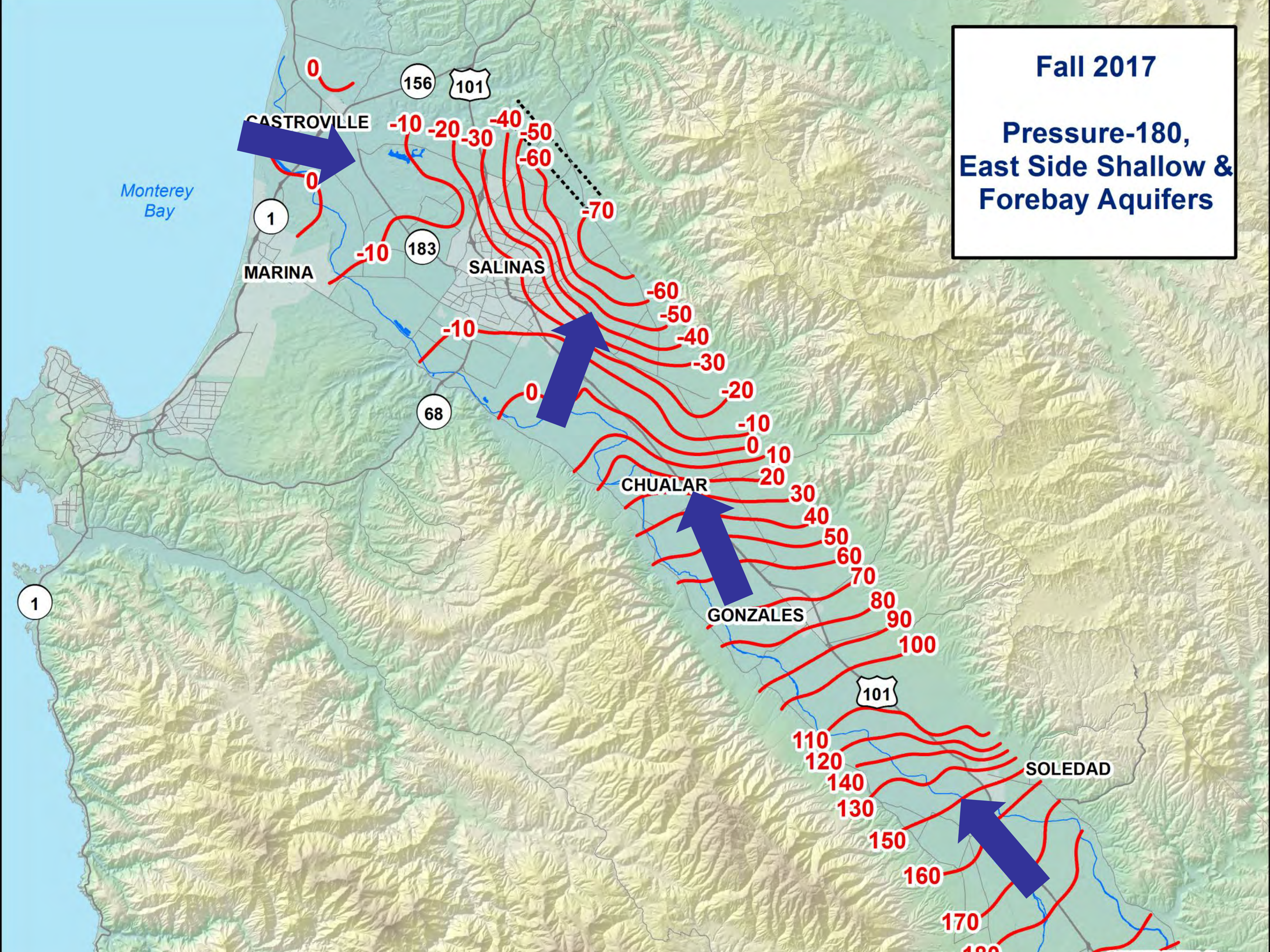
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Pressure-180, East Side Shallow & Forebay Aquifers
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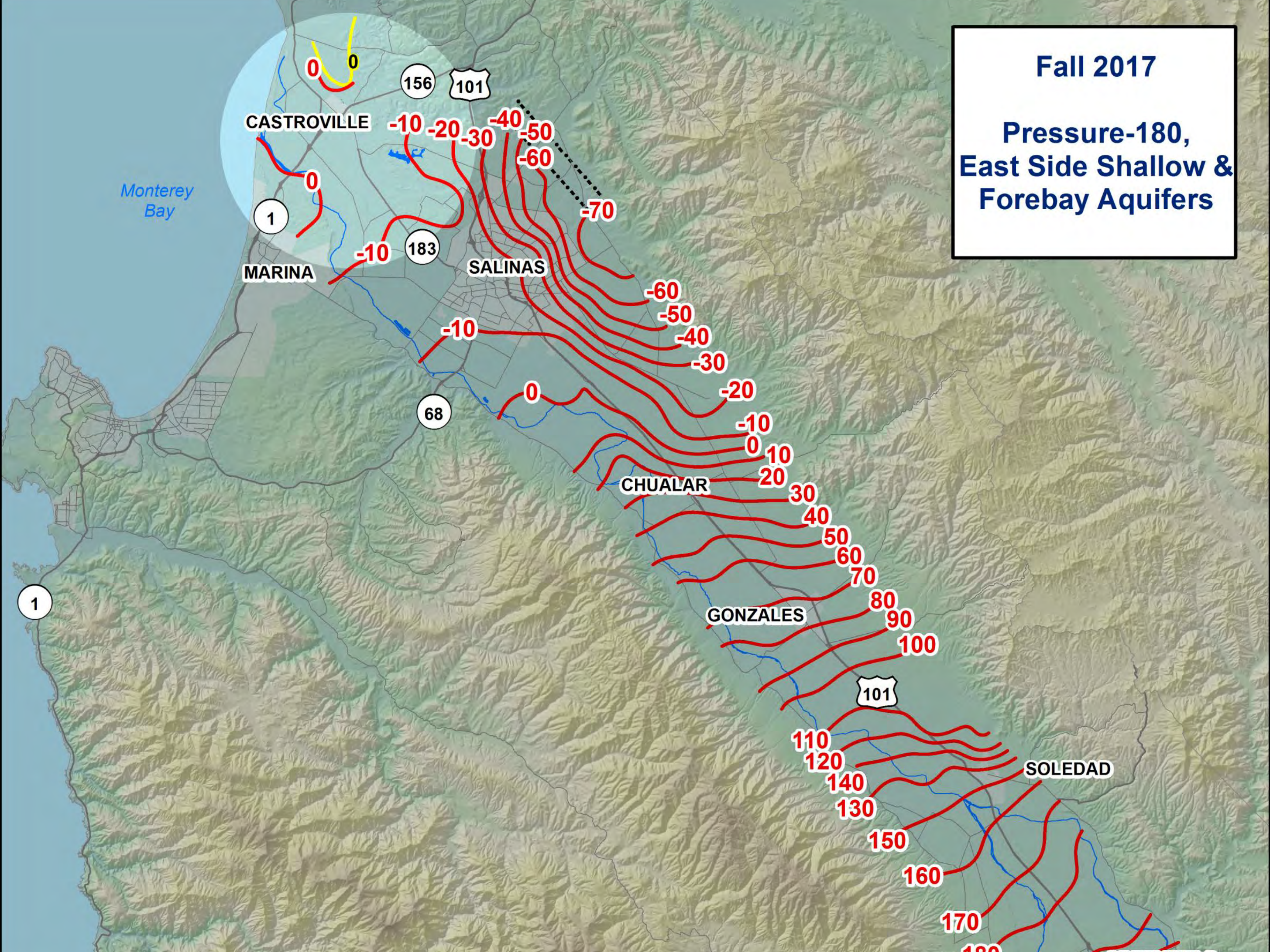
Fall 2017
Pressure-180,
East Side Shallow &
Forebay Aquifers
Monterey Bay
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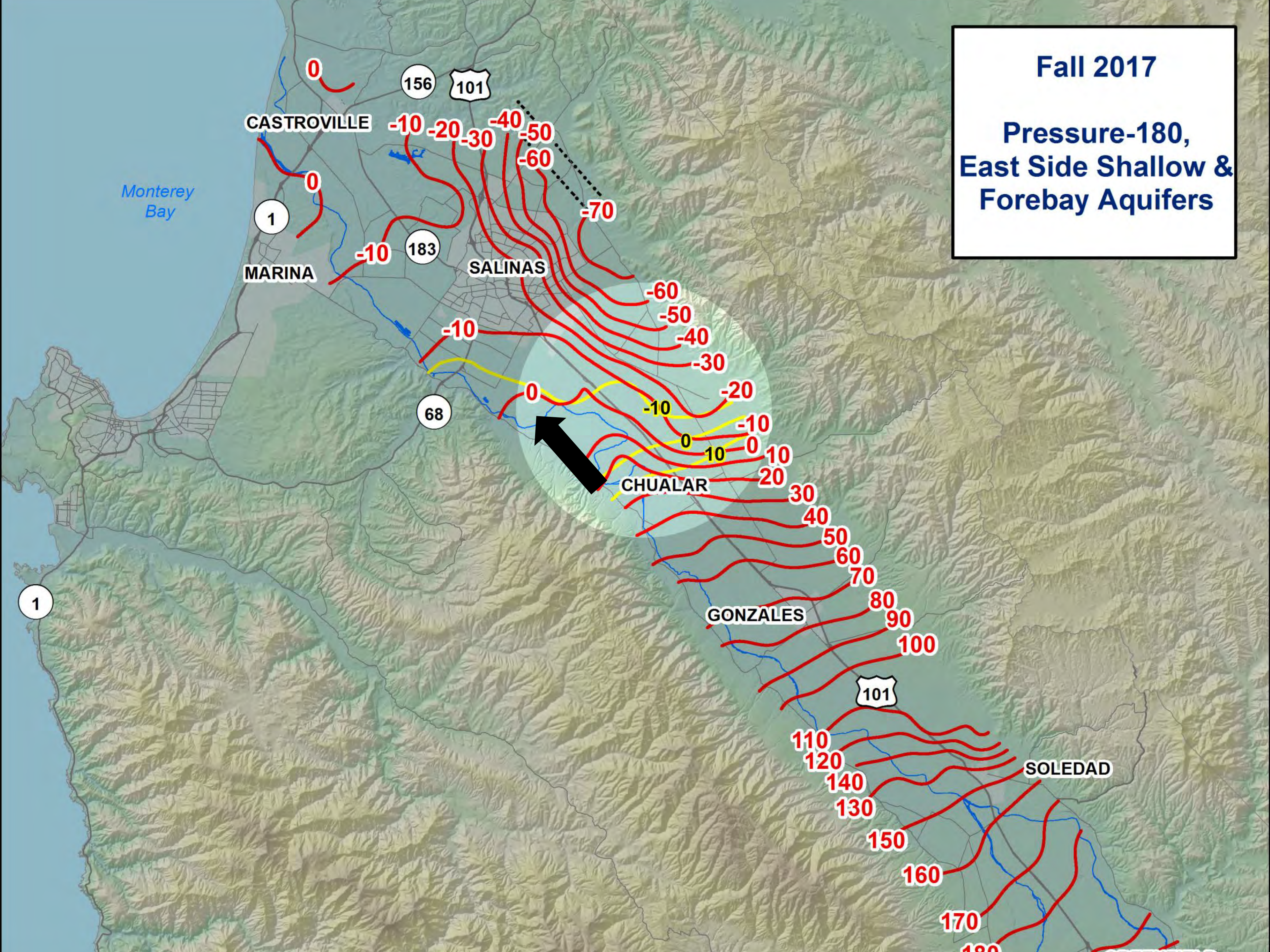
Fall 2017
Pressure-180, East Side Shallow & Forebay Aquifers
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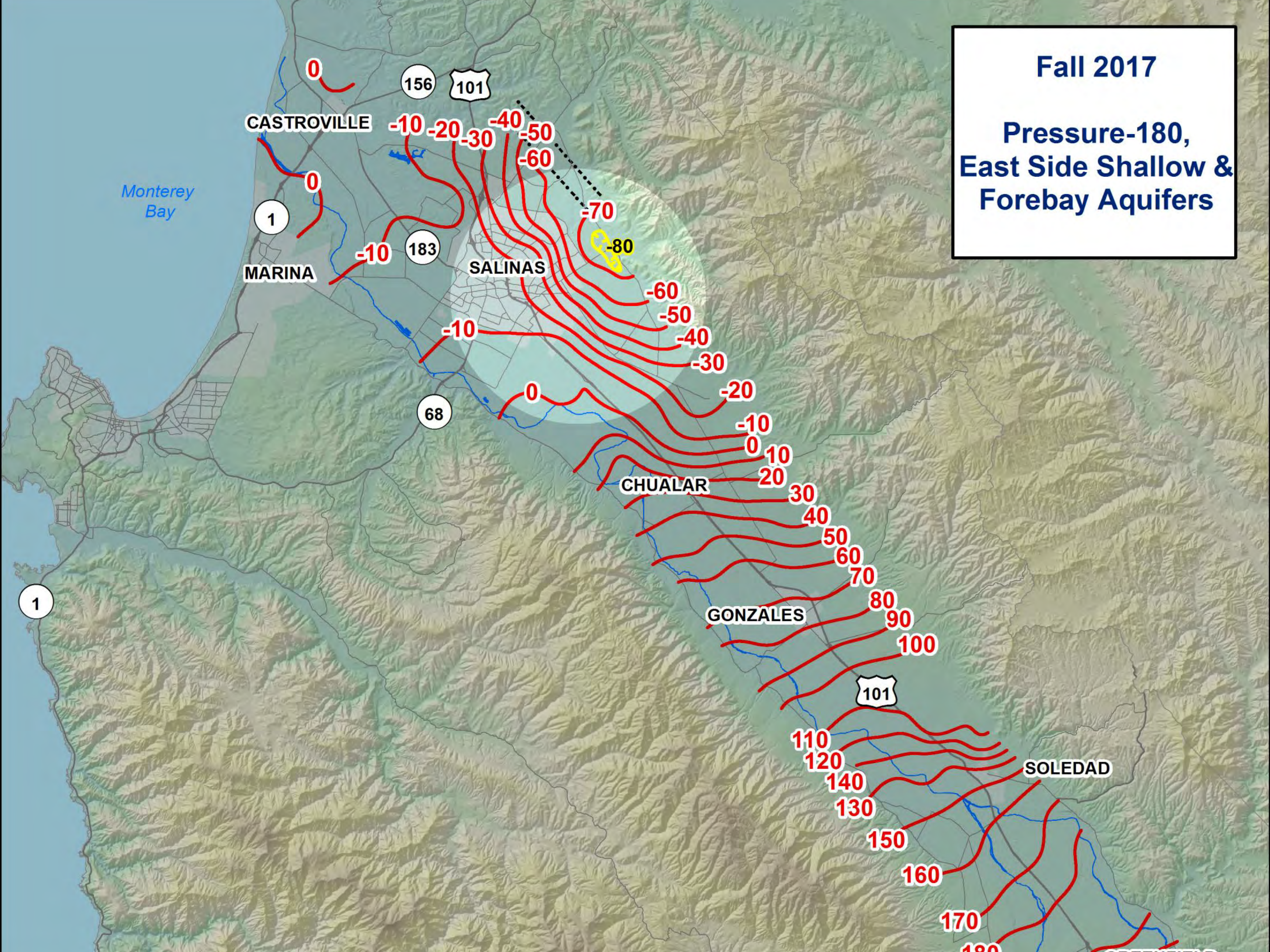
Fall 2017
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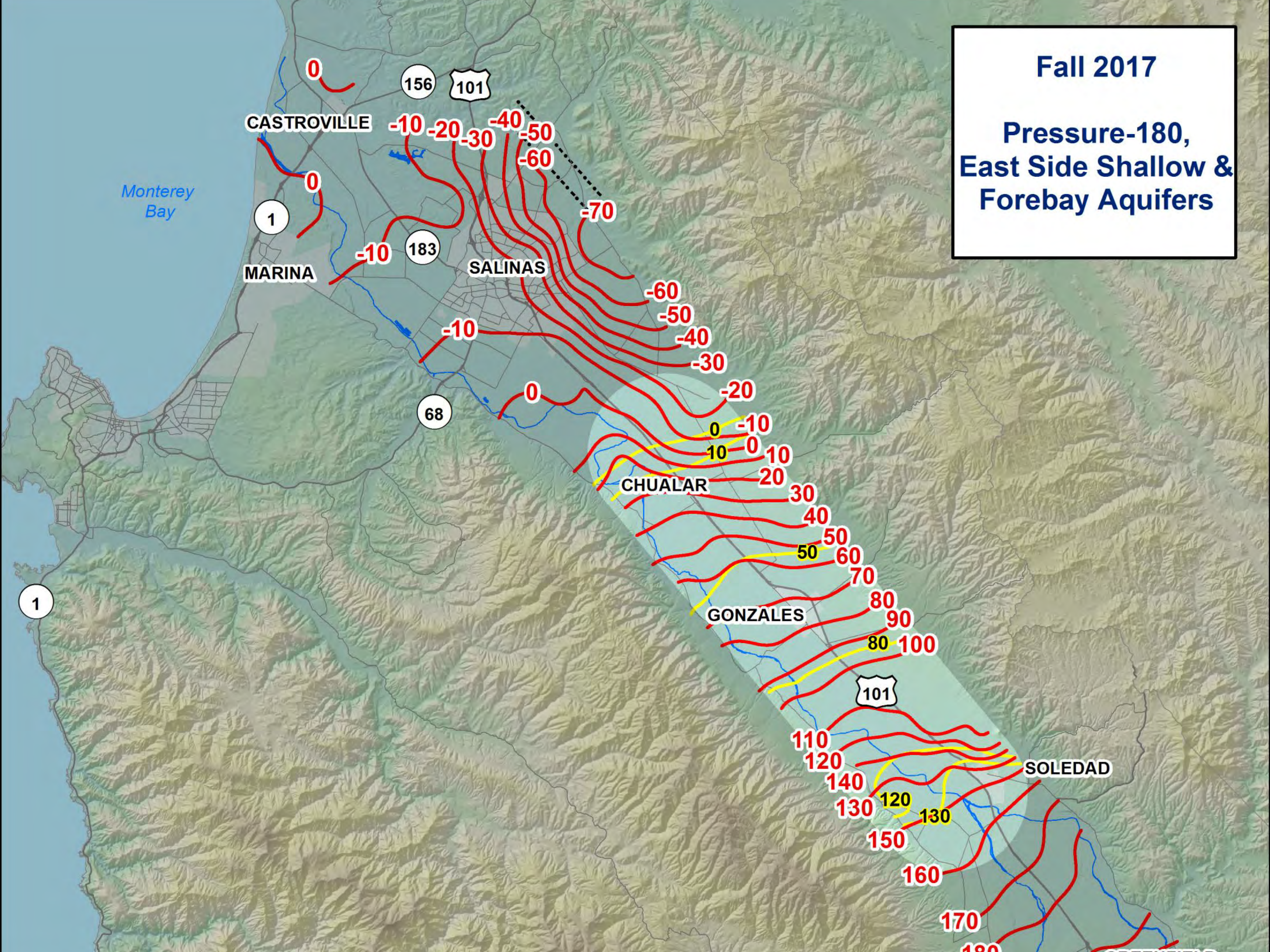
Fall 2017
Pressure-180, East Side Shallow & Forebay Aquifers
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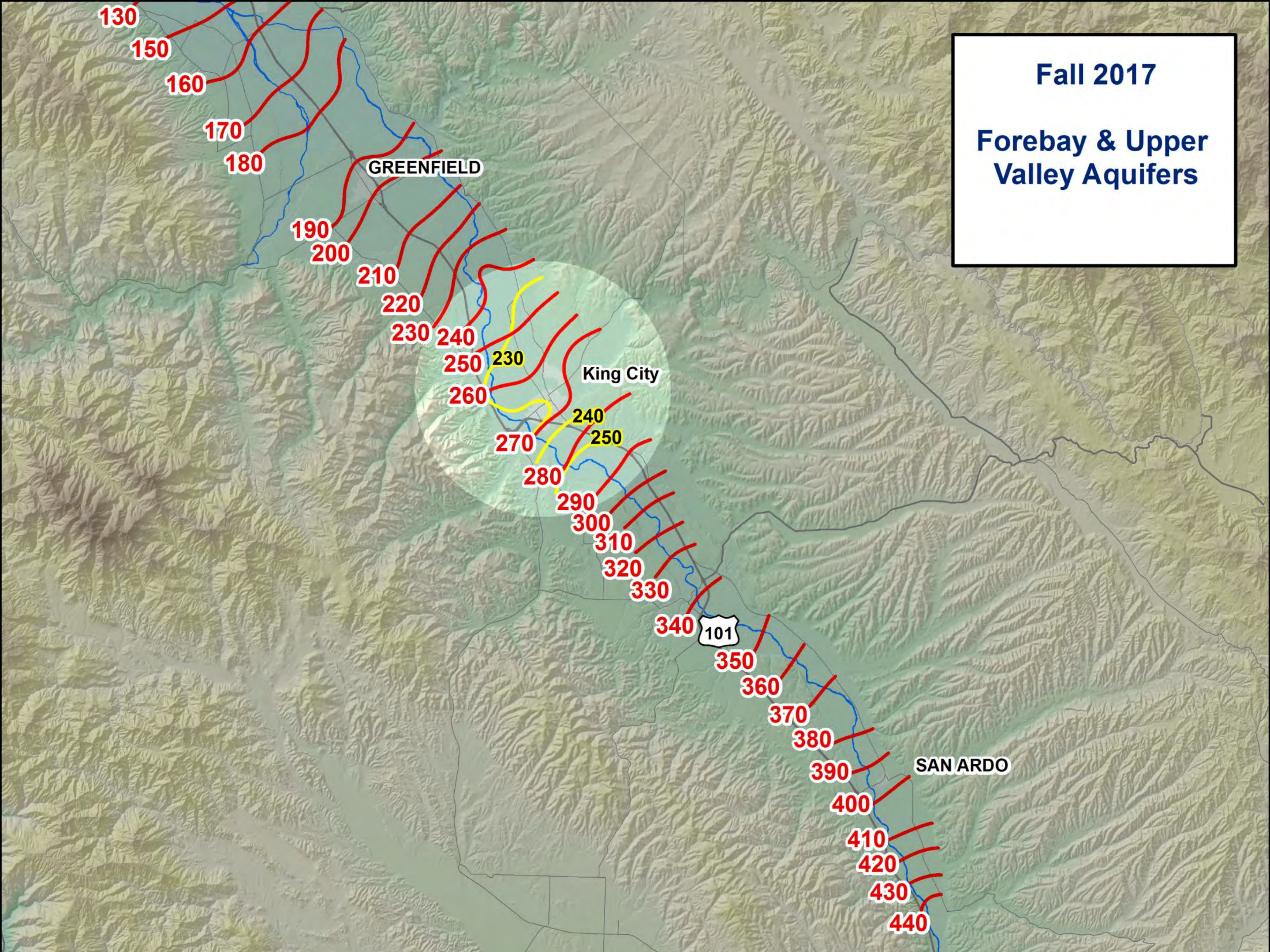
Fall 2017
Forebay & Upper Valley Aquifers
GREENFIELD
King City
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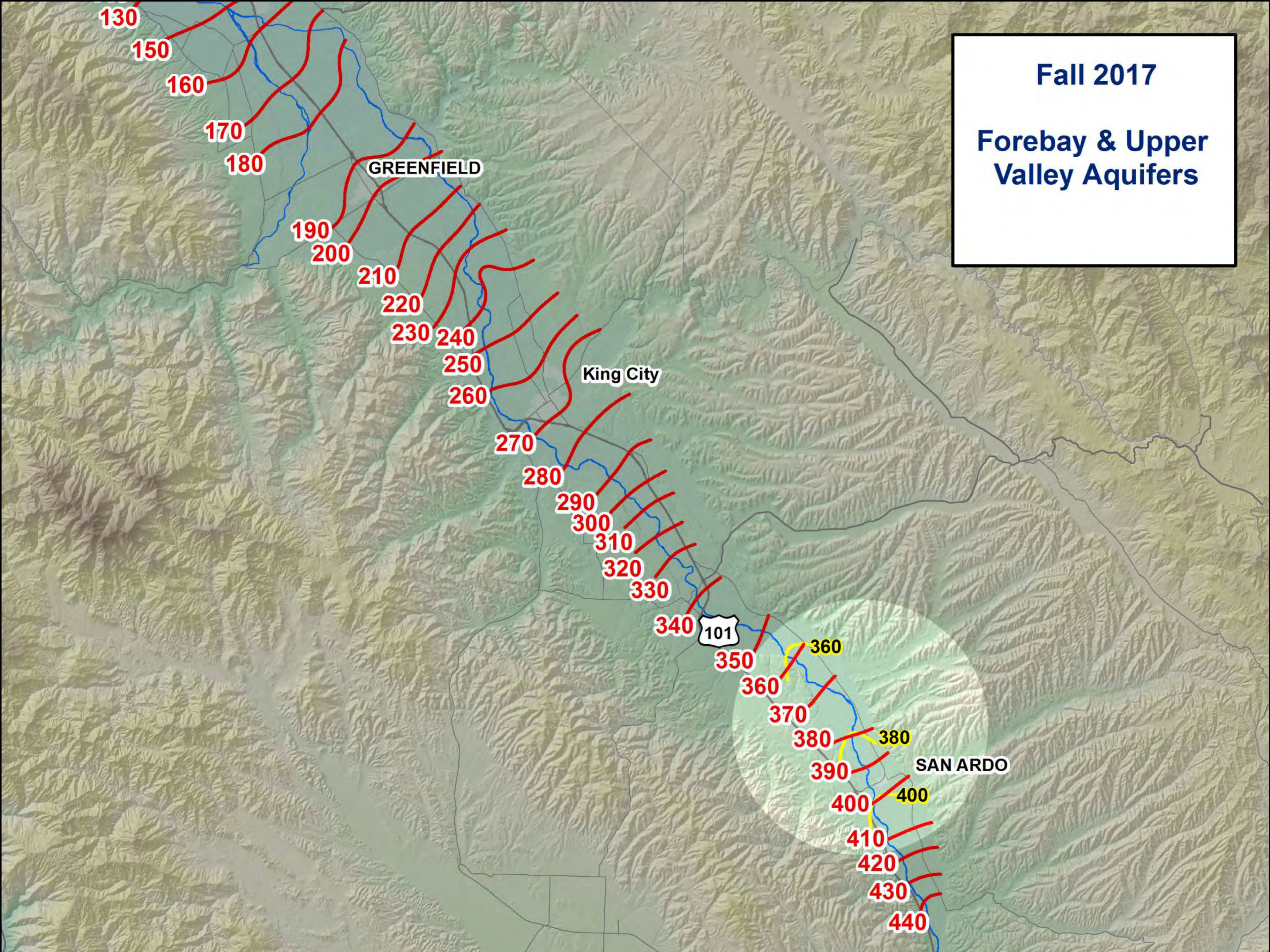
Fall 2017
Forebay & Upper Valley Aquifers
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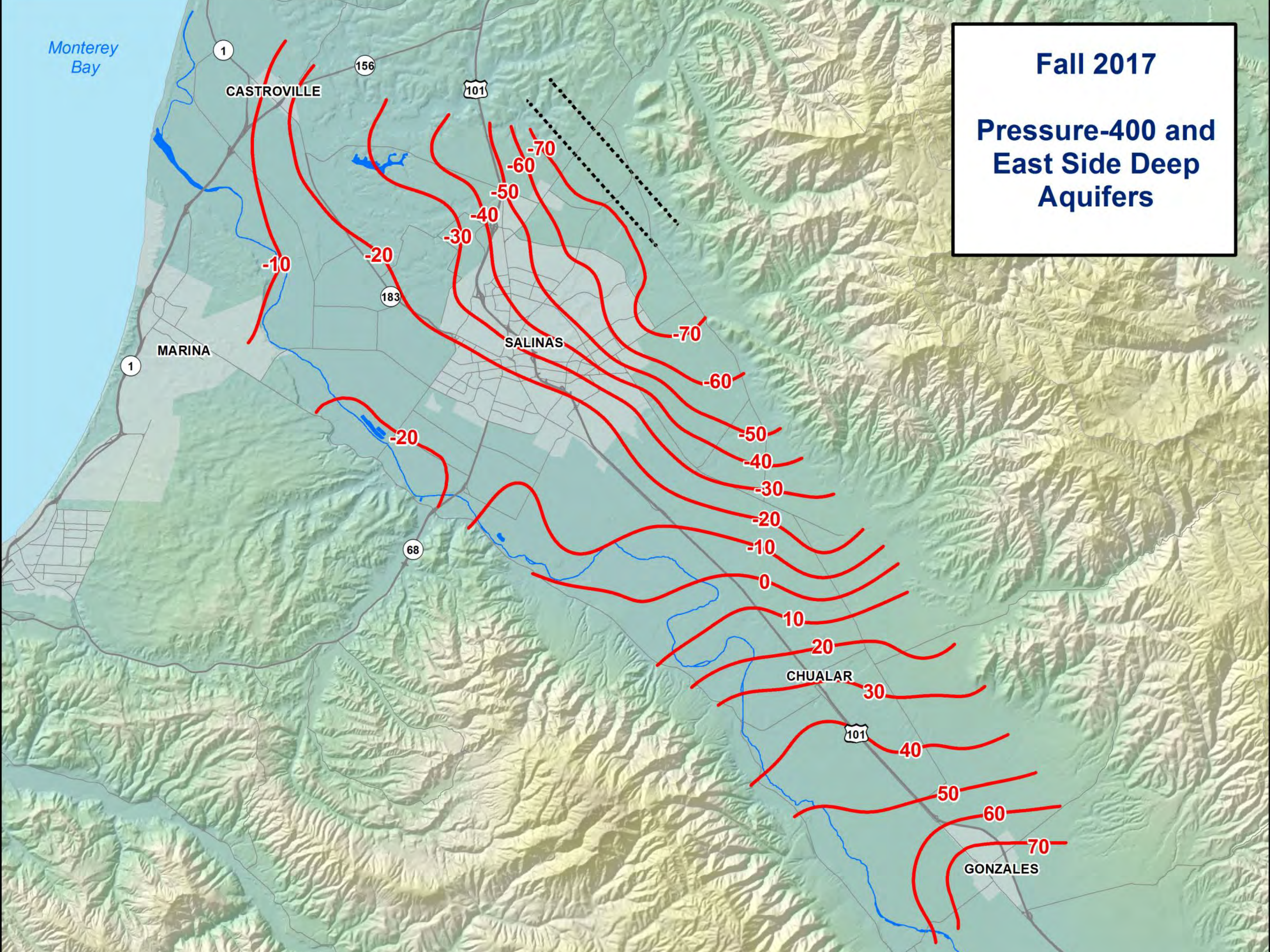

Fall 2017
Pressure-400 and East Side Deep Aquifers
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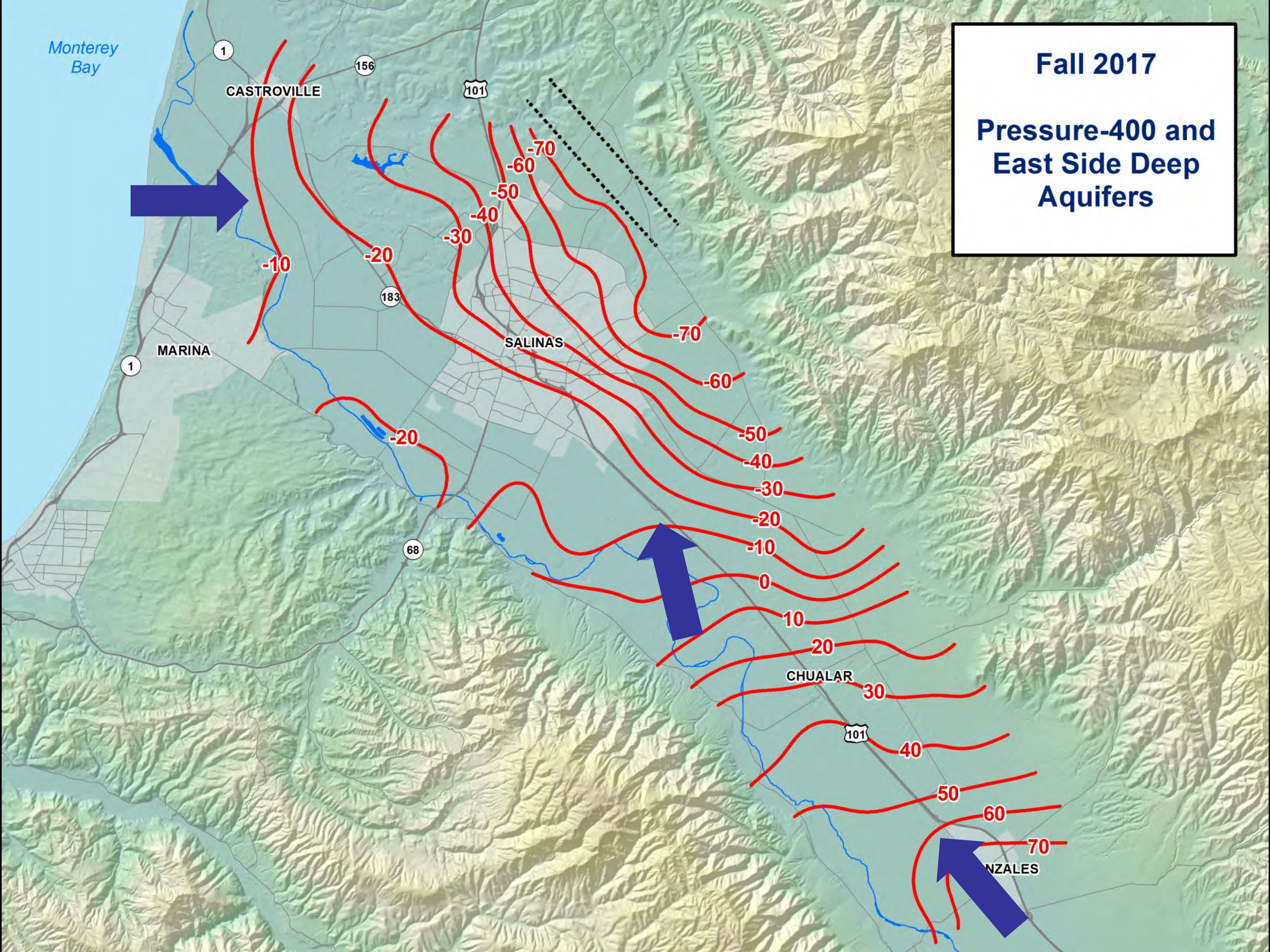

Fall 2017
Pressure-400 and East Side Deep Aquifers
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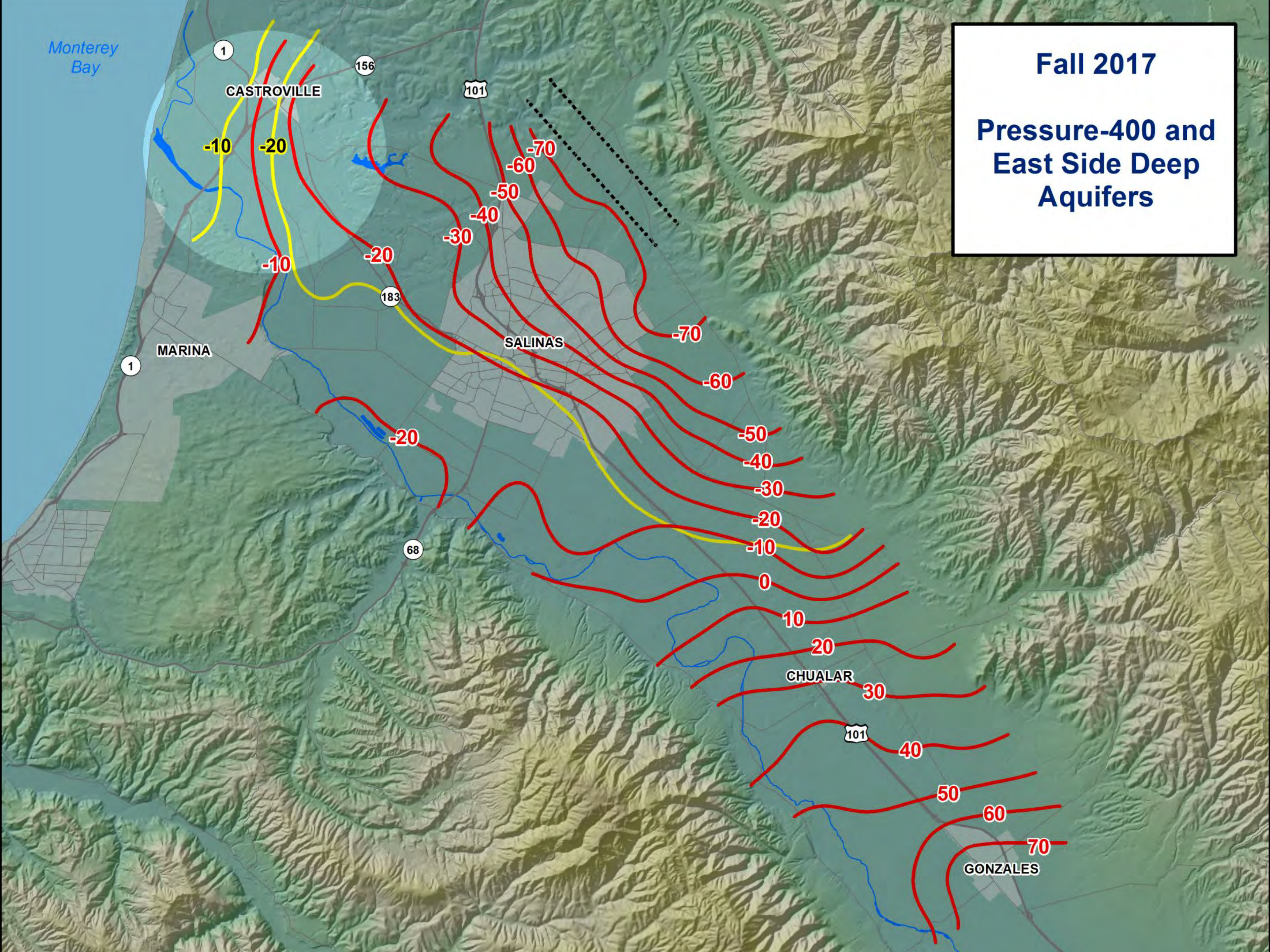

Fall 2017
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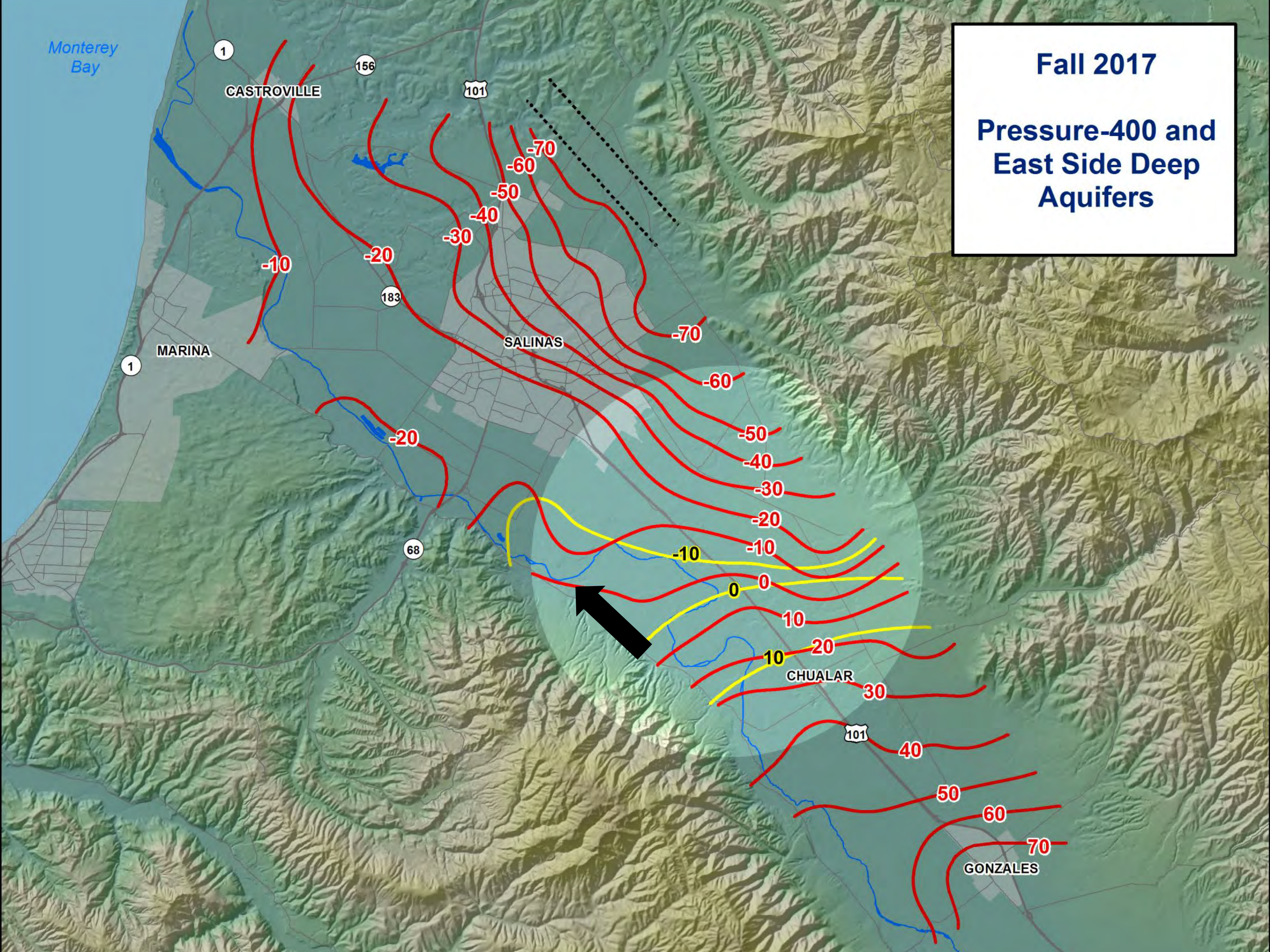
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Pressure-400 and East Side Deep Aquifers
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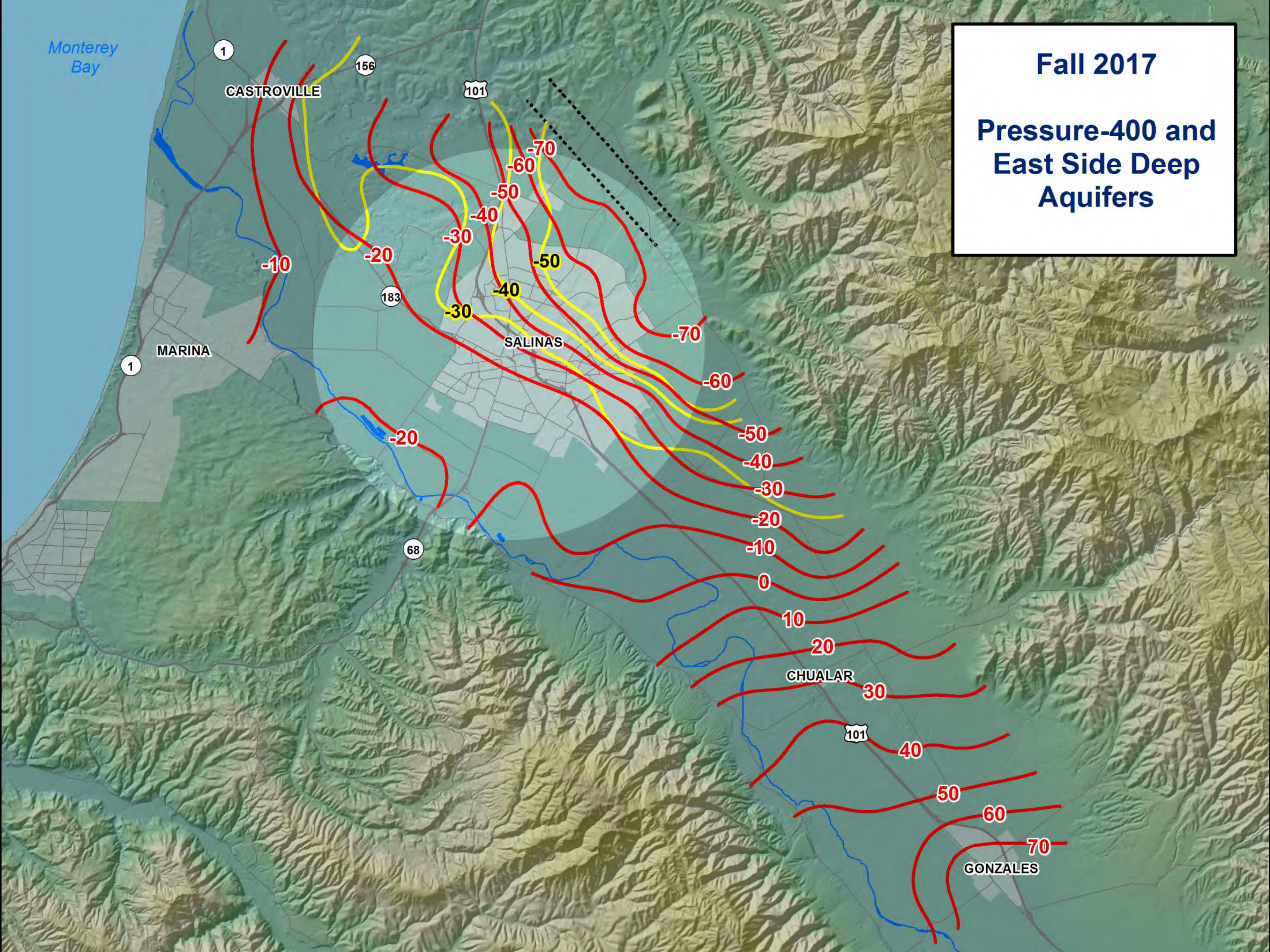
Fall 2017
Pressure-400 and East Side Deep Aquifers
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CASTROVILLE
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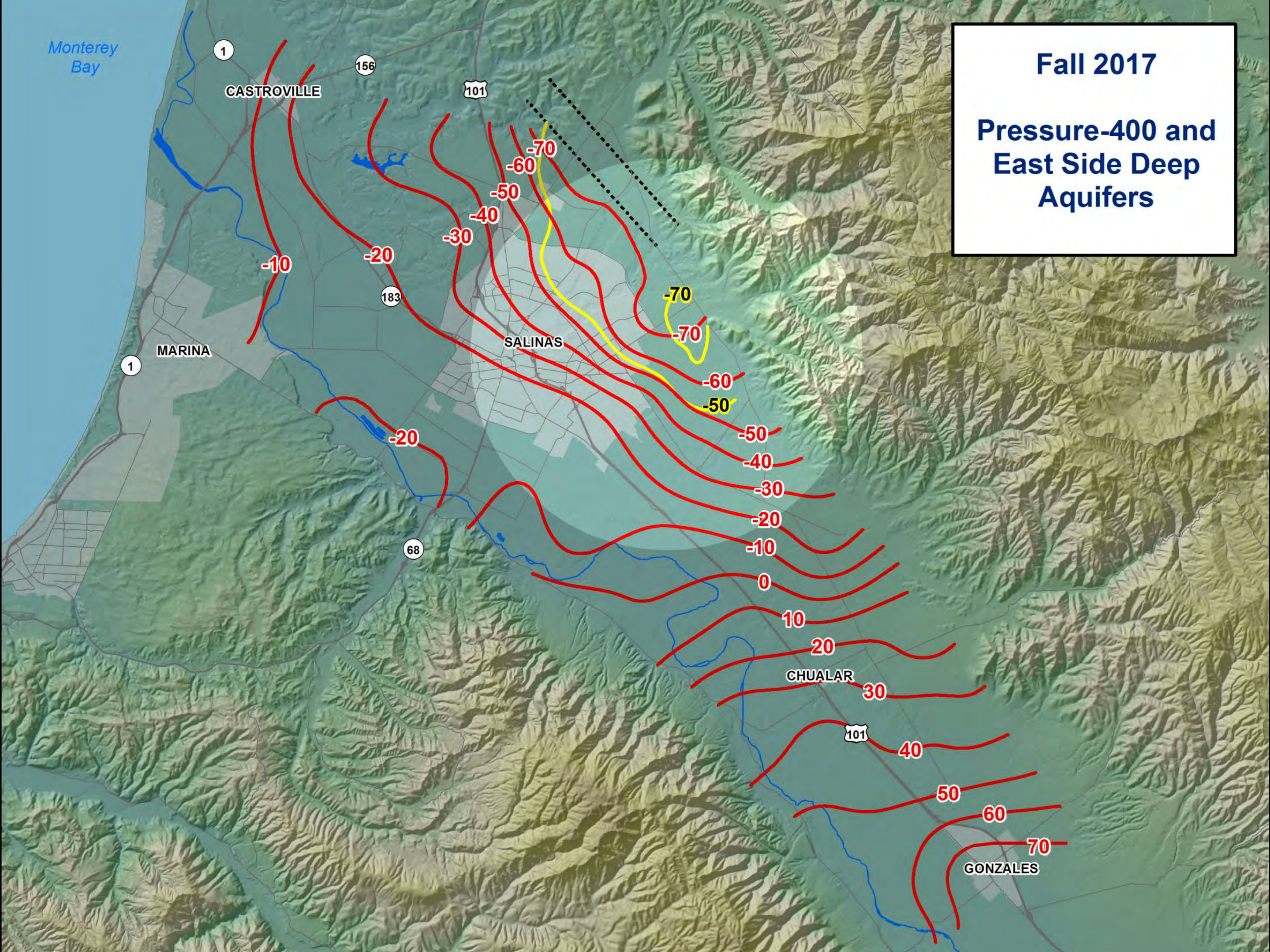
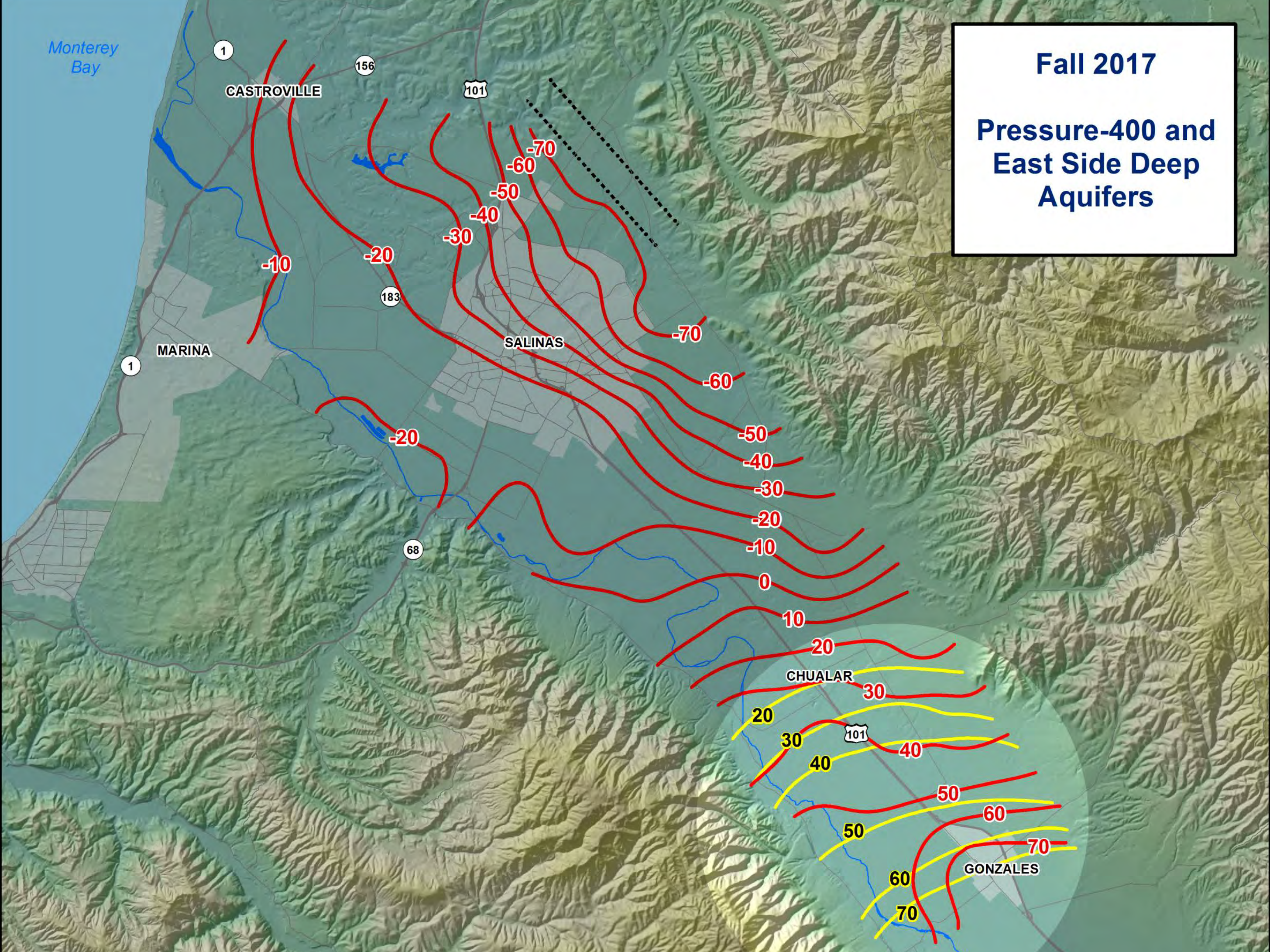


Fall 2017

Pressure-400 and East Side Deep Aquifers



Fall 2017
Pressure-400 and East Side Deep Aquifers
Monterey Bay
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Summary: 2017 Fall GWL Changes Since 2015

- P180, East Side Shallow, Forebay, Upper Valley Aquifers
  - ➢ Coastal GWLs: little to no change
  - ➢ East Side: trough 10 feet recovery
  - ➢ Zero line moved three miles down valley
  - ➢ Largest recoveries near King City (30ft)
  - ➢ San Lucas to San Ardo area: little change

Summary: 2017 Fall GWL Changes Since 2015

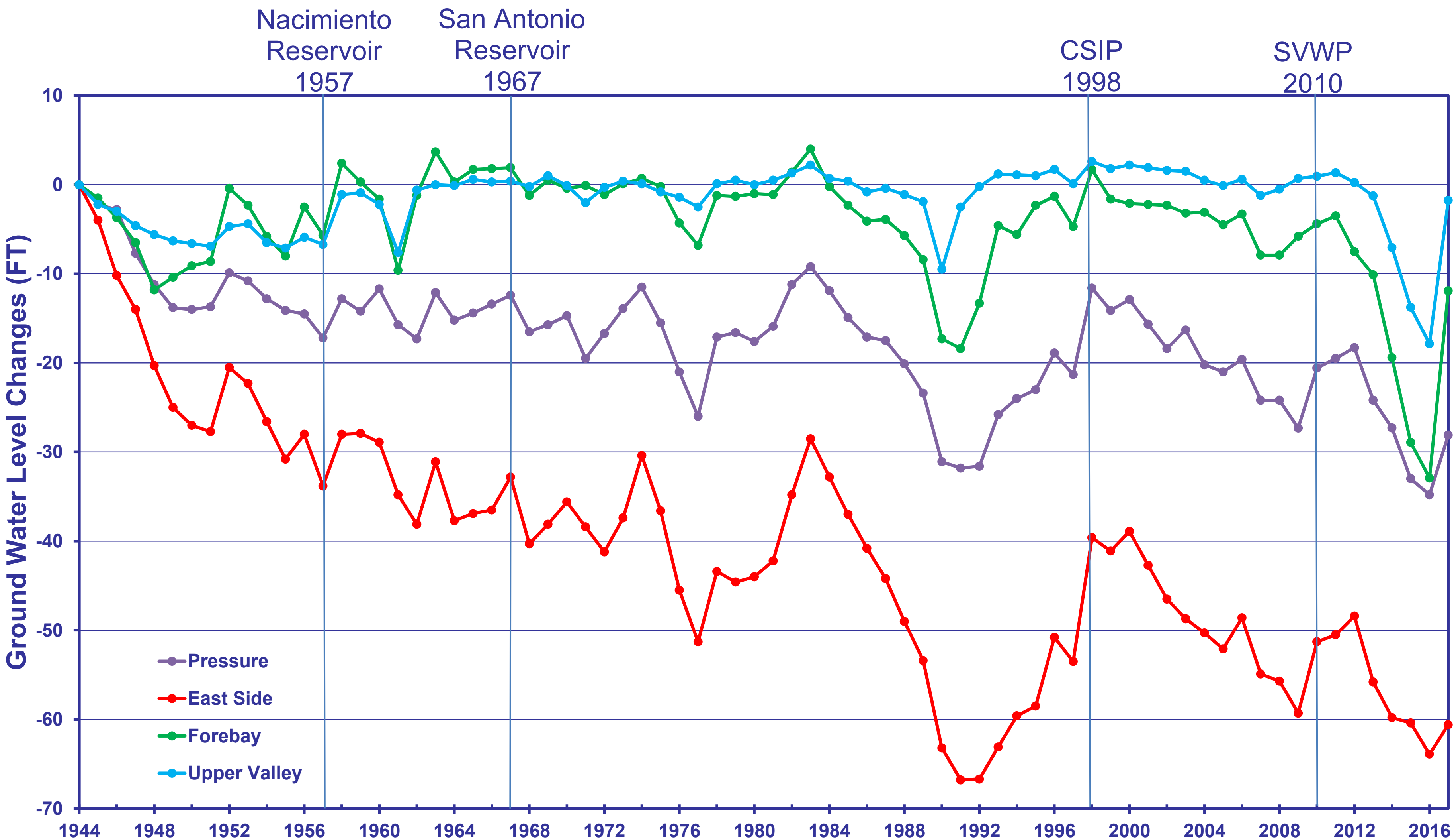
- P400, East Side Deep
  - Coastal GWLs: No change to 5ft higher
  - Salinas area: Little change
  - East Side: little to no change north, up to 10 ft recovery between Chualar & Gonzales
  - Zero line two miles down valley
  - 10 ft recovery near Chualar; little change near Gonzales

GWL Changes Since 1944

Fall data (1944-2017)

- Indicator of change in aquifer storage
- Approximately 400 GWL measurements
- 200-300 used for comparison
- Each Subarea represented by one value

Fall Groundwater Level Changes by Subarea



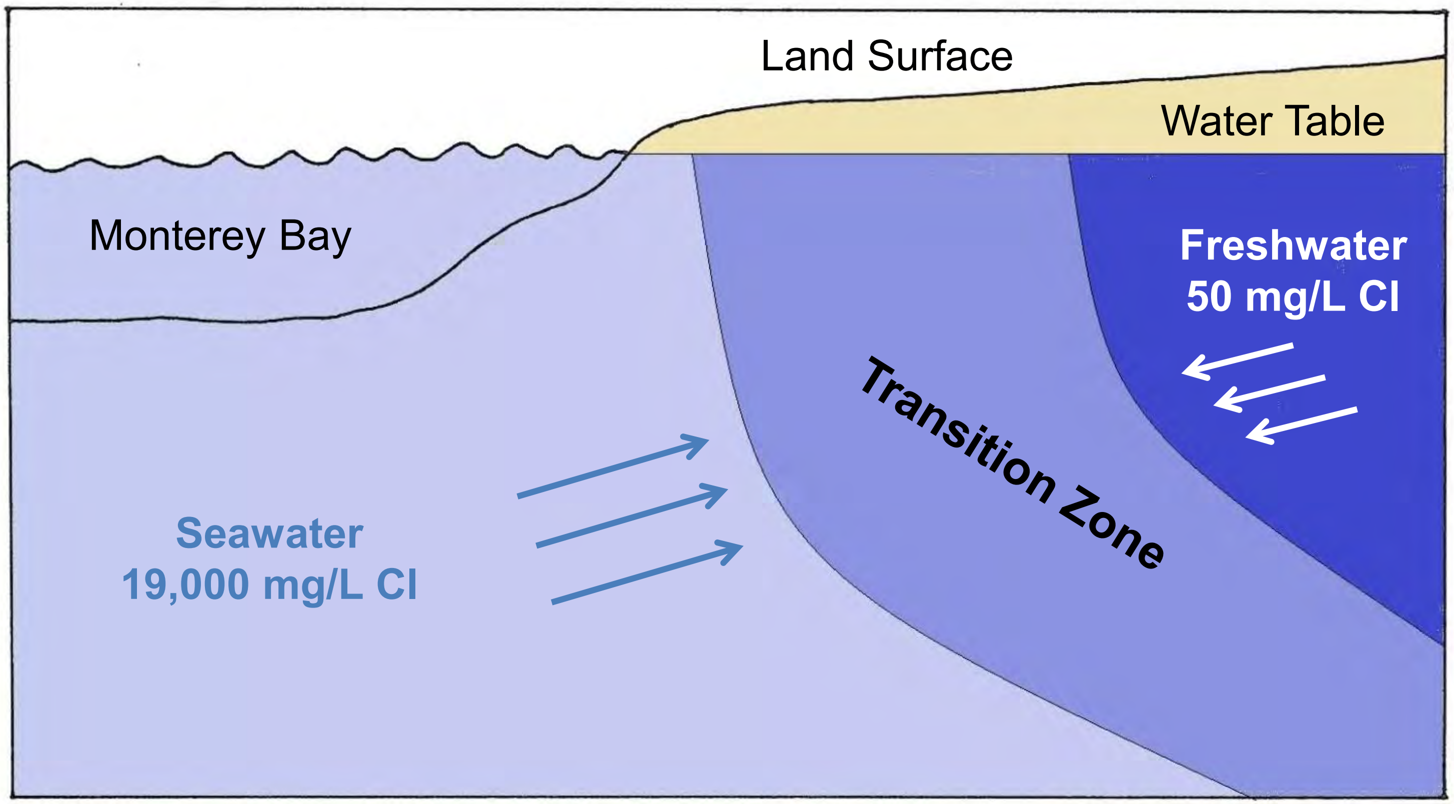
MONTEREY COUNTY WATER RESOURCES AGENCY

1947

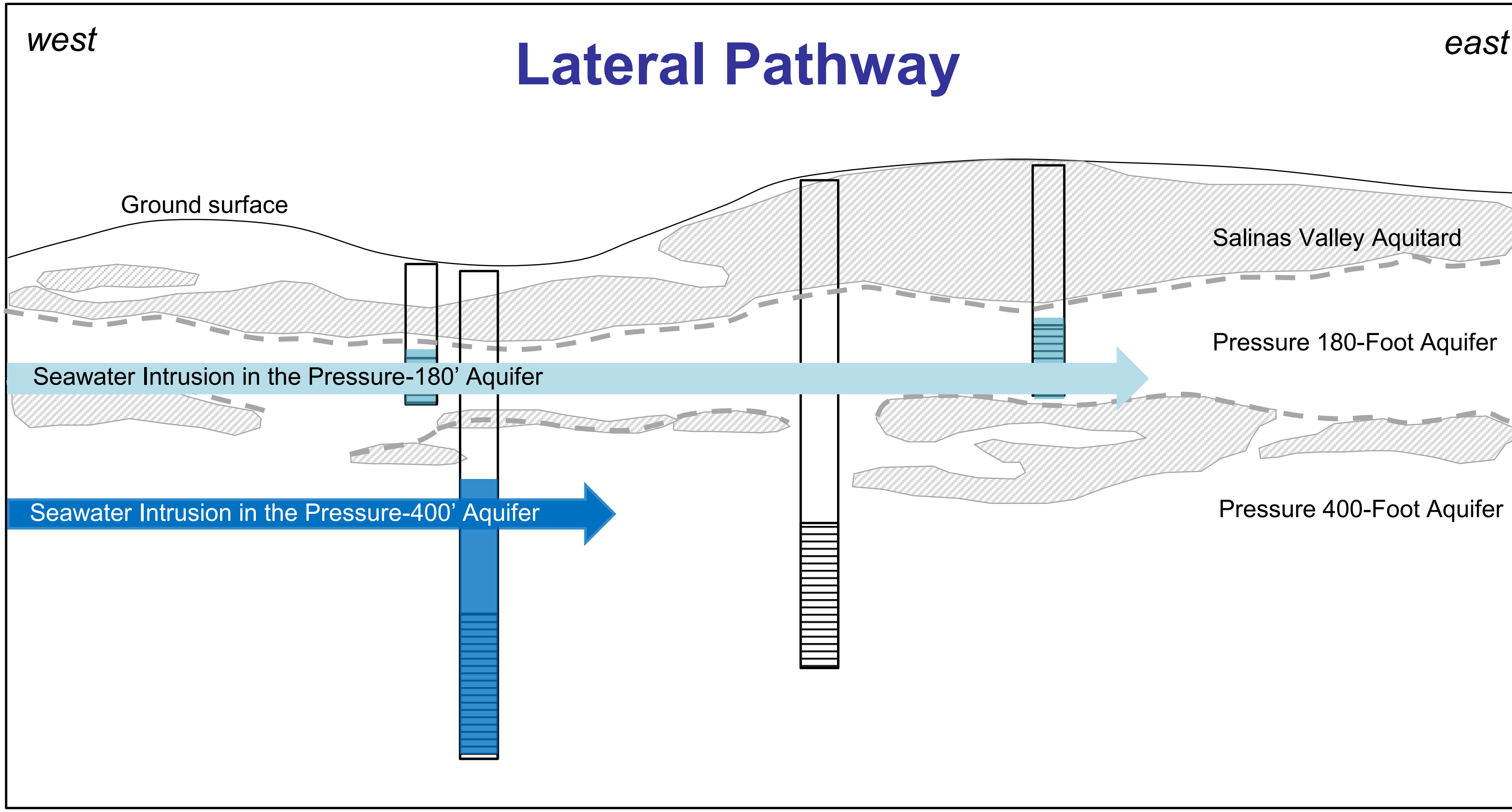
Coastal Salinas Valley Seawater Intrusion Maps

500 mg/L Chloride Contours
2017

Seawater Intrusion – Transition Zone



Seawater Intrusion – Pathways

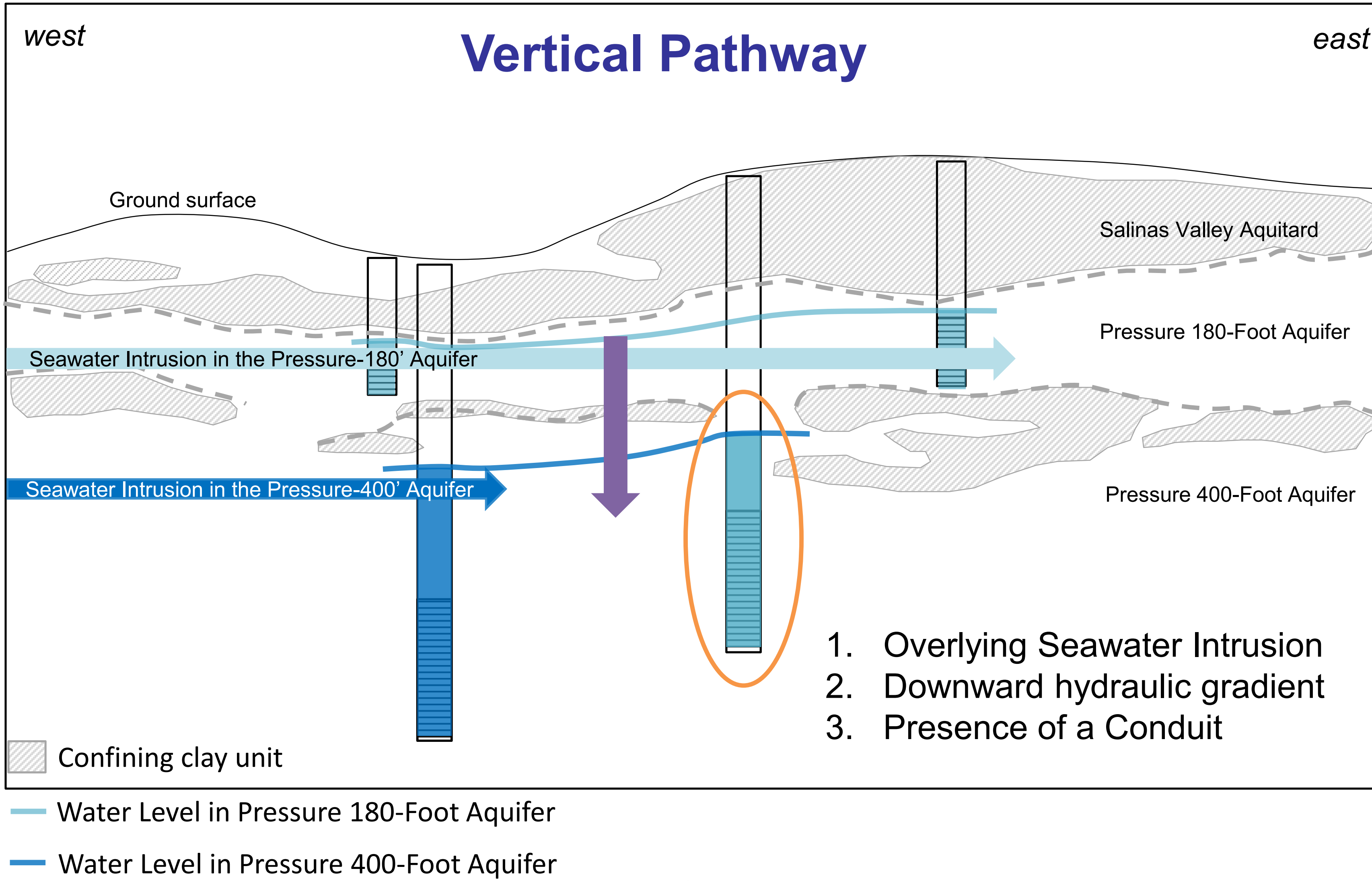


Confining clay unit

Water Level in Pressure 180-Foot Aquifer

Water Level in Pressure 400-Foot Aquifer

Seawater Intrusion – Pathways



Seawater Intrusion – Monitoring Program

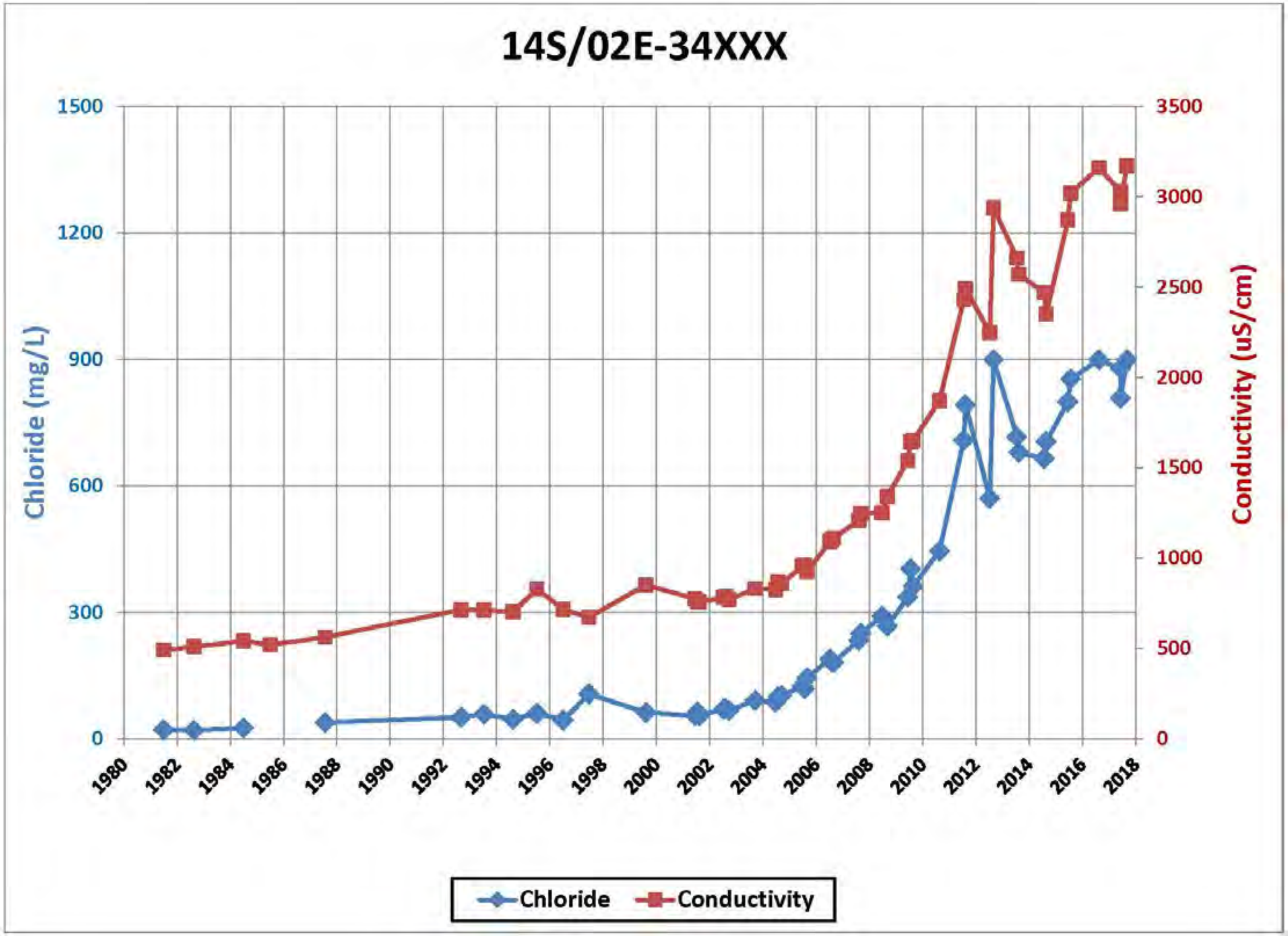
- Groundwater Wells
  - Sampled annually during peak pumping
  - 96 Agricultural wells sampled twice (Jun & Aug)
  - 25 Dedicated monitoring wells sampled
    - Agency’s wells and MPWSP wells
  - Analyzed for General Minerals

Seawater Intrusion – Analysis

- Data Evaluation
  - Historical Chloride & Conductivity Trends
  - Stiff and Piper Diagrams
  - Chloride Concentration vs. Na/Cl Molar Ratio Trends

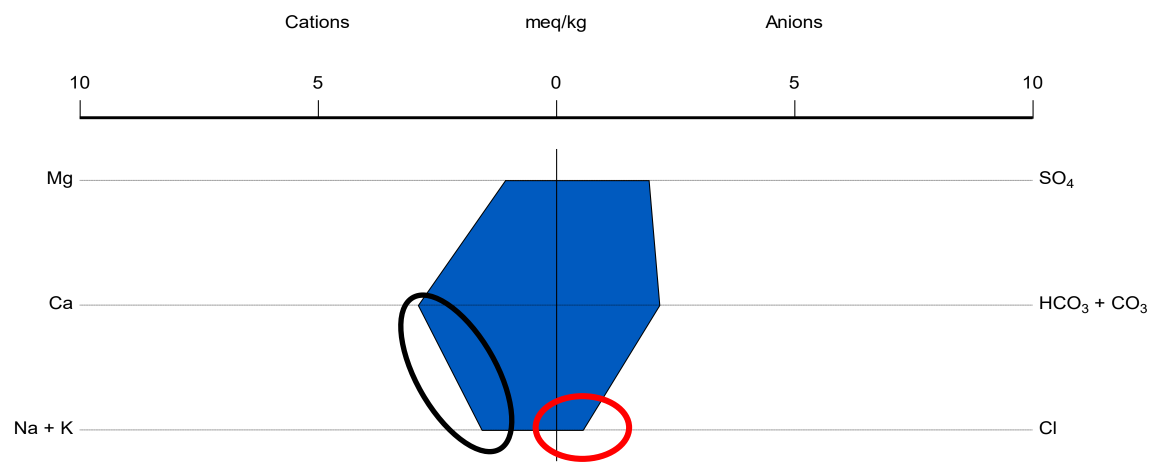
- Data Development Process
  - Water Quality
  - Well Construction
  - Well Pumping Data
  - Ground Water Level Contours

Chloride & Conductivity Time Series Indicating Intrusion

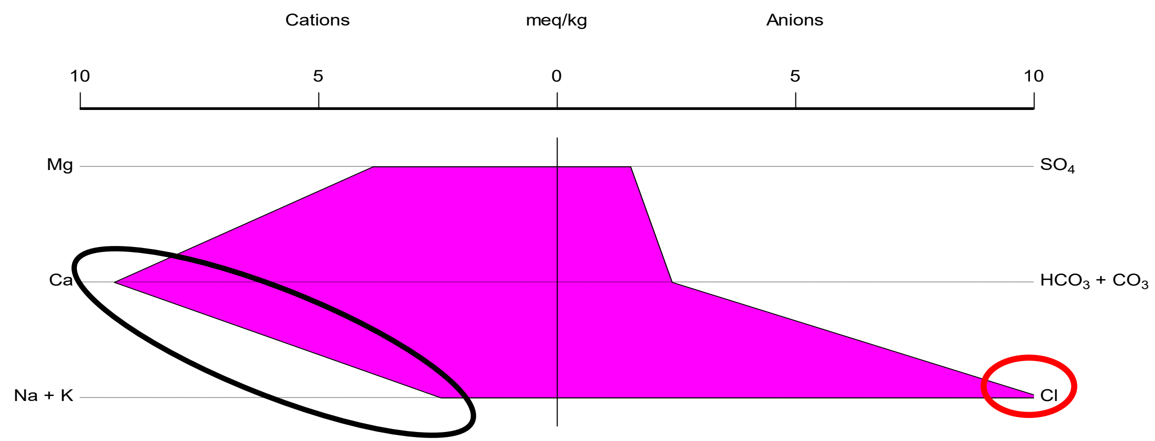


Stiff Diagrams

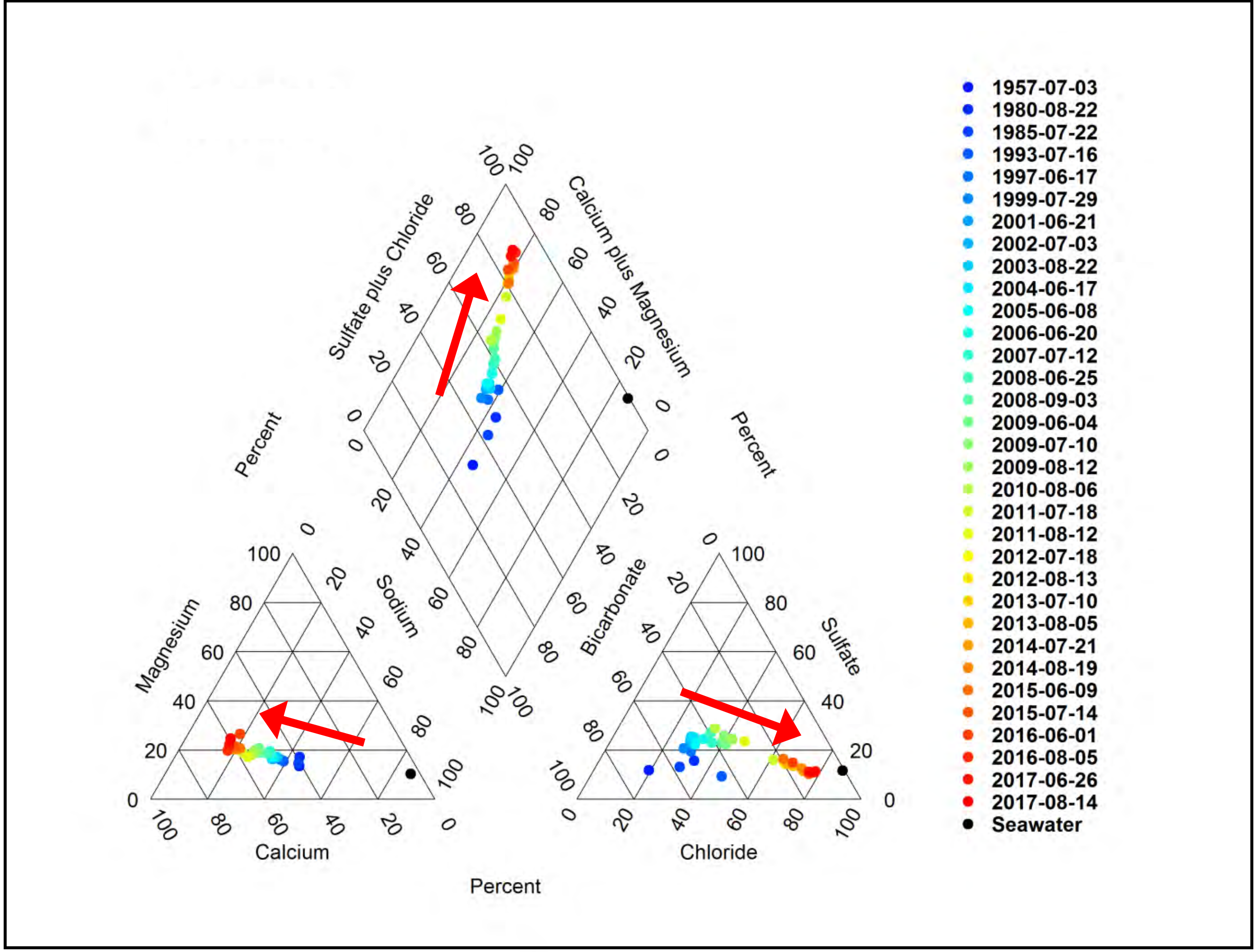
No Intrusion - 1982



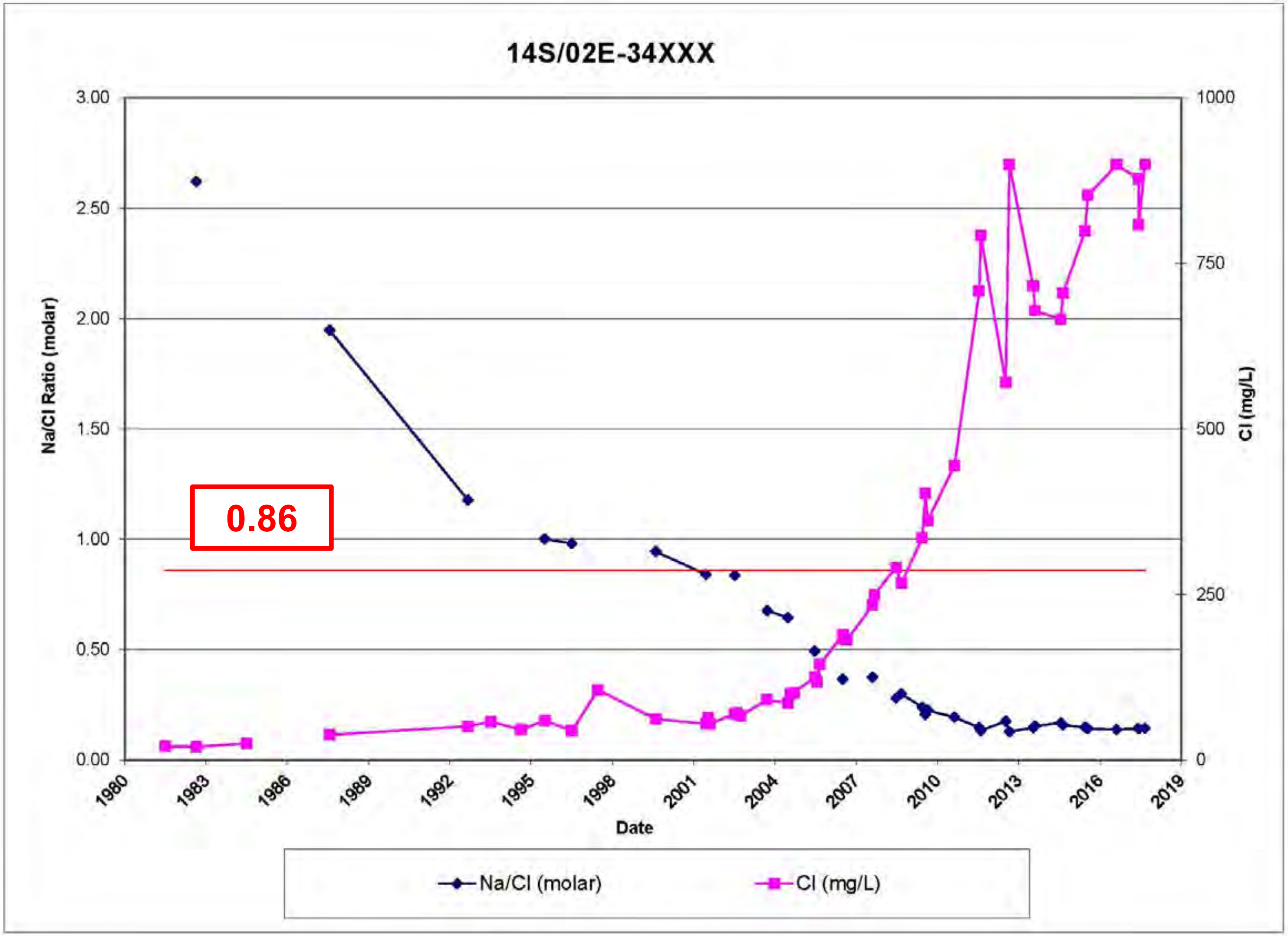
Early Intrusion - 2009



Piper Diagram
Indicating Phase-I Intrusion



Chloride vs. Na/Cl Molar Ratio

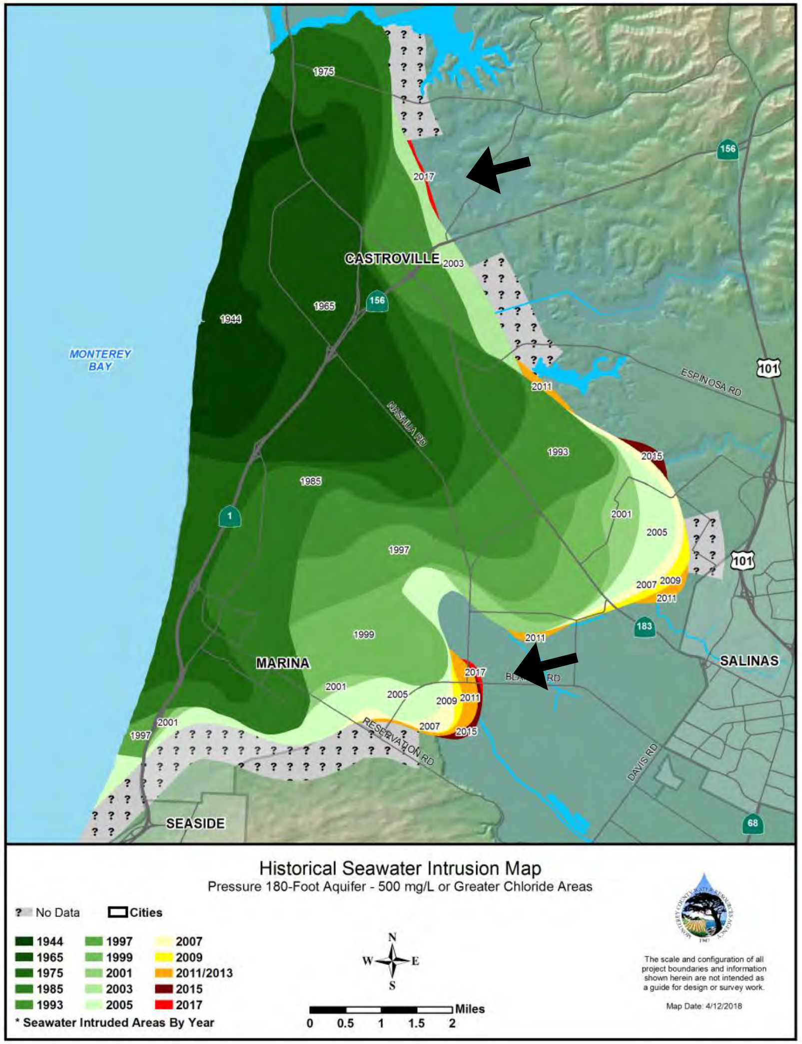


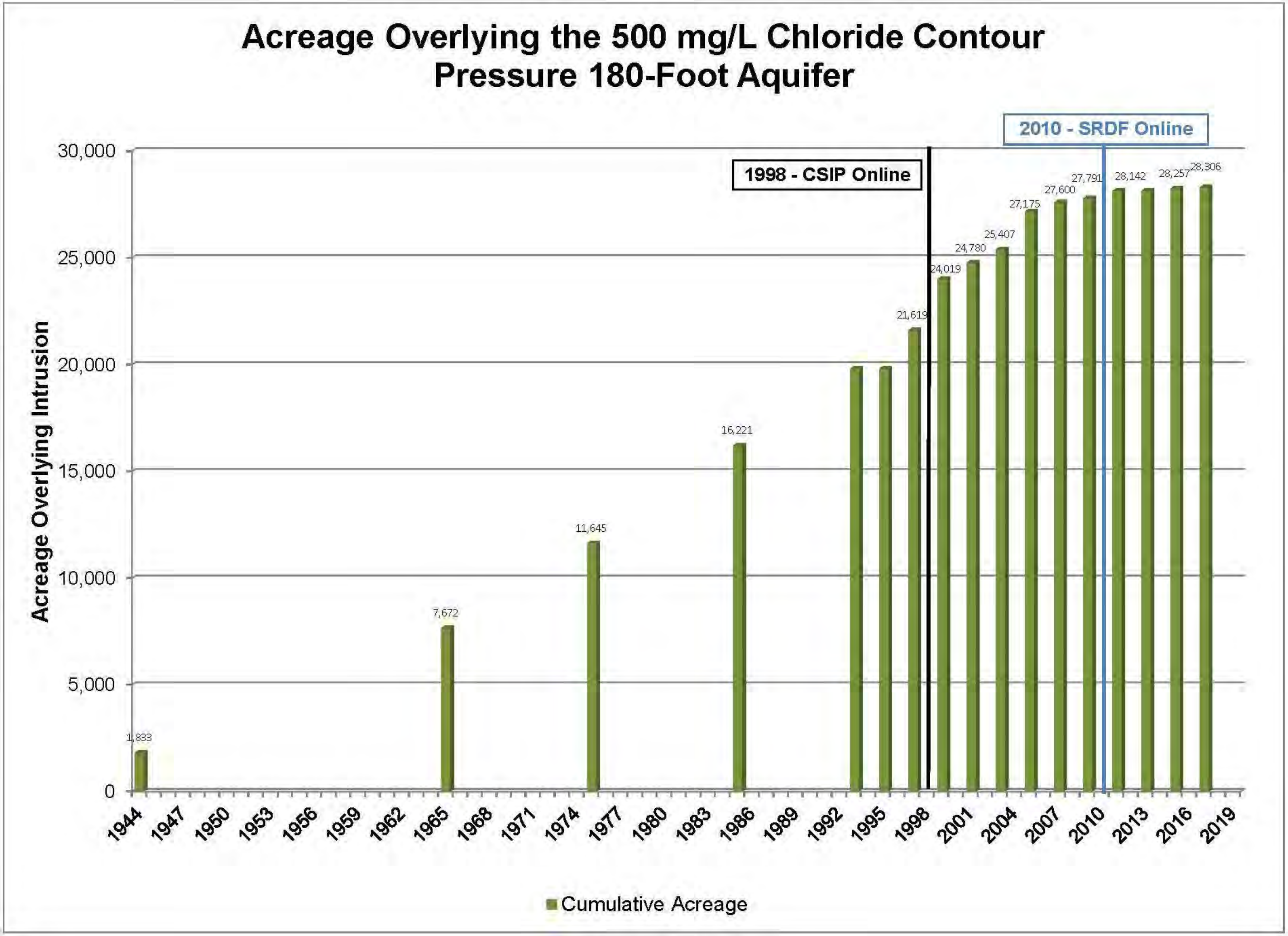
Seawater Intrusion – Data Processing

- Lab Results are Evaluated & Uploaded into WRAIMS Database Annually

- 500 mg/L Contours are Developed from the Odd Year Data & Added to the Historical SWI Maps

2017 Pressure 180-Foot Aquifer 500 mg/L Chloride Areas




Acreage Overlying the 500 mg/L Chloride Contour
Pressure 180-Foot Aquifer
2010 - SRDF Online
1998 - CSIP Online
Acreage Overlying Intrusion
30,000
25,000
20,000
15,000
10,000
5,000
0
1,833
7,672
11,645
16,221
21,619
24,019
24,780
25,407
27,175
27,600
27,791
28,142
28,257
28,306
1944
1947
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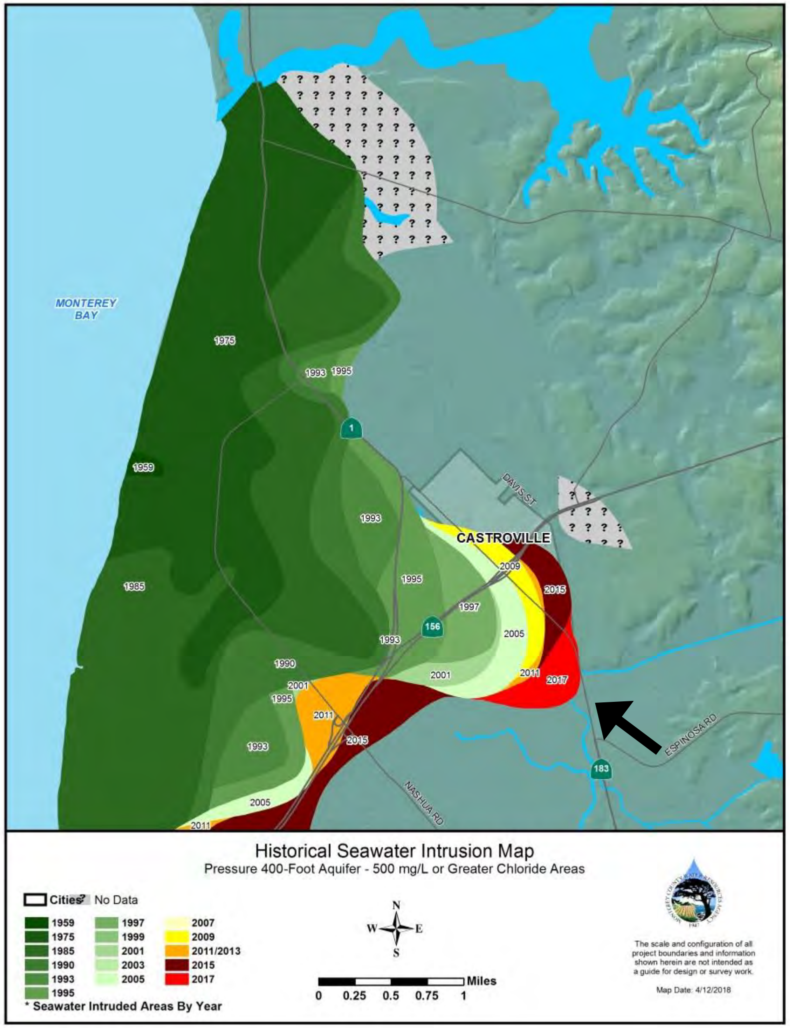
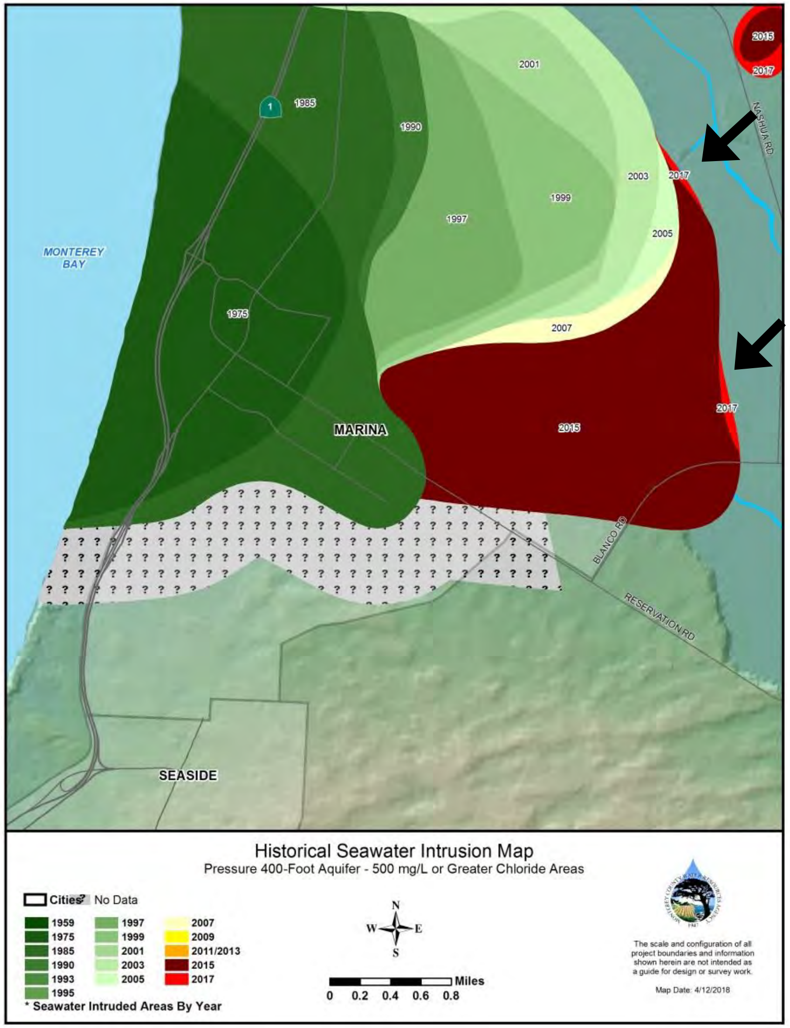
2010
2013
2016
2019
Cumulative Acreage

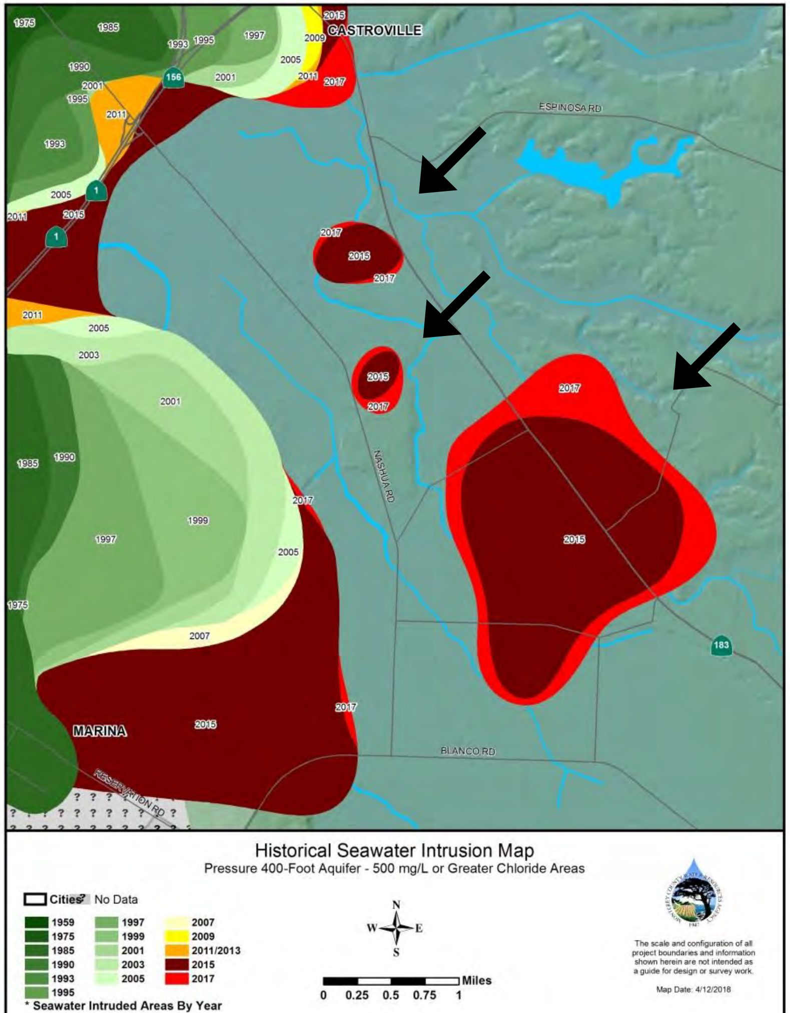
2017 Pressure 400-Foot Aquifer 500 mg/L Chloride Areas



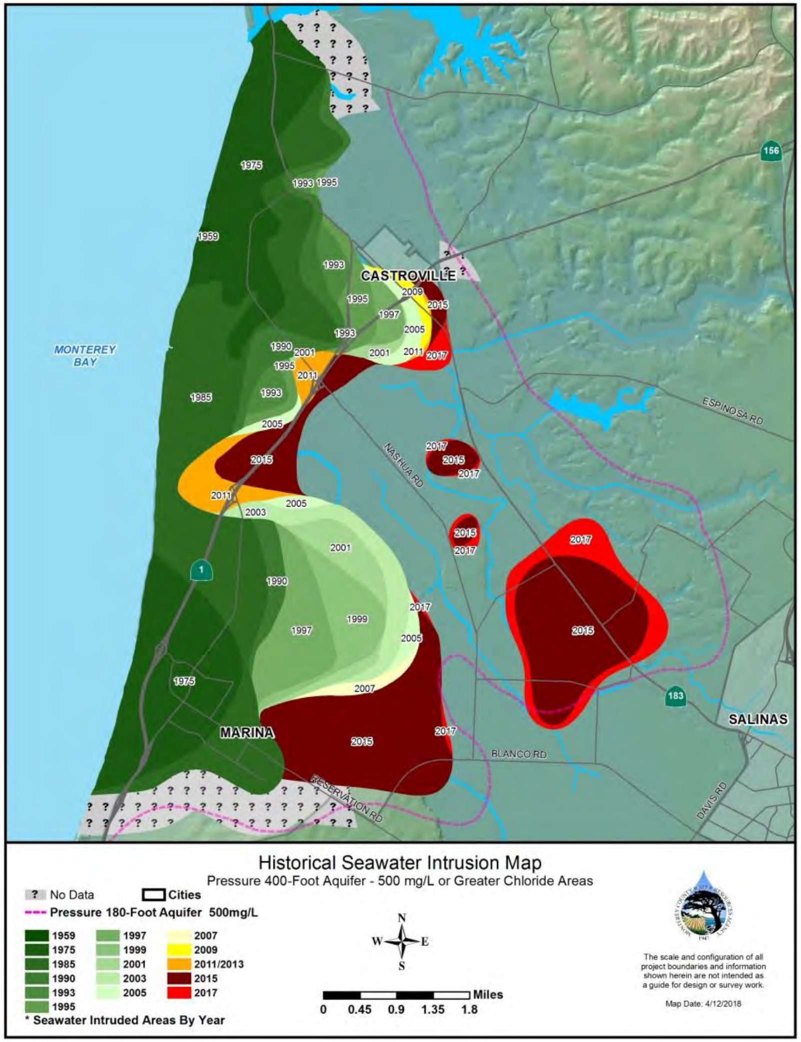
2017 Pressure 400-Foot Aquifer 500 mg/L Chloride Areas

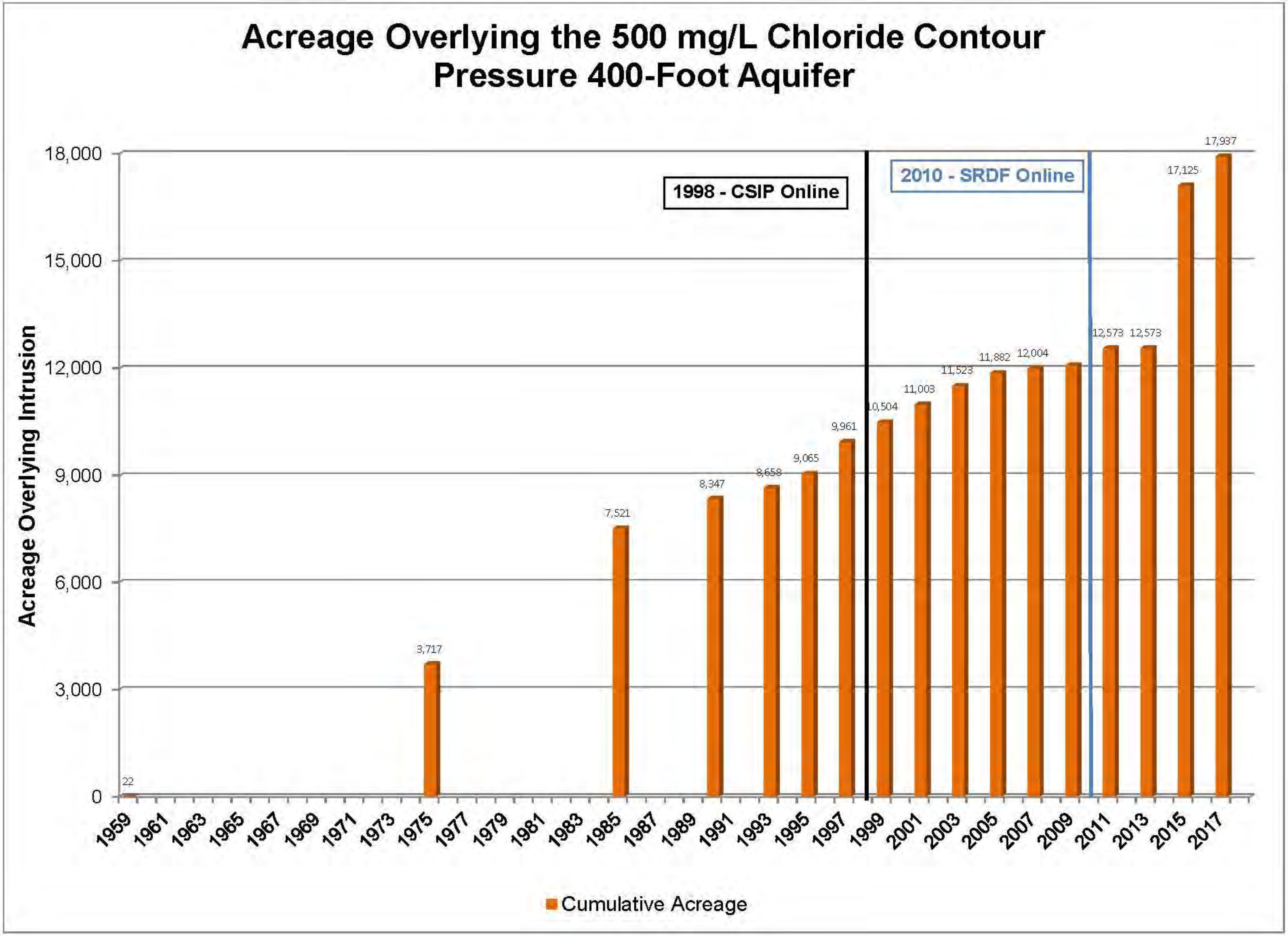


2017 Pressure 400-Foot Aquifer 500 mg/L Chloride Areas



2017 Pressure 400-Foot Aquifer 500 mg/L Chloride Areas





Acreage Overlying the 500 mg/L Chloride Contour
Pressure 400-Foot Aquifer
Acreage Overlying Intrusion
1998 - CSIP Online
2010 - SRDF Online
18,000
15,000
12,000
9,000
6,000
3,000
0
22
3,717
7,521
8,347
8,658
9,065
9,961
10,504
11,003
11,523
11,882
12,004
12,573
12,573
17,125
17,937
Cumulative Acreage

Conclusion

Pressure 180-Ft Contours

- Rate of SWI Continues to Decrease
- Minimal Advancement
- Minimal Lobe Broadening

Pressure 400-Ft Contours

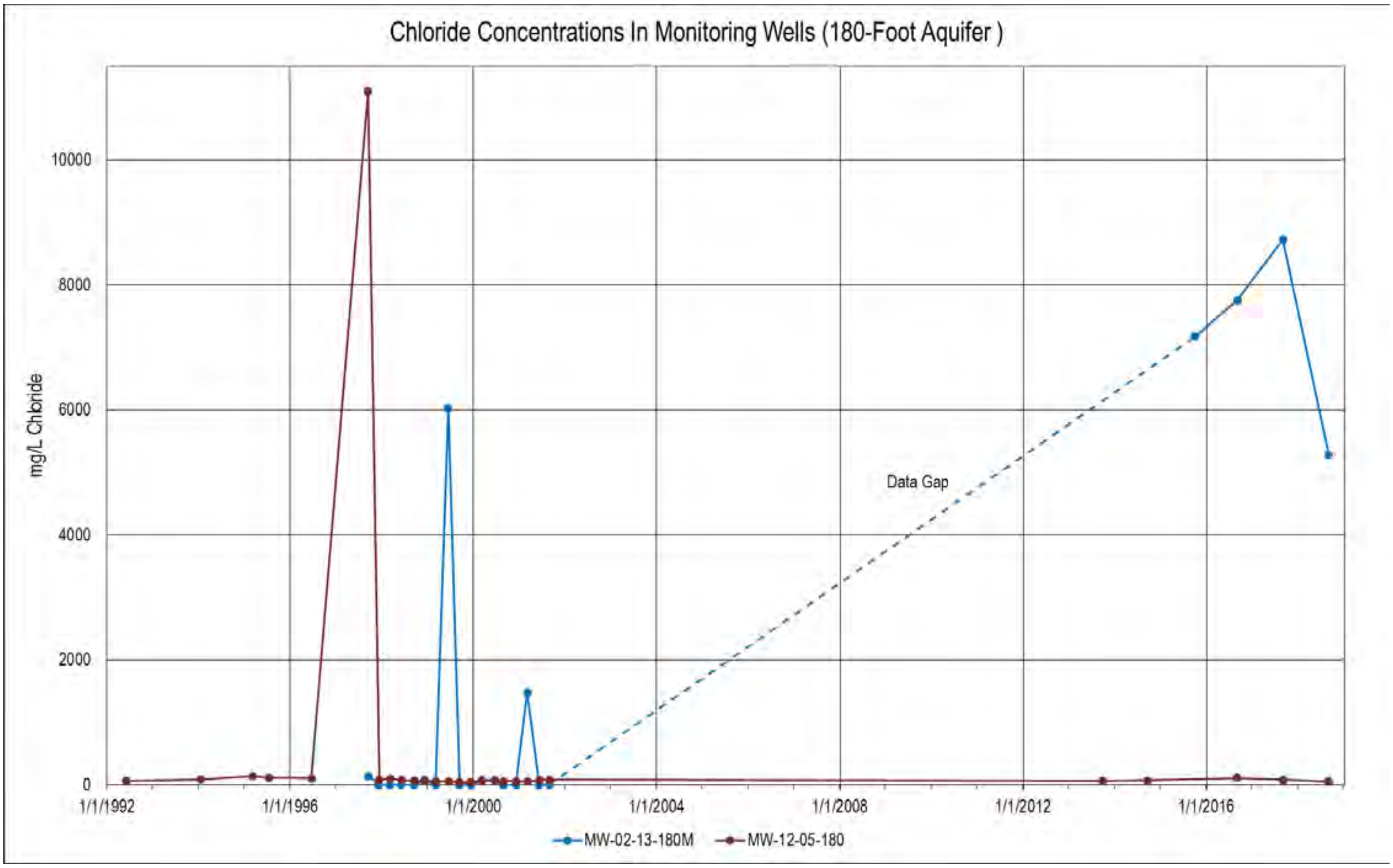
- Continued Lobe Broadening
- Expansion of the Intruded WQ in Front of the 500 mg/L Contour (“Islands)
- Minimal Advancement

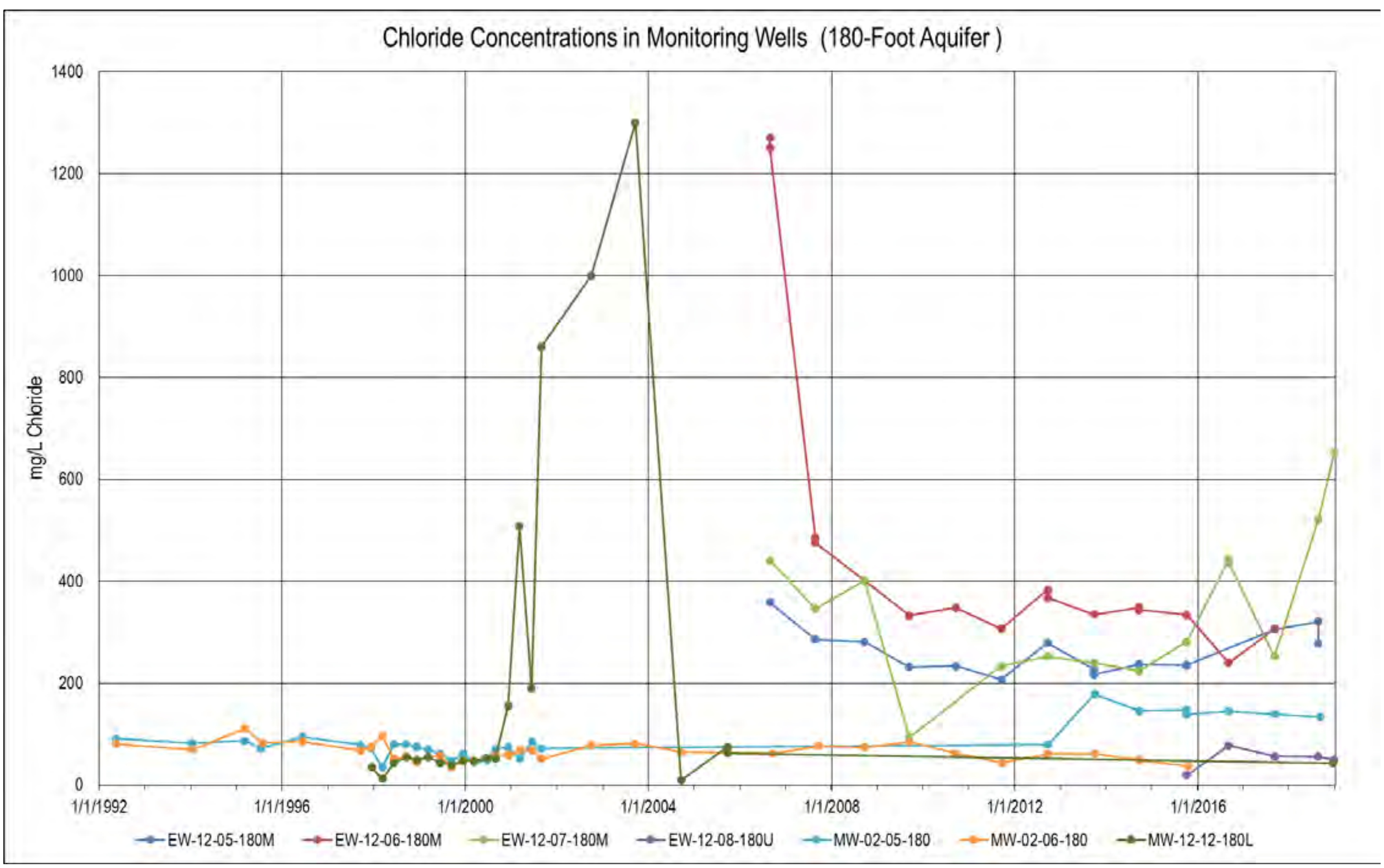
TODAY'S ACTION

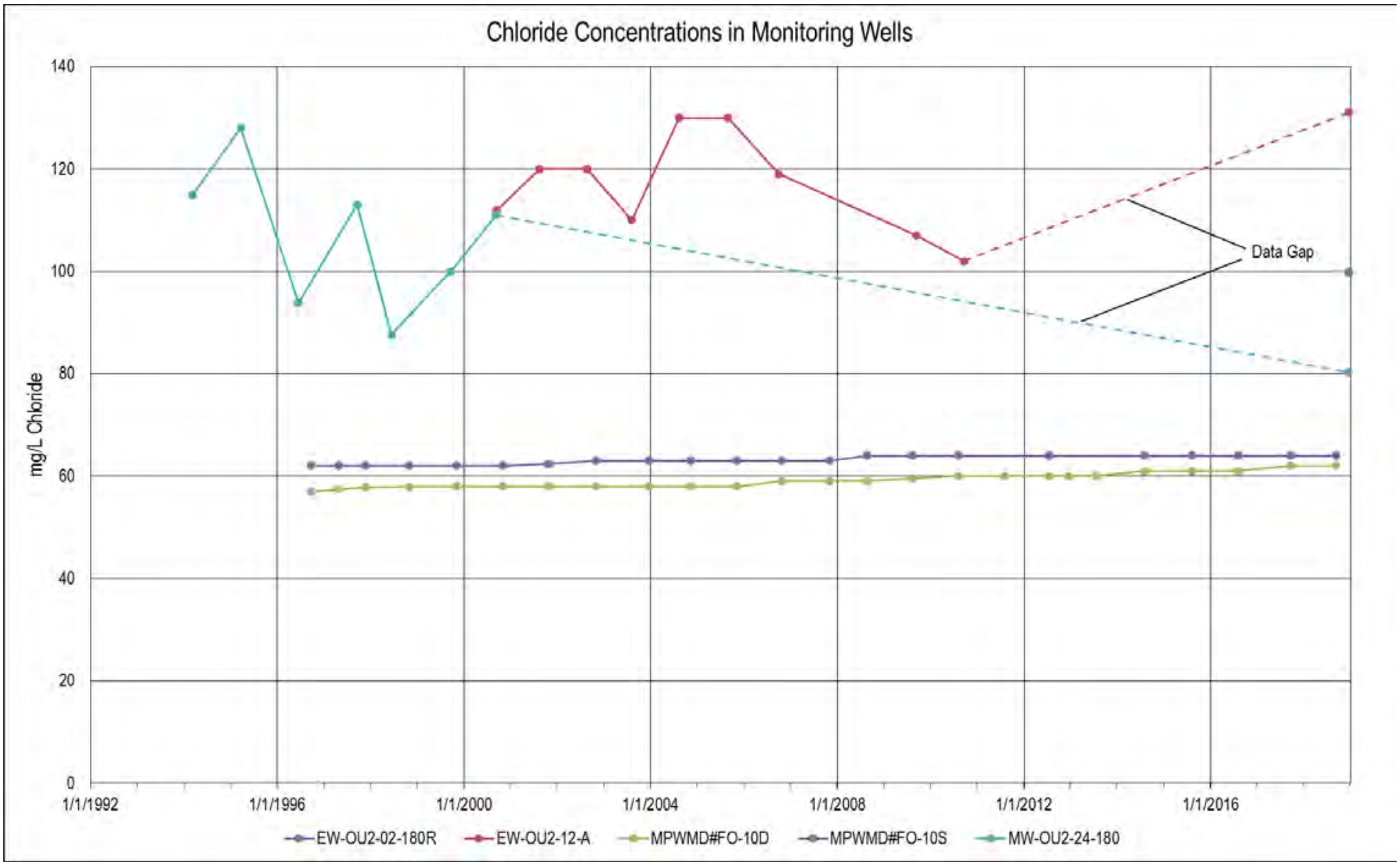
Consider Receiving the
2017 Groundwater Level Contours and
Coastal Salinas Valley
Seawater Intrusion Maps

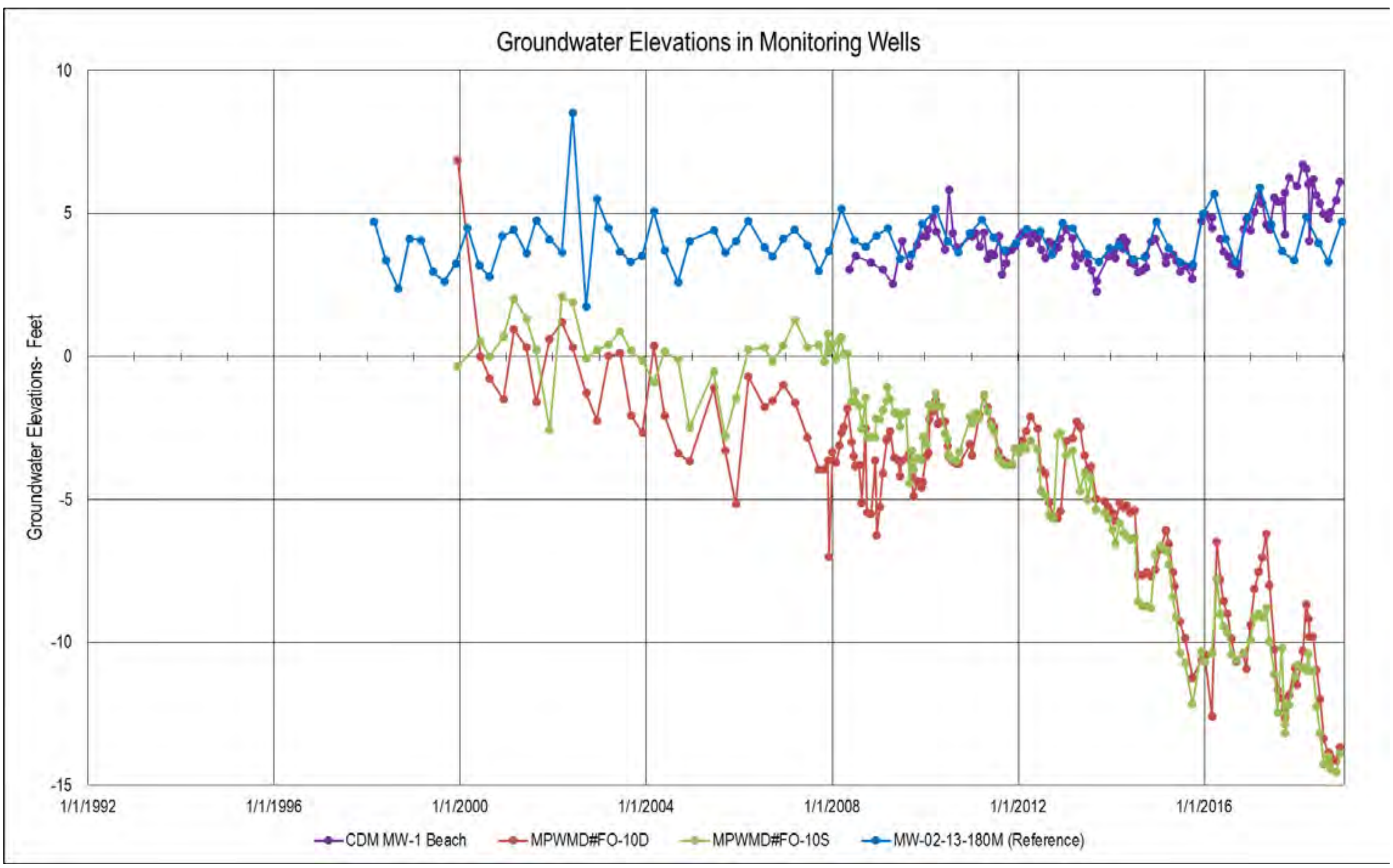
MONTEREY COUNTY WATER RESOURCES AGENCY

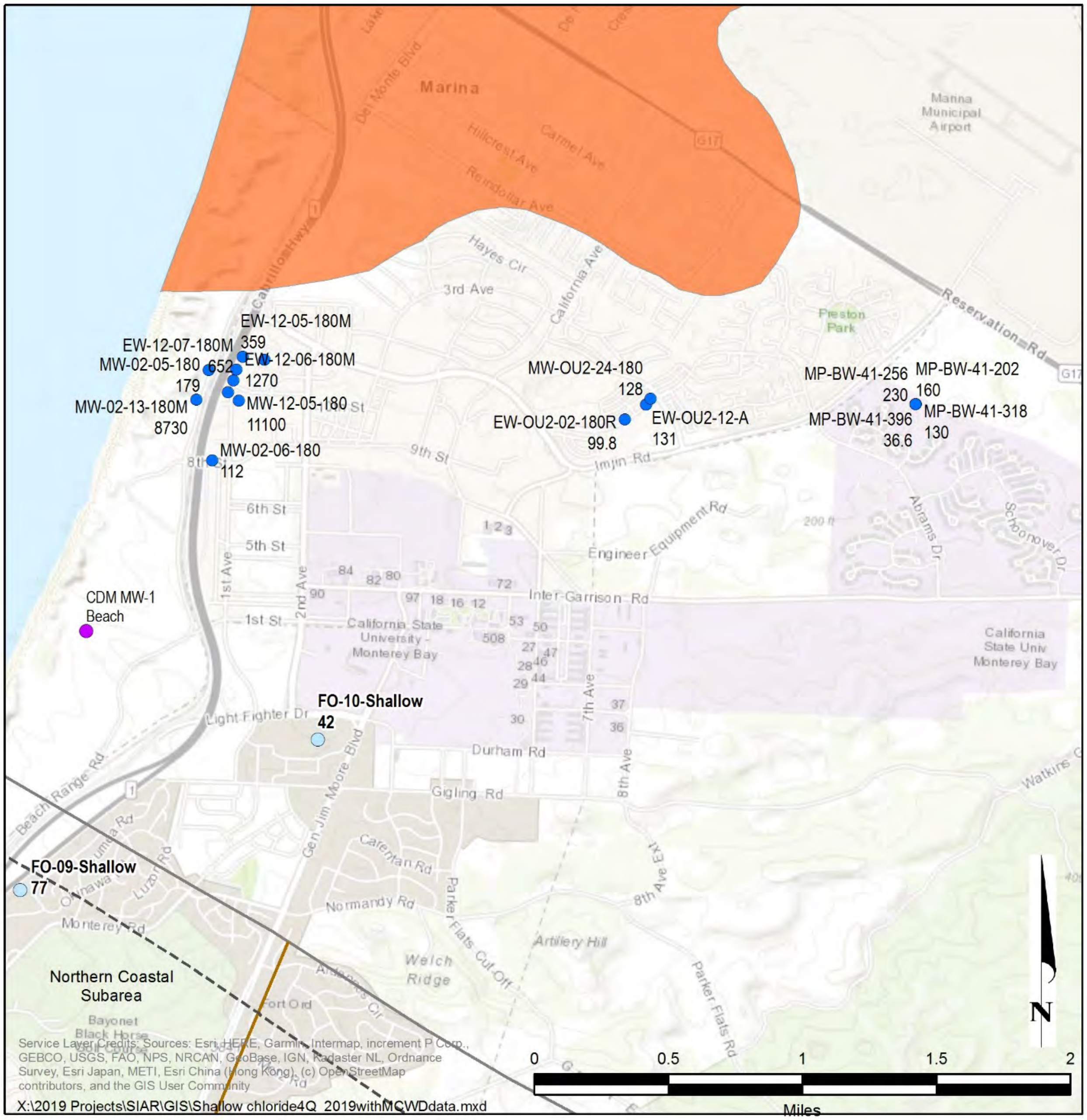
1947


Chloride Concentrations In Monitoring Wells (180-Foot Aquifer)
mg/L Chloride
0
2000
4000
6000
8000
10000
Data Gap
1/1/1992
1/1/1996
1/1/2000
1/1/2004
1/1/2008
1/1/2012
1/1/2016
MW-02-13-180M
MW-12-05-180


Chloride Concentrations in Monitoring Wells (180-Foot Aquifer)
mg/L Chloride
0
200
400
600
800
1000
1200
1400
1/1/1992
1/1/1996
1/1/2000
1/1/2004
1/1/2008
1/1/2012
1/1/2016
EW-12-05-180M
EW-12-06-180M
EW-12-07-180M
EW-12-08-180U
MW-02-05-180
MW-02-06-180
MW-12-12-180L


Chloride Concentrations in Monitoring Wells
mg/L Chloride
140
120
100
80
60
40
20
0
1/1/1992
1/1/1996
1/1/2000
1/1/2004
1/1/2008
1/1/2012
1/1/2016
Data Gap
EW-OU2-02-180R
EW-OU2-12-A
MPWMD#FO-10D
MPWMD#FO-10S
MW-OU2-24-180


Groundwater Elevations in Monitoring Wells
Groundwater Elevations- Feet
10
5
0
-5
-10
-15
1/1/1992
1/1/1996
1/1/2000
1/1/2004
1/1/2008
1/1/2012
1/1/2016
CDM MW-1 Beach
MPWMD#FO-10D
MPWMD#FO-10S
MW-02-13-180M (Reference)

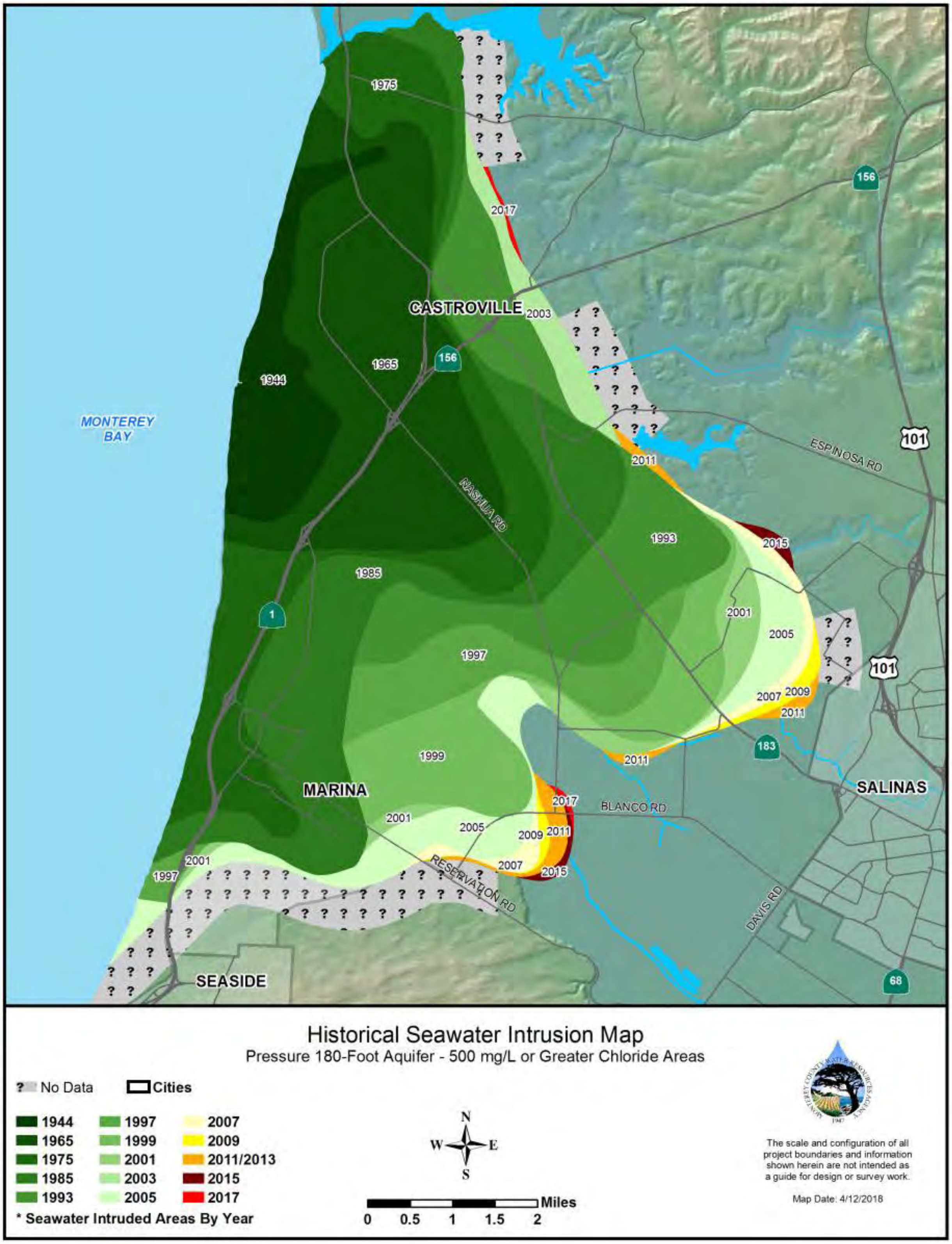


EXPLANATION

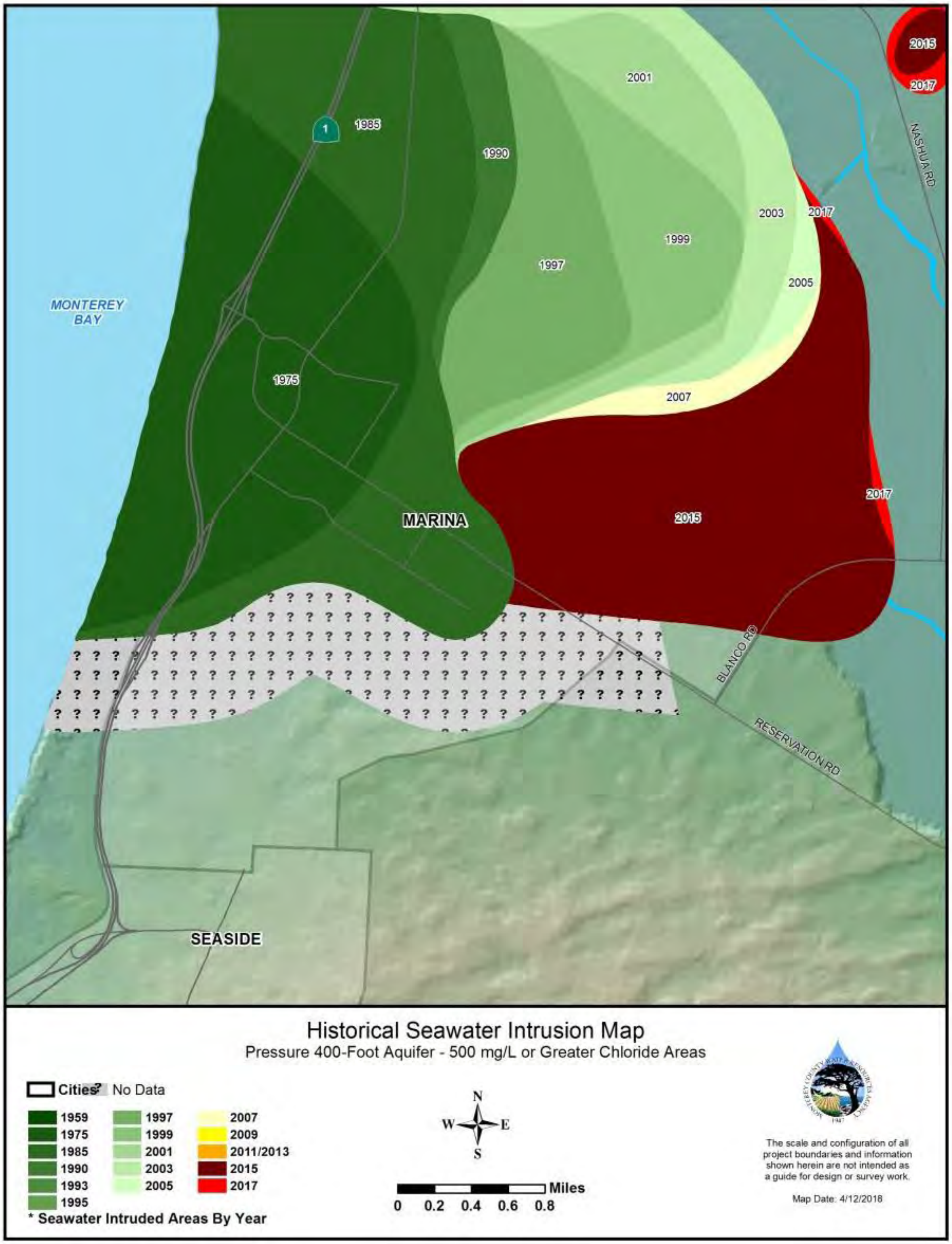
- Fort Ord Monitoring Wells with Maximum Chloride concentration (mg/L)
- Groundwater Elevation Data Reference Well
- 4th Quarter WY 2019 Chloride Concentration in mg/L
- Approximate Shallow Aquifer Northern Boundary

Adjudicated Seaside Groundwater Basin Boundary

- Basin Boundary
- Subarea Boundary
- >500 mg/L Chloride Areas - 400 ft Aquifer in Salinas Valley



2017 Seawater Intrusion Map – 180-foot Aquifer



2017 Seawater Intrusion Map – 400-foot Aquifer

PAGE NO.	PARAGRAPH	COMMENT
General Overall Comment	N/A	1. There are a huge number of acronyms in this Chapter. Please include near the front of the Chapter a list of acronyms and their meanings. 2. I am confused by the many names given to the various aquifers. For example in the Seaside Basin we have 3 aquifers: Aromas Sands, Paso Robles, and Santa Margarita. In the adjacent Monterey Subbasin Marina Management Area there are the upper and lower 180' and 400', the Dunes Sands, and the Deep Aquifers. In the Monterey Subbasin Corral de Tierra Management Area there are the El Toro Principle aquifers. I'm sure many of these are hydrogeologically interconnected and thus, in essence, the same aquifer. Near the front of this Chapter please include a table that gives the corresponding name of the aquifers in each of the Management Areas and the adjacent Seaside Subbasin and the 180/400-foot Subbasin, and a cross-section figure that graphically depicts the aquifers across each of these Management Areas and Subbasins.
7	First bulleted para	This para includes language indicating that there is a data gap in the southern portion of the Marina-Ord area Dune Sand Aquifer. Language should be added to say that this data gap needs to be filled as part of the GSP.
8	First bullet at top of page	This para states that the Dune Sand Aquifer protects the upper 180' aquifer from SWI. Please elaborate on how this protection is provided.
	2nd bullet under "400 Foot Aquifer"	Please explain what is causing the local groundwater depression just north of the boundary between the Seaside Subbasin and the Marina-Ord area. The Watermaster is very concerned that we are starting to see increasing chloride levels in our monitoring well FO-10 which is in that area and also in our monitoring well FO-9 which is inside the Seaside Subbasin not too far south and west of FO-10. For more detail on this please refer to page 33 of the Watermaster's 2020 Seawater Intrusion Analysis Report (SIAR) which is posted at this link: http://www.seasidebasinwatermaster.org/Other/2020%20Seawater%20Intrusion%20Analysis%20Report%20Final%2012-3-20.pdf
Figure 5-3	N/A	The depression referred to on page 8 is clearly shown in this Figure so the response to the comment above about this should also refer to this Figure.
Figure 5-7	N/A	The groundwater contours for the 400-foot aquifer shown in this Figure extend into the Seaside Subbasin. We do not have a 400-foot aquifer in the Seaside Subbasin. Presumably this is either the Paso Robles or the Santa Margarita aquifer, so the legend of this Figure should make that clarification.
Figure 5-8	N/A	The groundwater contours for the Deep Aquifers shown in this Figure extend into the Seaside Subbasin. We do not have a Deep Aquifer in the Seaside Subbasin, and the aquifers we do have, with the exception of the Aromas Sands, are all much deeper than the contours that are shown.

Figures 5-9 and 5-10	N/A	There are groundwater level contours in the Laguna Seca Subarea of the Seaside Subbasin that should also be plotted on this Figure, since they correspond to the same aquifers that are part of the El Toro Primary Aquifer. Those contours are contained in the Watermaster's 2017 Seawater Intrusion Analysis Report on pages 54 and 55. For 2017 the link to the SIAR is: http://www.seasidebasinwatermaster.org/Other/2017%20Seawater%20Intrusion%20Analysis%20Report_Final.pdf
21	Dune Sand Aquifer	The word "the" is missing in the first sentence of this bulleted para, right before the word "large".
23	First para under Corral de Tierra Area	When the term "El Toro Primary Aquifer System" is first introduced please describe the aquifers that comprise it, and if they are not the Paso Robles and Santa Margarita aquifers, explain how they correspond to those aquifers, which are the ones we monitor in the Laguna Seca Subarea of the Seaside Subbasin.
Figure 5-13	N/A	The plots in this Figure of MPWMD#FO-10 and MPWMD#FO-11S show falling groundwater levels, whereas the other plots in this Figure should stable levels. The reason for the falling levels in these wells, which are in the southwestern portion of the Marina-Ord area, should be explained in the text.
Figure 5-14	N/A	This Figure shows groundwater levels in the Deep Aquifers. The plot for MPWMD#FO-10D shows groundwater levels in the Santa Margarita aquifer, not the Deep Aquifer. I am not sure, but the same may be true of MPWMD#FO-11D.
31	Figure 5-18	The text should discuss the dramatic decline in groundwater elevations occurring since 1998, and a trend line for that portion of the data would be helpful to highlight the rate of decline.
Figure 5-20	N/A	There is considerably more groundwater level measurement data in the Seaside Subbasin than is depicted in this Figure. That data is available in the Watermaster's annual SIARs and should be added to this Figure, just as the data in the 180/400-foot Aquifer Subbasin is shown.
37	N/A	A paragraph should be added within the discussion of the AEM data describing the comments and concerns about the reliability of the AEM data which were raised by the Blue Ribbon Panel that reviewed the Cal Am Slant Well reports.
41	Next to last para	A sentence should be added at the end of this para stating that there is also a data gap in the southwestern portion of the Marina-Ord area, which prevents knowing the location of the SWI front in that area as well.
Figure 5-24	Legend	In the legend the "Note" pertaining to the Groundwater with TDS <1,000 mg/L is missing.
Figure 5-28	N/A	The text where it discusses this Figure should note that the Watermaster's Sentinel Well SBWM-1, which is located next to the coast just north of the Seaside-Marina-Ord boundary has not shown any indication of SWI in any of the aquifers that it penetrates, which include the Paso Robles and Santa Margarita aquifers. Therefore, it is not clear why the extent of the "Area of Known Seawater Intrusion" is shown going into that area. Due to the lack of monitoring well data in that area (as mentioned in some of the comments above) it is not clear how the extent of the SWI front can be accurately depicted in that part of the Marina-Ord area. This is supported by the MCWRA SWI mapping in Appendix 5B which has

		"???" shown in that area due to lack of data. This comment also applies to Figure 5-29 which also shows the "Area of Known Seawater Intrusion".
48	Next to last para	A sentence should be added at the end of this para stating that Wells MPWMD#FO-9 and FO-10 have also been showing increasing TDS levels in recent years.
	Last para	Provide a para here that discusses the apparent migration of SWI from the Marina-Ord area, south toward the Seaside Subbasin, as discussed in the Watermaster's 2020 SIAR.
Figure 5-29	N/A	Add an inset plot of TDS levels from well MPWMD#FO-9 to this Figure
50	Bullet list under the heading of Data Sources	Add MPWMD and the Watermaster as entities from which data was collected.

Re: Comments on Agenda Packet Items from Most Recent Monterey Subbasin GSP Committee Meeting

Emily,

I didn't have time to thoroughly read thru the last meetings agenda packet until this past weekend. I'd like to offer the comments below, all of which are referenced to the page numbers of the Agenda packet. I would have cc'd Sara Hardgrave with this email, as she is the Chair, but I found I only have her old email address, not her new one with Supervisor Adams' office, so your forwarding this to her would be appreciated.

Thanks,

Robert S. Jaques, PE
Technical Program Manager
Seaside Basin Watermaster

__Page 13:__ As I mentioned in my comment during the meeting, I believe it is important with any diversion project, such as the one being proposed for the Toro Creek, that the impact of such diversions on adjacent basins (in this case the Seaside Adjudicated Basin) be fully examined. My understanding from our hydrogeologist consultants is that the primary recharge area for the Santa Margarita aquifer in the Seaside Basin is from rainfall percolating through Toro Creek and other areas in that vicinity. It would be harmful to the Seaside Basin if some of that recharge water was diverted for use in the Corral de Tierra Subarea.

On this page there is also reference to "State diversion regulations." It would be good to elaborate on what those regulations say with regard to the proposed Toro Creek diversion.

__Page 57:__ If it is of any help we have production data from the Seaside Golf Courses (there are two 18 hole courses there) which have an allocation of 540 AFY under the Adjudication Decision and in Water Year 2020 actually pumped 537 AF. So for one course the annual pumping amount might be approximately ½ this amount of 270 AFY. This is quite a bit higher than the 168 AFY amount estimated for the Corral de Tierra Golf Course. Golf course superintendents are pretty savvy about their irrigation amounts as it affects turf management. I would think that pumping data from that golf course could be obtained, so the pumping amount won't have to be estimated.

__Page 59:__ I worked on a performance evaluation of the Las Palmas Wastewater Treatment Plant some years ago. As noted in the Wallace report, they use reclaimed water for landscape and open space irrigation within the Las Palmas housing development. However, they rely on a spray field for disposal of the remainder of their effluent that cannot be used for such irrigation. In the winter months the plant has experienced problems with effluent disposal to its spray field, when rainfall causes the sprayed effluent to run off rather than percolate and evaporate. So I believe there is definitely some excess reclaimed water that could be available from this plant. The plant's Annual Report of Waste Discharge, filed with the RWQCB, should have that information.

__Page 66:__ I fully concur with expanding the Groundwater Extraction Management System (GEMS) maintained by the Monterey County Water Resources Agency to cover the full area of the Corral de

Tierra portion of the Monterey Subbasin, as mentioned on pages 21-22, and of requiring Well Registration as mentioned on page 22. If done, I expect this would greatly increase the amount of pumping data that would become available. As noted on page 55, "No extraction information has been found for these private on-site wells in the Subarea" which indicates the need to get more pumping data.

In Figures 2 and 3, and the Land Use Table on this page, what Category is the Corral de Tierra Golf Course? As a major water user it would be helpful for it to be easy to find in the reported data.

Page 69: There is considerable discussion about De Minimis users and that data from them cannot be required. I think there should be some way that the County or MCWRA could require them to submit pumping data, outside of the SGMA regulations, i.e. perhaps under the GEMS as noted above. As Abby mentioned during her presentation, the De Minimis users' collective pumping amounts are estimates only and she commented that the estimate could be low. In either case, I think getting a better handle on how much is really being pumped by the De Minimis users is important to the overall Water Balance and decision that will be made regarding the projects to be implemented to achieve Sustainability.

SBWA
SALINAS BASIN WATER ALLIANCE

Salinas Basin Water Alliance

P.O. Box 247, Salinas, CA 93902

March 10, 2021

Chair Tom Adcock
SVBGSA Advisory Committee
P.O. Box 1350
Carmel Valley, CA 93924

Dear Chair Adcock and SVBGSA Board Members,

On behalf of our directors and members, we are writing to voice several concerns about the GSA's process for approving and promoting projects and management actions for subbasins throughout the Salinas Valley.

First, we are concerned about the agency's timelines for subbasin committees to approve water allocation policies *before* disclosing or approving water budgets. We are acutely aware that the agency's mission is to ensure the sustainability of groundwater throughout the valley. How can we accomplish this if staff-recommended policies to committees are disconnected from the actual amounts of water being used annually in each subbasin? We have seen this order of operations in every one of the subbasin meetings so far and are concerned it flies in the face of the agency's extraordinary efforts to be transparent and effective.

Secondly, we are concerned about how the agency is formulating water budgets. We represent more than 37,000 acres owned and farmed throughout the valley. From our experience, the data being used from 2013 and earlier is not accurate to water usage today, self-reporting data is not a sufficient safeguard for sustainability, and thirdly, any valley-wide formula based on crops is insufficient as temperatures, soil composition, and other conditions vary. If we are to accurately measure and equitably discuss water use throughout the Salinas Valley, we must draw on water metering data to create water budgets.

We appreciate the opportunity to bring our valley-wide experience to the table and look forward to working with all the subcommittees to find sustainable solutions for everyone in the Salinas Valley.

Sincerely,

DocuSigned by:
George Fontes
275F0A0E3ED424...

George Fontes, President, Board of Directors
Salinas Basin Water Alliance

From: Emily Gardner
To: Tina Wang
Subject: Fwd: Monterey Subbasin GSP Committee Special Meeting on March 23
Date: Thursday, July 22, 2021 3:56:15 PM

---------- Forwarded message ---------
From: <bobj83@comcast.net>
Date: Mon, Mar 22, 2021 at 11:04 AM
Subject: Monterey Subbasin GSP Committee Special Meeting on March 23
To: Hardgrave, Sarah <HardgraveS@co.monterey.ca.us>, Emily Garnder <gardnere@svbgsa.org>, Abby Ostovar <aostovar@elmontgomery.com>, Derrik Williams <dwilliams@elmontgomery.com>
CC: Bob Jaques <bobj83@comcast.net>, Jonathan Lear <jlear@mpwmd.net>, Tamara Voss <vosstl@co.monterey.ca.us>, Laura Paxton <watermasterseaside@sbcglobal.net>

Everyone,

As I commented on at the last GSP Committee meeting, I believe that Pumping Allocations will be an essential (not just a “Contingency”) Action in order for the Corral de Tierra subarea to achieve the Subbasin’s Sustainable Yield (SY). The other actions that are Projects only are projected to reduce pumping by a little less than 400 AFY, and the amount of reduction needed to reach SY is estimated to be 1,000 AFY. Thus, a substantial additional amount of reduction will be needed, and this appears only capable of being accomplished by implementing pumping allocations to further reduce pumping.

The term “Sustainable Yield” in the context of the documents being prepared for the GSP is actually the “Natural Safe Yield” as confirmed by Derrik at a recent meeting. The Sustainable Yield concept should be explained to the Committee members, because it is different than the Natural Safe Yield. The Sustainable Yield is nearly always less than the Natural Safe Yield. Specifically, if pumping within a subarea is concentrated in one location, localized lowering of ground water levels can occur there, even if the Natural Safe Yield of the subarea is not being exceeded. It appears that the majority of the pumping in the Corral de Tierra subarea is concentrated in the westernmost portion of the subarea, adjacent to the Laguna Seca Subarea of the Seaside Subbasin. This appears to be a major cause in the lowering of groundwater levels in the Laguna Seca Subarea, as well as in that part of the Corral de Tierra subarea, and hence need to be addressed in the GSP to stop this lowering of groundwater levels.

From the perspective of the Seaside Basin Watermaster, we are looking for the GSP for the Corral de Tierra subarea to address the depletion of groundwater in the Laguna Seca Subarea that is being caused by overpumping in the Corral de Tierra subarea. This is because if pumping in the Laguna Subarea were reduced or even stopped altogether, our modeling shows that even more water from the Laguna Seca subarea would be drawn into the Corral de Tierra subarea because of the lowered groundwater levels in the Corral de Tierra subarea. This tells us that the Watermaster has no capability of stopping the chronic lowering of groundwater levels in the Laguna Seca Subarea, and that this can only be corrected by reducing pumping in the Corral de Tierra subarea.

In summary, I believe this issue needs to be clearly discussed and highlighted in the GSP, so it is clear to all reader of the GSP that pumping allocations to reduce pumping will be necessary, and that they will need to be implemented early-on in the implementation of the GSP in order to avoid causing further detrimental impacts on the Laguna Seca subarea.

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

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April 5, 2021

Marina Coast Water District
11 Reservation Road
Marina, CA 93933
Attn: Patrick Breen, Water Resources Manager
Email: pbreen@mcwd.org

Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Attn: Emily Gardner, Deputy General Manager and Derrik Williams, GSP Project Manager
Email: gardnere@svbgsa.org; dwilliams@elmontgomery.com

SUBJECT: HWG COMMENTS ON DRAFT MONTEREY SUBBASIN GROUNDWATER SUSTAINABILITY PLAN, CHAPTERS 4 AND 5

Dear Mr. Breen, Ms. Gardner, and Mr. Williams:

This letter provides the comments of the Hydrogeologic Working Group (HWG) on the Draft Monterey Subbasin Groundwater Sustainability Plan (GSP) Chapters 4 and 5. This letter provides both an Executive Summary highlighting some of our main comments, and a Detailed Comments section. It should be noted that the Executive Summary and Detailed Comments provided in this letter are not necessarily intended to be comprehensive, and additional comments may be provided at a later time.

EXECUTIVE SUMMARY

Our comments on the Draft Monterey Subbasin GSP Chapters 4 and 5 generally relate to the following items: description of geologic conditions, conclusions regarding groundwater conditions, preferential use of airborne electromagnetics (AEM) data over field data, and hydrogeologic interpretation of AEM data. Our high-level summary comments on Draft GSP chapters 4 and 5 are provided below, with a detailed comments section following this Executive Summary.

HWG summary comments on Chapters 4 and 5 are:

- The GSP presents a hydrogeologic conceptual model (HCM) with some inaccuracies based on invalid hydrogeologic interpretations of the AEM surface geophysics and other data that is not in agreement with available field data including boring logs, aquifer test, groundwater level, and groundwater quality data;
- The GSP does not utilize the most up-to-date hydrogeologic conceptual model for the northern Monterey Subbasin and southern 180/400 Aquifer Subbasin area in understanding the

hydrogeology of the area even the though the HWG conducted the most recent and extensive investigation of the hydrogeology specific to this area (e.g., HWG Technical Report, November 2017);

- Groundwater levels/quality and aquifer/aquitard continuity are mischaracterized in the northern Monterey Subbasin and southern 180/400 Aquifer Subbasin due to: inappropriate application of the Fort Ord Site Conceptual Model to this area; use of inaccurate hydrogeologic interpretations from AEM data; and lack of using all available field data and the most recent comprehensive hydrogeologic conceptual model of the area;
- The Dune Sand Aquifer (DSA) is not a Principal Aquifer and has been misclassified in the Monterey Subbasin GSP, and is in conflict with the 180/400 Foot Aquifer Subbasin GSP where the Dune Sand Aquifer is not classified as a Principal Aquifer;
- The inaccurate HCM analyses create conflicts with the 180/400-Foot Aquifer Subbasin GSP;
- While the HWG concur that achieving sustainability within the 180/400-Foot Aquifer Subbasin is important for achieving sustainability within Monterey Subbasin, the cause of depressed groundwater elevations and seawater intrusion in the Monterey Subbasin is mischaracterized as essentially being entirely due to pumping within the 180-/400-Foot Aquifer Subbasin and Seaside Subbasin; however, pumping from wells within Monterey Subbasin have played a major role in historical/current undesirable groundwater conditions and the Monterey Subbasin needs to do its part in achieving local and regional sustainability;
- The Monterey Subbasin GSP relies primarily on a study conducted by WRA Environmental (and by reference a study by Formation Environmental) in its discussion of groundwater dependent ecosystems (GDEs); however, there are many concerns about the methods/conclusions used in these studies to establish groundwater dependency of ecosystems that have been documented previously by HWG and supplemented by a recent study conducted by Geoscience/AECOM.

More specific and detailed comments on Monterey Subbasin Draft GSP chapters 4 and 5 are provided below.

DETAILED COMMENTS

Chapter 4 – Hydrogeologic Conceptual Model

1. The GSP states, “The geology described here is based on previously published scientific reports from investigations conducted by the USGS, State of California, other consulting firms, and academic institutions.”(Section 4.1.1, Geological and Structural Setting, p. 64).

HWG Comment: *We note that extensive field work conducted by the HWG between 2013 and 2018, including test slant well installation/testing, drilling of several borings and installation of an extensive monitoring well network, extensive data analyses covering the coastal southern 180/400-Foot Aquifer Subbasin and coastal northern Monterey Subbasin are documented in publicly available reports prepared by the HWG and posted on the Monterey Peninsula Water Supply Project (MPWSP) website (e.g., HWG,* *November 2017). These HWG documents incorporated data from previous studies by others (many of which are cited in the Monterey Subbasin GSP), and allowed for improved hydrogeologic interpretations by incorporating both existing and new field data collected by HWG. The Monterey Subbasin GSP ignores these HWG documents and makes geologic interpretations that are inconsistent with the most recent data that has been collected. Some of the specific inconsistencies are noted in other comments in this letter.*

2. The GSP mischaracterizes the Dune Sand Aquifer in multiple instances in Chapter 4. One example is the attempt to label the Dune Sand Aquifer as a "Principal Aquifer" (Section 4.2.1, Hydrogeology in the Marina-Ord Area, Table 4-1, page 79).

HWG Comment: *The Dune Sand Aquifer is not a Principal Aquifer in the subbasin. The Draft GSP prepared by City of Marina (2019) stated the Dune Sand Aquifer, "…is not commonly used for drinking water or agricultural irrigation". The Monterey County Water Resources Agency (MCWRA), which has studied and characterized the groundwater basin for many decades, does not consider the Dune Sand Aquifer as a principal aquifer (e.g., no seawater intrusion maps are prepared for the Dune Sand Aquifer by MCWRA). The 180/400-Foot Aquifer Subbasin GSP, which the MCWD GSA adopted and submitted to DWR, also does not classify the Dune Sand Aquifer as a Principal Aquifer. The Dune Sand Aquifer is not a Principal Aquifer due in part to its lack of capability for use in groundwater production (e.g., thin saturation, groundwater quality issues related to sea water intrusion and nitrates, etc.). In addition, the Hydrogeology section for the Corral de Tierra Area in Monterey Subbasin GSP Chapter 4 states that following about the upper 120 feet of sediments, "Several small domestic wells draw groundwater from these local alluvial aquifers, but these volumes of groundwater are minimal…Since this volume of groundwater is neither economic or significant, these shallow sediments are not considered a principal aquifer…Groundwater in these sediments is hydraulically connected to the small streams found in the area…" (page 111 of Chapter 4). This conclusion for the Corral de Tierra Area is inconsistent with designating the Dune Sand Aquifer, which cannot even claim to be tapped by "several small domestic wells", as a Principal Aquifer. As noted above, designation of the Dune Sand Aquifer as a Principal Aquifer is inconsistent with the 180/400-Foot Aquifer Subbasin GSP (where the Dune Sand Aquifer also is present), which specifically did not designate the Dune Sand Aquifer as a Principal Aquifer. It is also important to point out that the Dune Sand Aquifer, as defined in the Monterey Subbasin GSP, consists of two distinct aquifers – the coastal Dune Sand Aquifer that directly overlies the 180-Foot Aquifer and the perched/mounded Dune Sand Aquifer (known as the A-Aquifer in Fort Ord studies) that overlies the Fort-Ord Salinas Valley Aquitard (FO-SVA) clay layer (incorrectly referred to as Salinas Valley Aquitard in the Monterey Subbasin GSP). The coastal Dune Sand Aquifer is intruded with sea water, while the perched/mounded Dune Sand Aquifer is perched in areas, has thin saturation, is impacted by nitrates, and is not developed with production wells for any significant water supply uses.*

3. The GSP relies on old geologic cross-sections from 2001 (Section 4.2.1.1, Cross-Sections, pages 80-85).

HWG Comment: *The cited geologic cross-section references and Figures 4-9 through 4-12 do not utilize best available science and most recent borehole and geophysical logs for wells drilled in the area, nor do* *they utilize the most recent geologic cross-sections developed based on these data (see HWG, November 2017). This results in mischaracterization of hydrogeologic conditions for the GSP Plan Area. Geologic cross-sections that use the latest available data and include areas within the Monterey Subbasin are provided in previously published HWG documents (HWG, November 2017; HWG et al., February 2020).*

4. With regard to the Dune Sand Aquifer, the GSP states, "The aquifer is perched further away from the coast in areas where the SVA exists… " (Section 4.2.12, Principal Aquifers, page 86).

HWG Comment: *The HWG agrees with this GSP statement about the Dune Sand Aquifer being perched in areas where it is underlain by the SVA (more correctly referred to as the FO-SVA). However, perched aquifers should not be designated as Principal Aquifers as is being done in the Monterey Subbasin GSP.*

5. The GSP refers to an average saturated thickness of the Dune Sand Aquifer being approximately 50 feet (Section 4.2.12, Principal Aquifers, page 86).

HWG Comment: *As described above, there are two distinct aquifers being referred to collectively in the GSP as the Dune Sand Aquifer. While the coastal DSA may have a saturated thickness of 50 feet or more in some areas, the perched/mounded DSA has a saturated thickness considerably less than 50 feet.*

6. The GSP does not distinguish and describe the differences between the Salinas Valley Aquitard (SVA) and Fort-Ord Salinas Valley Aquitard (FO-SVA) and its significance to the perched/mounded aquifer (underlain by FO-SVA) versus the Dune Sand Aquifer and its equivalents (not underlain by FO-SVA) in many places in the document (Chapter 4).

HWG Comment: *It should be noted that the SVA and FO-SVA are not the same aquitard and FO-SVA occurs at a higher elevation; therefore, they should not be referred to as the same aquitard.*

7. The GSP shows a Conceptual Site Model diagram that was developed from Fort Ord studies, and implies that the Fort Ord Conceptual Site Model diagram applies throughout the Monterey Subbasin (Section 4.2.1.2, Principal Aquifers, Figure 4-13, p.87).

HWG Comment: *Recent studies completed by the HWG demonstrate that the Fort Ord Conceptual Site Model does not apply in the southern portion of the 180/400 Foot Aquifer Subbasin or the northern portion of the Monterey Subbasin. In particular, the concepts of an Intermediate 180-Foot Aquitard and lack of a 180/400 Foot Aquitard do not apply outside of Fort Ord. Work completed by HWG demonstrates that the 180-Foot Aquifer is one vertically continuous aquifer and that the 180/400 Foot Aquitard is present (HWG, November 2017).*

8. The GSP states that horizontal hydraulic conductivity in the DSA ranges from 0.14 to 120 feet/day (Section 4.2.1.2, Principal Aquifers, p.87).

HWG Comment: *It is important to distinguish the two major portions of what is referred to in the GSP as the DSA – coastal and perched/mounded. While the coastal DSA does have K values on the higher end of the cited range, perched/mounded portion of the DSA only has K values at the lower end of the cited range.*

9. The GSP makes general statements on hydrogeologic interpretations of AEM data, including outside of the GSP Plan area (Section 4.2.1.2, Principal Aquifers, p. 88).

HWG Comment: *It is not clear why the GSP is speculating on aquifer conditions outside of the Monterey GSP Plan Area based solely on AEM data, and without consideration of geologic and well data. The GSP also provides no demonstration/evidence of how these conclusions were reached. The HWG has previously provided extensive documentation of erroneous hydrogeologic interpretations of the AEM data (HWG, November 2017, January 2018, August 2018, January 2019, March 2019, and April 2019). The HWG April 2019 document clearly demonstrates with field data that the hydrogeologic interpretations of aquitard gaps from the AEM study are invalid. Furthermore, as described above, MPWSP monitoring well borehole logs demonstrate that areas of uncertain aquitard continuity identified by MCWRA (who did not have MPWSP monitoring well borehole data available to them at the time of their study) near the northern Monterey Subbasin boundary are no longer uncertain and clearly have significant aquitard material present. Furthermore, review of water level and water quality data for the MPWSP clearly demonstrate the presence and continuity of the 180/400-Foot Aquitard in this area.*

The Monterey Subbasin GSP does not describe the applicability of the concept of a sea water wedge (i.e., where sea water intrusion occurs, less saline water often overlies more saline water in a given aquifer) to explain the expected presence of less saline water overlying more saline water in some areas of the vertically continuous 180-Foot Aquifer. The presence of less saline water in the upper portion of an aquifer does not demonstrate the aquifer is not sea water intruded. Furthermore, given the standard of 500 mg/L chloride applied by MCWRA for defining the area of seawater intrusion, the AEM data collected in the area are not capable of distinguishing between a chloride concentration below the standard (e.g., 200 mg/L) from a chloride concentration above the standard (e.g., 600 mg/L) given inherent uncertainties in AEM data interpretation and the complicating variable of lithologic influences on AEM data.

10. The GSP states, “South of the City of Marina, in a portion of the former Fort Ord, the 180-Foot Aquifer is separated into an “upper” zone of sandy deposits with some gravel and a “lower” zone of gravel with sand and clay lenses; the two zones are separated by a thin clay layer (Ahtna Engineering, 2013). Data collected within the former Fort Ord show that significant head differences exist between the upper and lower ones of the 180-Foot Aquifer.” (Section 4.2.1.2, Principal Aquifers, p. 91).

HWG Comment: *The HWG agrees that the area where this conceptual model applies is in a portion of former Fort Ord to the south of the City of Marina. However, the GSP implies this conceptual model (illustrated in Figure 4-13) applies throughout the GSP Plan Area, including north of Reservation Road, which is not correct as documented in work by HWG that is not referenced in this GSP (e.g., HWG, November 2017).*

11. The GSP discussion of the “Middle (180/400) Aquitard” suggests it is not present beneath the majority of the Marina-Ord Area, and implies this conceptual model applies throughout the Monterey Subbasin as illustrated by Figure 4-13 (Section 4.2.1.2, Principal Aquifers, p. 91).

HWG Comment: *As noted above with other aspects of the conceptual model presented in Figure 4-13, the concept that the 180/400 Foot Aquitard is not present in northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin is erroneous (see recent work by HWG not referenced in the GSP, as well as MCWD well logs). For example, HWG work demonstrates similar groundwater elevations in the upper and lower 180 Foot Aquifer (MW-6), and significantly different groundwater elevations and fluctuations in the 180 and 400 Foot Aquifers (multiple MPWSP monitoring wells).*

12. The GSP states, "The Lower 180-Foot Aquifer zone and the 400-Foot Aquifer in the vicinity of the City of Marina are functionally the same due to the missing Middle (180/400-Foot) Aquitard in this area." (Section 4.2.1.2, Principal Aquifers, p. 94).

HWG Comment: *As discussed above with other aspects of the Site Conceptual Model (Figure 4-13), this characterization does not apply to Northern Monterey Subbasin, contrary to what is stated/implied in the GSP.*

13. The GSP states, "Near the Monterey-Seaside subbasin boundary, a depression exists in the groundwater potentiometric surface of the 400-Foot Aquifer…These data suggest that a potential connection may exist between the 400-Foot Aquifer and the Deep Aquifer in this area." (Section 4.2.1.2, Principal Aquifers, p. 94.)

HWG Comment: *There is no geologic evidence provided in the GSP to support this statement. Preliminary review of geologic data (lithologic logs and Elogs) by HWG for MPWMD FO-10 and FO-11 indicate presence of sufficient thicknesses of clay layers to serve as aquitard layers between the 400-Foot and Deep Aquifers at this location.*

14. The GSP states, "As shown in Section 6 below, groundwater flow direction in the 400-Foot Aquifer is strongly influenced by groundwater pumping in the Salinas Valley Groundwater Basin, inland of the Monterey Subbasin." (Section 4.2.1.2, Principal Aquifers, p. 94)

HWG Comment: *A primary theme of this GSP here and elsewhere is that pumping in the 180/400 Foot Aquifer Subbasin is essentially solely responsible for seawater intrusion in the 180-Foot Aquifer and 400-Foot Aquifer within Monterey Subbasin, and for depressed Deep Aquifer groundwater elevations in the within Monterey Subbasin. However, the history of groundwater development in the Monterey Subbasin demonstrates how groundwater production wells developed for MCWD and Fort Ord resulted in seawater intrusion in the 180-Foot Aquifer and 400-Foot Aquifers in Monterey Subbasin (for example, see quote below from Harding ESE, 2001). In addition, Deep Aquifer groundwater elevations were fluctuating around sea level prior to pumping of Deep Aquifer wells by MCWD that dropped Deep Aquifer groundwater elevations well below sea level. Thus, groundwater pumping from wells screened in the 180-Foot, 400-Foot, and Deep Aquifers within Monterey Subbasin have played a significant role in historical/current seawater intrusion and depressed groundwater elevations within Monterey Subbasin.*

Harding ESE (2001) states: "Seawater intrusion beneath the city of Marina was observed soon after installing several production wells in the 180-Foot Aquifer (MCWD-1, the first city well, was installed in

1956). Subsequent seawater intrusion into this area was closely related to ground water withdrawal by the city of Marina and former Fort Ord. Deteriorating water quality forced the city of Marina to discontinue pumping most of its 180-Foot Aquifer wells by the late 1970's and install water-supply wells in the 400-foot (MCWD-8, -8a, and -9) and Deep Aquifers (MCWD-10, -11, and-12)."

15. The GSP states with respect to the Deep Aquitard (otherwise known as 400 Foot/Deep Aquitard), "There is no analysis available for its spatial occurrence or geologic composition." (Section 4.2.1.2, Principal Aquifers, p. 95).

HWG Comment: *The GSP could have conducted the "missing" analysis of the aquitard for the Monterey Subbasin given that several MCWD production wells (e.g., MWCW 10, 11, 12) and other wells (e.g., USGS deep nested monitoring well, agricultural wells) have available lithologic and geophysical logs. Such an analysis would demonstrate the presence of a 200 to 300 foot thick clay layer (i.e., 400/Deep Aquitard) between the 400-Foot Aquifer and uppermost Deep Aquifer Zone. The lack of seawater intrusion in the Deep Aquifer, which has groundwater elevations on the order of 50 to 100 feet below sea level in the northern Monterey Subbasin area and a strong vertically downward gradient from the 400-Foot Aquifer, combined with high salinity in the 400-Foot Aquifer within and surrounding the northern Monterey Subbasin also shows the strong integrity of the aquitard between the 400-Foot Aquifer and Deep Aquifer. T*he large difference in water levels between the 400-Foot Aquifer and Deep Aquifers also provides evidence of a thick/tight aquitard separating these aquifer zones.

16. The GSP describes the Reliz Fault as displaced the Monterey Formation, which is the base of the Deep Aquifer, shifted downward on the northeast side by 1,000 feet. It then states the fault does not appear to impede groundwater flow within the Dune Sand Aquifer, 180-Foot Aquifer, or 400-Foot Aquifers (Section 4.2.1.3, Structural Restrictions to Flow, p. 98).

HWG Comment: *The GSP does not comment on the possibility of the Reliz Fault altering groundwater flow within the Deep Aquifer.*

17. This section of the GSP begins, "This Section presents a general discussion of the natural fresh groundwater quality in the Marina-Ord Area, focusing on general geochemistry (Section 4.2.1.4, General Water Quality, p. 98).

HWG Comment: *Given the significance of historical and ongoing seawater intrusion in the Dune Sand Aquifer, 180-Foot Aquifer, and 400-Foot Aquifer in the Marina-Ord Area, it is unclear why this section would only describe the fresh water within the Marina-Ord Area.*

18. With regard to the Dune Sand Aquifer, the GSP states, "Groundwater in this aquifer is primarily fresh; minimal seawater intrusion has occurred in this aquifer (Section 4.2.1.4, General Water Quality, p. 98).

HWG Comment: *The coastal Dune Sand Aquifer is intruded by seawater, as demonstrated by monitoring wells at the MCWD office on Reservation Road (Staal, Gardner & Dunne, 1991 and 1992; Fugro West, 1996, 2001) and in the vicinity of the CEMEX site (HWG, November 2017).*

19. The GSP states, "The Dune Sand Aquifer contributes recharge to the 180-Foot Aquifer…" (Section 4.2.1.4, General Water Quality, p. 98).

HWG Comment: *It should be noted that this recharge from the Dune Sand Aquifer to the 180-Foot Aquifer is minimal (likely on the order of a few hundred acre-feet per year). This recharge has not stopped seawater intrusion from occurring in this area.*

Chapter 5 – Groundwater Conditions

1. The GSP notes data sources used in the GSP, which includes documents/data for Monterey Peninsula Landfill (Section 5.1.1, Data Sources, p. 6).

HWG Comment: *We note that Monterey Peninsula Landfill (MPL) is not located within Monterey Subbasin. In addition, if data from Monterey Peninsula Landfill are being used, why are data from MPWSP monitoring network not being used. Notably, later in Chapter 5, the GSP uses AEM data outside of Monterey Subbasin and within the area of MPWSP monitoring network data, yet there is no use of MPWSP data that contradicts the hydrogeologic interpretation of AEM data provided in the GSP.*

2. The GSP states that the Dune Sand Aquifer is a Principal Aquifer and that the 180-Foot Aquifer contains two distinct layers, known as the upper- and lower- 180-Foot Aquifer (Section 5.1.2.1, Marina-Ord Area, p.7).

HWG Comment: *The Dune Sand Aquifer should not be designated as a Principal Aquifer, and is in conflict with the 180/400 Foot Aquifer Subbasin GSP in this regard. Furthermore, the splitting of the 180-Foot Aquifer into two distinct aquifers only applies in the Fort Ord area, and does not apply in northern Monterey Subbasin (HWG, November 2017). While the entire thickness of the 180-Foot Aquifer is intruded by seawater near the coast and for a significant distance inland, the presence of less saline water within the upper portion of the 180-Foot Aquifer further inland is merely a function of the nature of seawater intrusion wedges, and not a function of the presence of an intermediate aquitard within the 180-Foot Aquifer in northern Monterey Subbasin.*

3. The GSP describes groundwater flow conditions in the 180-Foot Aquifer, and states, "…inflow from the Dune Sand Aquifer protects the upper 180-Foot Aquifer from seawater intrusion." (Section 5.1.2.1, Marina-Ord Area, p.8).

HWG Comment: *Any groundwater flow that may occur from the Perched/Mounded portion of the inland Dune Sand Aquifer to the underlying 180-Foot Aquifer has historically not prevented seawater* *intrusion from occurring within the 180-Foot Aquifer, which has been and remains heavily intruded with seawater. Any claims to the contrary, such as in this referenced statement from the Monterey Subbasin GSP, are incorrect. As noted above, there are not geologically distinct Upper and Lower 180 Foot Aquifers in northern Monterey Subbasin. The amount of recharge from the Dune Sand Aquifer to the 180-Foot Aquifer is small, as can easily be demonstrated by calculation of the amount of precipitation recharge in the Dune Sand Aquifer within the area west of the groundwater divide that has potential to recharge the 180-Foot Aquifer (e.g., on the order of a few hundred AFY, before subtracting Ford Ord remedial pumping). Furthermore, in order to dilute incoming seawater to a fresh water concentration, there would need to be over 30 times more fresh water than seawater in the mixing zone to create a net fresh water condition. Thus, a few hundred AFY of fresh water can effectively only dilute about 10 to 20 AFY of incoming seawater.*

4. The GSP states, "…the lower 180-Foot Aquifer is hydraulically connected to the 400-Foot Aquifer in the Marina-Ord Area due to the discontinuous nature of the 180/400-Foot Aquitard within this region…As such, groundwater elevation and gradients in the lower 180-Foot Aquifer are similar to those in the 400-Foot Aquifer in the Marina Ord Area of the Subbasin…" (Section 5.1.2.1, Marina-Ord Area, p.8).

HWG Comment: *This characterization of the discontinuous nature of the 180-400 Aquitard is not applicable to the northern portion of the Monterey Subbasin. Groundwater levels in the 180-Foot Aquifer and 400-Foot Aquifer are clearly different and distinct in the northern half of Monterey Subbasin and in the adjacent 180/400-Foot Aquifer Subbasin (HWG, November 2017). The Monterey Subbasin GSP does not demonstrate the similarity or difference in groundwater elevations to justify its characterization.*

5. Figures 5-1 and 5-5 show the western extent of the FO-SVA north of Monterey Subbasin as extending to MPWSP MW-3.

HWG Comment: *The extent of FO-SVA shown on the maps is outdated and also does not incorporate more recent data and analyses based on the MPWSP borehole/well data. We also note that groundwater elevation figures for all units except the Dune Sand Aquifer extend northward across the Monterey Subbasin/180-400 Foot Aquifer Subbasin boundary, even though many Dune Sand Aquifer well locations are available and shown on the figures for the MPWSP and MPL monitoring networks. In addition, there are several monitoring wells located at the MCWD District office headquarters and treatment plant on Reservation Road near the coast (Staal, Gardner & Dunne, 1991 and 1992; Fugro West, 1996 and 2001).*

6. In describing groundwater elevations in the 400-Foot Aquifer the GSP states, "A local groundwater depression exists just north of the Monterey-Seaside Subbasin boundary where a potential connection between the 400-Foot Aquifer and the Deep Aquifers may be located ." (Section 5.1.2.1, Marina-Ord Area, p.8).

HWG Comment: *The GSP provides no geologic evidence for a potential connection at this location between the two aquifers. The GSP only cites to HLA (2001) for cross-sections in this area, but other geologic cross-sections are available to consider from previous reports (e.g., HWG, 2017; Yates et.al., 2005). The location of this depression, which is more centrally located within Monterey Subbasin than described in the GSP text, is only about 1.5 miles south of MCWD Deep wells where a thick (i.e., 200 to 300 feet) aquitard exists between the 400 Foot Aquifer and Deep Aquifer.*

7. GSP Figures 5-1 and 5-5 (Groundwater Level Contours in the Dune Sand Aquifer – Fall 2017 and Spring 2018) show locations of MPWSP and MPL wells, but do not use the data to prepare groundwater level contours.

HWG Comment: *It is not clear why the GSP maps would show these MPWSP/MPL well locations but not use the data. We also note that geologic and borehole geophysical data from these wells are not used in developing geologic cross-sections or to develop an understanding of the geologic conditions for the HCM. This is particularly noteworthy in that the GSP Chapter 5 later uses hydrogeologic interpretations from the AEM data in lieu of actual borehole/well data to derive different conclusions regarding the HCM that are not supported by borehole/well data.*

8. GSP Figures 5-2 and 5-5 (Groundwater Level Contours in the 180-Foot Aquifer – Fall 2017 and Spring 2018) show locations of only three of the MPWSP wells (MW-6, MW-8, and MW-9), and do not use data from MW-8 and MW-9.

HWG Comment: *It is not clear why the GSP maps only show selected MPWSP well locations and do not use most of the data from the selected wells that are shown on the maps. We also note that geologic and borehole geophysical data from these wells are not used in developing geologic cross-sections or in developing an understanding of the geologic conditions underlying the HCM. This is particularly noteworthy in that the GSP Chapter 5 later uses hydrogeologic interpretations from the AEM data in lieu of actual borehole/well data to derive different conclusions regarding the HCM that are not supported by borehole/well data. We also note that groundwater is indicated to flow inland from the ocean to a pumping center in the north central portion of Monterey Subbasin.*

9. Figures 5-3 and 5-7 (Groundwater level Contours in the 400-Foot Aquifer – Fall 2017 and Spring 2018) show a +10 feet MSL contour as the shoreline in Marina Subbasin.

HWG Comment: *There is no well control to support this +10 feet MSL contour line, or even the zero contour line. We note that groundwater elevations in the 400-Foot Aquifer for MPWSP MW-3 (very close to the shoreline) ranged from 0 to -15 feet NAVD88 during this time period. We also note that groundwater is indicated to flow inland from the ocean to a depressed area in the south central portion of Monterey Subbasin. The Fall 2017 groundwater levels show that the pumping depression in the southern central area of Monterey Subbasin contributes to a broader depression that extends to the 180/400 Foot Aquifer Subbasin. Spring 2018 groundwater levels appear to indicate occurrence of a temporal groundwater divide around the MCWD well field.*

10. The GSP states, "…water levels in the Dune Sand Aquifer increase and decrease during extended wet and dry periods." This statement is apparently in reference to Figure 5-11: Representative Groundwater Elevation Hydrographs in the Dune Sand Aquifer (Section 5.1.3.1, Long-Term Groundwater Elevation Trends, Marina-Ord Area, p. 21).

HWG Comment: *The seven hydrographs shown in Figure 5-11 do not appear to respond to wet and dry periods. The only short-term response observed is around the year 2000 in the hydrograph for MW-OU2-05-A. This apparent stability of groundwater levels in the Perched/Mounded portion of the Dune Sand Aquifer is quite unlike the seasonal fluctuations that occur in response to pumping in the underlying aquifers, and further confirms that the DSA is undeveloped and essentially undevelopable as a water supply and therefore not a Principal Aquifer.*

11. The GSP states, "Groundwater elevations in the Lower 180-Foot Aquifer are generally equivalent to those observed in the 400-Foot Aquifer…" (Section 5.1.3.1, Long-Term Groundwater elevation Trends, 180-Foot Aquifer, Lower 180-Foot Aquifer, p. 21).

HWG Comment: *The GSP provides no evidence that groundwater elevations in the Lower 180-Foot Aquifer are equivalent to those in the 400-Foot Aquifer. In addition, no geologic evidence is provided that defines distinct Upper and Lower 180-Foot Aquifers in terms of a continuous intermediate aquifer throughout the Monterey Subbasin. MPWSP monitoring well MW-6 is a nested well cluster with separate wells in the upper and lower 180-Foot Aquifer and shows essentially identical groundwater elevations and fluctuations – it is located along Blanco Road on the border of the Monterey Subbasin with the 180/400-Foot Aquifer Subbasin.*

12. The GSP states that groundwater elevation data for MPWMD#FO-10 and MPWMD#FO-11 suggest, "…(1) these wells are screened within sediments that connect directly to the Deep Aquifers; or (2) leakage is occurring from the 400-Foot Aquifer into the Deep Aquifers in the vicinity of these wells." (Long-Term Groundwater Elevation Trends, 400-Foot Aquifer, p. 22).

HWG Comment: *Insufficient evidence is provided to make the stated conclusions; for example, no geologic evidence is provided to support these claims. In addition, more groundwater elevation data are needed to evaluate the gradient and flow direction in this portion of the aquifer. Preliminary review of geologic data (lithologic logs and Elogs) by HWG for MPWMD FO-10 and FO-11 indicate presence of sufficient thicknesses of clay layers to serve as aquitard layers between the 400-Foot and Deep Aquifers at this location.*

13. GSP Figure 5-15 shows groundwater hydrographs for Deep Aquifer wells near the Monterey Subbasin and 180/400-Foot Aquifer Subbasin boundary. Figure 5-16 shows Deep Aquifer groundwater pumping over time. In reference to the adjacent 180/400-Foot Aquifer Subbasin, the GSP states that, "…groundwater elevations in wells located near Cooper Road and Blanco Road have declined more than 5 ft/year over the past 15 years."

HWG Comment: *We note that the three wells in the 180/400-Foot Aquifer Subbasin have data through about 2020 and generally show fluctuating but overall stable groundwater elevations from about 2015 to 2020. Several of the MCWD wells within the Monterey Subbasin shown in the figure are lacking data from about 2017 to 2020, but the overall trend from available data appears to be declining groundwater elevations within Monterey Subbasin from 2015 to 2020. We note that Figure 5-16 shows significant increases in both agricultural and urban pumping from the Deep Aquifer after 2013, with urban pumping comprising approximately half of the total Deep Aquifer pumping over that time period. Figure 5-16 shows a doubling of urban pumping between 2013 and 2018, but no discussion/explanation of the sharp jump in urban pumping is provided in the text. Overall, the characterization of recent Deep Aquifer groundwater elevation trends between the two subbasins in the text appears to be inaccurate based on review of the figures.*

14. The GSP states, "These downward vertical gradients are caused by areal surface recharge, groundwater extraction from deeper aquifers, and laterally extensive aquitards, which exist in the Marina-Ord Area." (Section 5.1.4, Vertical Hydraulic Groundwater Gradients, pp. 31-32).

HWG Comment: *We note that the GSP references the presence of laterally extensive aquitards separating Principal Aquifers throughout Monterey Subbasin, a statement that we agree with, and yet the conceptual model described in GSP Chapters 4 and 5 provides for essentially no aquitard between the 180-Foot and 400-Foot Aquifers and a big hole in the thick aquitard between the 400-Foot Aquifer and Deep Aquifers.*

15. The GSP states that in the central Marina-Ord Area the groundwater elevations in the upper 180-Foot Aquifer are 70 feet lower than in the Dune Sand Aquifer (Section 5.1.4, Vertical Hydraulic Groundwater Gradients, p. 32).

HWG Comment: *This 70 foot difference in groundwater elevation almost certainly reflects the presence of perched aquifer conditions in the Dune Sand Aquifer at this location, which is why the HWG refers to the portion of the so-called Dune Sand Aquifer overlying the FO-SVA as the Perched/Mounded Aquifer. This observation also begs the question of why the Dune Sand Aquifer is being classified as a Principal Aquifer in this GSP, when much of it is a thinly saturated perched aquifer.*

16. The GSP states, "Within the Monterey Subbasin, seawater intrusion has been documented in the northern portion of the lower 180-Foot and 400-Foot Aquifers." (Section 5.3, Seawater Intrusion, p. 36).

HWG Comment: *As discussed other HWG comments in this letter, the designation of a geologically distinct lower 180-Foot Aquifer does not apply in the northern portion of the Monterey Subbasin. The entire thickness of the 180-Foot Aquifer is intruded at the coast and for some distance inland, with a seawater wedge having formed further inland (i.e., less saline water overlying more saline water due to density differences).*

17. The GSP describes data sources used in their analysis of seawater intrusion for the GSP, which include two airborne electromagnetic (AEM) surveys (Section 5.3.1, Seawater Intrusion, Data Sources, p. 36).

HWG Comment: *We note that the GSP utilizes an AEM profile entirely within the 180/400-Foot Aquifer Subbasin that passes through/near several MPWSP boreholes/wells, yet the GSP does not use the readily available MPWSP borehole/well data in its analysis. Furthermore, the HWG has conclusively demonstrated in previous documents (e.g., HWG, April 2019) that hydrogeologic interpretations derived from AEM data are flawed and inconsistent with borehole/well data.*

18. The GSP devotes several pages and two figures (5-26 and 5-27) to describing AEM surveys, primarily a profile entirely outside of the Monterey Subbasin (Section 5.3.1.2, Geophysical Data, pp. 36-38, 41-42, and 45-46).

HWG Comment: *It is not clear why the GSP relies so heavily on AEM data (primarily outside the Monterey Subbasin) in its discussion of seawater intrusion (and disregards borehole/well data for the same area) – especially given the flaws in the hydrogeologic and groundwater quality interpretations made using AEM data previously described in multiple HWG documents (e.g., January, March, April 2019). The hydrostratigraphy shown on the AEM profiles (Figures 5-26 and 5-27) is incorrect; particularly with regard to its depiction of aquitards (i.e., the presence of a continuous intermediate aquitard within the 180-Foot Aquifer and absence of a 180/400 Aquitard). In essence, the GSP is inappropriately trying to apply the Fort Ord hydrogeologic conceptual model (developed for a limited area south of Reservation Road) throughout the northern Monterey Subbasin and into the adjacent 180/400 Foot Aquifer Subbasin. Field borehole/well data demonstrate that application of the Fort Ord HCM to northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin is incorrect. There is no evidence/basis to support the stratigraphic interpretations in Figures 5-26 and 5-27 related to the presence (or absence) of aquitards between various aquifers. We note that there are no control points for the majority of the cross-section in Figure 5-26, yet the figure implies an abundance of fresh water. Field water quality data from MW-7M do not match that indicated on the profile. The two profiles are inconsistent; where control points exist with a TDS color coded legend the profiles are not shaded accordingly; however, where no control points exist to validate AEM water quality the profiles are shaded.*

19. In describing the purpose of the AEM surveys, the GSP states, "The studies' goal was to evaluate the understanding of the hydrostratigraphy in the study area and to interpret that distribution of groundwater quality indicated by available well data." (Section 5.3.1.2, Geophysical Data, p. 37).

HWG Comment: *While this statement references "available well data", it does not actually cite or use available well data. Rather, the GSP interpretations of hydrostratigraphy and seawater intrusion in this section are based primarily on interpretations of AEM data that are at odds with well data (see various HWG documents such as January 2019, March 2019, and April 2019).*

20. The GSP describes how AEM data (i.e. electrical resistivity) are dependent on, "…the amount of clay, the amount of water, and/or the salinity of the water…" (Section 5.3.1.2, Geophysical Data, p. 37).

HWG Comment: *While we agree with this statement, these facts also point out the high level of uncertainty associated with interpretation of AEM data in this coastal seawater intruded setting where multiple variables are impacting recorded AEM (resistivity) values. This allows for multiple non-unique interpretations of AEM data to be made in such settings, which creates more uncertainty in those hydrostratigraphic and groundwater quality interpretations. The GSP itself acknowledges that water quality interpretation is "difficult to discern" for a wide range of AEM resistivity values. The GSP does not acknowledge that geochemical interpretation of AEM resistivity values even outside of the cited large range are still subject to uncertainties related to variation in lithologic/saturation conditions.*

21. The GSP states, "The AEM surveys have found that high salinity groundwater as a result of seawater intrusion exists within the lower 180-Foot Aquifer and 400-Foot Aquifers of the Monterey Subbasin. This volume of high salinity groundwater is overlain by fresh groundwater in the Dune Sand and upper 180-Foot Aquifers. The results of the AEM study are consistent with water quality data collected within the Subbasin (EKI, 2019)." (Section 5.3.1.2, Geophysical Data, p. 38).

HWG Comment: *Both the AEM data and borehole/well data demonstrate that the coastal Dune Sand Aquifer and essentially the entire thickness of the 180-Foot Aquifer are seawater intruded from the ocean shoreline to approximately one mile inland. At that point, the coastal Dune Sand Aquifer begins to transition to the Perched/Mounded Aquifer that overlies of FO-SVA that is generally not seawater intruded because it is an elevated thinly saturated perched aquifer further inland, and the fully seawater intruded area of the 180-Foot Aquifer transitions to a seawater intrusion wedge with less saline water overlying more saline water due to density differences. While the results of the AEM survey may be consistent with the primarily Perched/Mounded Aquifer groundwater quality data cited in EKI (2019), the AEM survey based hydrostratigraphic and groundwater quality interpretations are inconsistent with the groundwater quality data collected for the MPWSP (e.g., HWG, April 2019) and key MCWD and Seaside Basin wells.*

22. The GSP presents an analysis (Figure 5-23) that demonstrates the definition of 500 mg/L chloride as the threshold for defining seawater intrusion is equivalent to a TDS of 1,000 mg/L. The GSP also cites the State of California upper Secondary Maximum Contaminant Level of 1,000 mg/L for TDS (Section 5.3.2, Defining Seawater Intrusion, p. 40).

HWG Comment: *We concur with the use of 500 mg/L chloride (although a good argument can be made for use of 250 mg/L chloride as a better indicator) and 1,000 mg/L TDS as an appropriate standards/thresholds for drinking water and seawater intrusion. We note that the AEM studies (study authors and study proponents) continue to argue for a drinking water and seawater intrusion threshold of 3,000 mg/L TDS, but this is at odds with GSP stated seawater intrusion and drinking water standards/thresholds of 500 mg/L and 1,000 mg/L TDS. Furthermore, due to the significant uncertainties in AEM groundwater quality interpretations, the AEM studies primarily attempt to differentiate* *groundwater above and below 3,000 mg/L TDS. The use of AEM data with a lower cutoff value (e.g., 1,000 mg/L TDS) results in even greater uncertainty in interpreted results than are achieved using the already uncertain AEM interpretations based on a cutoff of 3,000 mg/L TDS. We note that the GSP adopts a double standard by saying seawater intrusion has occurred when TDS exceeds 1,000 mg/L or chloride exceeds 500 mg/L in the Deep Aquifer, yet concentrations of 3,000 mg/L TDS and over 1,000 mg/L chloride represent low-TDS groundwater that is considered a source of drinking water supply in the AEM studies cited in the GSP.*

23. In reference to the AEM profiles shown in Figures 5-26 and 5-27, the GSP states, “TDS and AEM data shown on these cross-sections confirm that seawater intrusion in the Monterey Subbasin primarily exists in the lower 180-Foot Aquifer and 400-Foot Aquifer, whereas groundwater in the Dune Sand and upper 180-Foot Aquifers remains fresh.” (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, p. 41).

HWG Comment: *While the statement refers to Monterey Subbasin, it should be noted that the Figure 5-26 is located entirely outside (north of) Monterey Subbasin, and Figure 5-27 contains very little data for the AEM profile within Monterey Subbasin. Furthermore, we have previously commented (in this letter and previous documents) on the flaws in the hydrostratigraphic and water quality interpretations shown on these AEM profiles (e.g., HWG, April 2019). Actual borehole/well data show the coastal Dune Sand Aquifer and entire thickness of the 180-Foot Aquifer are heavily intruded with seawater at the coast and for a significant distance inland. We recommend that AEM data only be used where results can be clearly validated with actual lithologic and water quality data. By not using this approach, the groundwater conditions are being misrepresented.*

24. In reference to the 180-Foot and 400-Foot Aquifers, the GSP states, “It appears that seawater intrusion in these two aquifers forms a unified intrusion wedge, due to the discontinuity of the 180/400-Foot Aquitard near the coast.” (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, p. 41).

HWG Comment: *The HWG has previously demonstrated the flaws and inaccuracies in the hydrostratigraphic/water quality interpretations from AEM data inherent in this statement (i.e., absence of 180/400 Aquitard) (see HWG, April 2019).*

25. The GSP states, “Based on available TDS and AEM data, Figure 5-28 depicts the estimated extent of seawater intrusion within the Monterey Subbasin.” (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, p. 41).

HWG Comment: *The area covered by Figure 5-28 does not include the AEM profile shown in Figure 5-26 and the AEM profile in Figure 5-27 provides very little data for the mapped area in Figure 5-28. Therefore, Figure 5-28 presumably is based essentially exclusively on TDS data. Furthermore, the area covered by Figure 5-28 has separate 180-Foot and 400-Foot Aquifers separated by an aquitard, so one map is mixing data from different aquifers and should be revised to be two separate figures as is done by the MCWRA.*

26. The GSP states, "…the 180-Foot Aquifer in the Subbasin is divided by an intermediate aquitard into an upper zone and a lower zone. There is no observed seawater intrusion in the upper portion of the 180-Foot Aquifer." (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, pp. 41-42).

HWG Comment: *As discussed previously in this letter, the area covered by Figure 5-28 does not have a continuous intermediate aquitard in the 180-Foot Aquifer, does have a 180/400-Foot Aquitard, and seawater intrusion is present in a significant zone along (and inland of) the ocean throughout the entire thickness of the 180-Foot Aquifer (see HWG, 2017; Staal, Gardner & Dunne, 1992; Fugro West 1996 and 2001).*

27. In reference to Figure 5-28, the GSP states, "The figure shows that depressed groundwater elevations in the 180/400 Foot Aquifer Subbasin are creating inland groundwater gradients that are contributing to seawater intrusion within the Monterey Subbasin." (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, pp. 41-42).

HWG Comment: *It should be noted that there are also depressed groundwater elevations from groundwater pumping within the Monterey Subbasin that are contributing to inland groundwater gradients that are contributing to seawater intrusion within the Monterey Subbasin. In fact, the groundwater elevation contour map provided in Figure 5-28 indicates flow lines from the ocean end in a groundwater depression within the Monterey Subbasin. Furthermore, much greater historical pumping from Fort Ord and MCWD wells within the Monterey Subbasin created seawater intrusion within the Monterey Subbasin. Once seawater intrusion occurs, it requires many decades of maintaining seaward gradients to flush saline water back out of the aquifers.*

28. GSP Figure 5-24 purports to show TDS concentrations and the extent of seawater intrusion in Monterey Subbasin (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, p. 43).

HWG Comment: *The dark blue zone in the Dune Sand Aquifer map extending approximately 0.5 miles inland from the shoreline suggests presence of fresh water coastal Dune Sand Aquifer, which is attributed to the 2018 AEM Survey report according to the map legend. The light blue zone that presumably attempts to define TDS concentrations below 1,000 mg/L includes a lobe that extends west of the FO-SVA extent that is not supported by any well data. On the contrary, available well data from the MCWD office site on Reservation Road for the Dune Sand Aquifer shows significant seawater intrusion has occurred in the area the AEM Survey report shown to be fresh water in the Dune Sand Aquifer along the coast (Staal, Gardner & Dunne, 1991 and 1992; Fugro West, 1996a and 1996b; Fugro West, 2001).*

29. The GSP states, "…seawater continues to flow across the area that is intruded towards the 180/400 Foot Aquifer Subbasin, while there is minimal migration of seawater intrusion to inland areas of the Monterey Subbasin. (Section 5.3.4, Historical Progression of Seawater Intrusion, p. 48.)

HWG Comment: *While the title of this GSP section refers to "Historical Progression of Seawater Intrusion", it fails to actually discuss the historical progress of seawater intrusion within Monterey Subbasin. As indicated in seawater intrusion maps prepared by MCWRA (Appendix 5B), a significant lobe of seawater intrusion into the 180-Foot Aquifer and 400-Foot Aquifer solely within Monterey Subbasin occurred south of Reservation Road in the 1970's and 1980's. This initial seawater intrusion into Monterey Subbasin occurred as a result of groundwater pumping from MCWD and Fort Ord wells screened in the 180-Foot Aquifer and 400-Foot Aquifer production zones, which were sequentially abandoned and moved inland and/or deeper as seawater intrusion moved inland in response to pumping of MCWD and Fort Ord production wells (Harding ESE, 2001). Most of the saline water that was induced to flow into Monterey Subbasin in the 1970s and 1980s still resides in Monterey Subbasin aquifers, and remains part of the overall area of seawater intrusion that exists today.*

30. Figure 5-29 of the GSP (Total Dissolved Solid Concentration Trends in the Lower 180-Foot, 400-Foot Aquifer) shows historical and recent TDS concentrations in various wells, including MCWD Wells MCWD-29 and MCWD-31. (Section 5.3.4, Historical Progression of Seawater Intrusion, p. 49).

HWG Comment: *Figure 5-29 indicates TDS concentrations of approximately 400 mg/L during 2019 in MCWD-29 and MCWD-31. Review of the 2019 AEM Survey Report Table 4-1 shows that AEM based TDS concentrations in the zone screened by these wells is estimated to be greater than 1,000 mg/L (about three times the field measured concentrations). Based on analysis (AEM data is a major data source of mapping sweater intrusion in the GSP) and relationships between chloride and TDS established in the GSP (e.g., chloride concentrations of 500 mg/L equate to TDS concentrations of approximately 1,000 mg/L), it seems that MCWD wells MCWD-29 and MCWD-31 should be included within the area of mapped seawater intrusion. In fact, this discrepancy demonstrates how interpretation of AEM data with regard to water quality can result in significant errors relative to field measured data. Interpreted AEM data has also been shown to significantly underpredict TDS/chloride concentrations (e.g., HWG, April 2019) is some areas.*

31. The GSP relies on a study conducted by WRA Environmental (2020) to conclude that 19.51 acres of aquatic and upland biological communities at six ponds are dependent upon groundwater (Section 5.7.1, Groundwater Dependent Ecosystems, Coastal Vernal Ponds within the City of Marina, p. 68).

HWG Comment: *We note that the five authors of the report by WRA Environmental are all biologists, with no apparent contribution from a hydrogeologist to help evaluate groundwater conditions and dependence of the plant communities on groundwater. The only investigation of groundwater in the report was digging a hole to 14 inches in depth to look for soil saturation; however, these field efforts are inadequate to determine groundwater conditions at the sites because there may be shallow fine-grained sediment layers supporting perched/saturated soils in the upper few feet of soil. The WRA report also cites the fact that their field efforts were conducted in June 2020, well after the end of the rainy season, and water was still observed in most of the ponds (implying it must be groundwater). However, review of monthly precipitation data for the 2019 and 2020 water years indicates the 2019 year was very wet (133% of normal) and the 2020 water year was wet (105% of normal). In addition, heavy rainfall* *occurred in March and April 2020 (about 6.5 inches or close to half the average annual rainfall) with smaller amounts of rainfall in May and June; therefore, it would be expected that surface runoff remained in the ponds with near surface saturation at the time of WRA's June 2020 site visits. We also note that the WRA Report relies on other studies such as Formation Environmental (April 2020) and the draft City of Marina GSA GSP (2020). The HWG has previously commented on these studies, and Geoscience/AECOM conducted the most recent study on the vernal pools (HWG, November 2019; Geoscience and AECOM, August 18, 2020). Summary Geoscience/AECOM comments on the Formation Environmental TM included: 1) very limited use of available groundwater data from MPWSP MW-4 and MW-7 to one point in time without considering entire record and impact of agricultural irrigation return flows in immediate vicinity; 2) relies solely on ET data to justify conclusion that Armstrong Ranch Ponds are groundwater dependent without consideration of alternative water sources such a seasonal surface water from rainfall; 3) failure to account for perched aquifer conditions underlying area; 4) failure to account for effects of urbanization surrounding six ponds in city of Marina that caused ponds to become primarily reliant of surface water runoff and leading to ponds becoming perennial. Furthermore, all six ponds in the Marina area are not hydraulically connected to the coastal Dune Sand Aquifer (thus, pumping from coastal Dune Sand Aquifer will not affect them); and all ponds received surface discharge from storm drains that empty into the ponds. Several ponds were found to have hardpan layers beneath them that limit percolation and likely account for WRA observations of shallow saturation. In addition, water quality data suggest that ponds are more influenced by stormwater runoff than groundwater from the perched aquifer system. Overall, it was found that the Formation Environmental study is fundamentally flawed , misrepresents potential impacts on ponds from pumping in the coastal Dune Sand Aquifer, and does not consider all available evidence concerned the nature of these pond resources and potential impacts to them from pumping. HWG comments on the City of Marina GSA Draft GSP state, "the fact that nearby GDEs are seasonally flooded and have a seasonal nature to them (and are associated with "a lens of less pervious soil") suggests a surface water source is most likely sustaining vegetation in these areas. The GSP evaluation to determine if potential GDEs are actual GDEs did not consider that shallow groundwater in these nearby potential GDE areas is saline or the likelihood that fresh surface water is the primary sustaining factor for these areas and (which means they are not GDEs)."*

32. We note that the City of Marina Draft GSP stated the following with regard to pumping from Marina Coast Water District Deep Aquifer wells, "The combined extraction from these wells was approximately 1,823 AFY in 2015, and is forecast to increase to 3,905 AFY by 2035…" (Section 3.1.8, page 3-17).

HWG Comment: *While the Monterey Subbasin GSP comments on the impacts of increasing pumping from the Deep Aquifer in the adjacent 180/400-Foot Aquifer Subbasin, it is silent on the issue of increased pumping from existing (and potential future new) MCWD Deep Aquifer wells. The cited MCWD Deep Aquifer pumping numbers represent a greater than doubling of the amount of current MCWD pumping from the Deep Aquifer, a pumping amount that already results in Deep Aquifer water levels within Monterey Subbasin on the order of 50-100 feet below sea level. Such increased pumping from the Deep Aquifer by MCWD and others is likely not sustainable.*

33. We note that the City of Marina Draft GSP stated, "In the Monterey Subbasin, groundwater demand from the Deep Aquifer by MCWD to supply the City of Marina is expected to increase….however, the increase is projected to be within MCWD's allocated pumping rights." (Section 3.3.10.4, page 3-69).

HWG Comment: *Regardless of the validity of allocated pumping rights (which is yet to be determined), it remains unclear if the proposed MCWD increase in pumping from the Deep Aquifer is sustainable. In addition, the increased pumping from the Deep Aquifer to the east to support agricultural expansion is based on overlying rights, not allocated (paper water) pumping rights, and are thereby presumably superior to MCWD rights.*

Monterey Subbasin GSP Comment Log (Prepared by SVBGSA)

1. In Comment 41 (dated 1/7/21) Tina Wang states, "…There is one thing we pointed out in that chapter, is the dune sand aquifer and the upper 180 foot aq is not SWI intruded, it is fresh."

HWG Comment: *As pointed out in our comments on GSP Chapters 4 and 5, the Fort Ord Site Conceptual Model (i.e., continuous intermediate aquitard within 180-Foot Aquifer and lack of a 180/400-Foot Aquitard) does not apply in northern Monterey Subbasin. Furthermore, available field data indicate that the Dune Sand Aquifer and upper portion of the 180-Foot Aquifer are seawater intruded (chloride greater than 500 mg/L) for a significant distance inland from the coast in the northern Monterey Subbasin and Southern 180/400-Foot Aquifer Subbasin. We also note that EKI's (and others) definition of fresh water in many previous documents related to the MPWSP has been TDS up to 3,000 mg/L; however, HWG have shown such levels of TDS also have greater than 1,000 mg/L chloride in the area, which is far in excess of the 500 mg/L standard applied by MCWRA for seawater intrusion. The Monterey Subbasin GSP uses AEM data outside of Monterey Subbasin (i.e., in southern 180/400-Foot Subbasin) to claim the presence of this so-called fresh water, yet actual field data show seawater intrusion has occurred at the coast and for a significant distance inland in this area (see HWG, 2017).*

2. In Comment 44 (dated 1/7/21) Derrik Williams responds to the commenter (Bob Jaques) that, "We have discussed the AEM data with some members of the blue ribbon panel…the didn't have too many concerns.'

HWG Comment: *If the commenter is referring to the Hydrogeologic Working Group, this statement by Derrik Williams is incorrect. The HWG has many concerns about the hydrogeologic interpretation of the AEM data and has documented our concerns in numerous documents (e.g., HWG, 2017; HWG, 2018; HWG, January 2019; HWG, March 2019; HWG, April 2019; HWG, June 2020).*

Sincerely,

The Hydrogeologic Working Group (Dennis Williams, Tim Durbin, Martin Feeney, Peter Leffler)

Dennis Williams

Tim Durbin

Martin Feeney

Peter Leffler

REFERENCES

California Public Utilities Commission (CPUC), CalAm Monterey Peninsula Water Supply Project Environmental Impact Report/Environmental Impact Statement, SCH#2006101004, March 2018.

City of Marina Groundwater Sustainability Agency, *Draft Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin*, October 2019.

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EKI Environment & Water, *Fresh Groundwater in Dune Sand and 180-Foot Aquifer South of Salinas River, 180/400 Foot Aquifer & Monterey Subbasins*, December 2019.

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HWG, *HWG Comments on Technical Appendices/Attachments to Letters Submitted by MCWD and City of Marina to the CPUC and MBNMS on April 19, 2018, Letter to John Forsythe/CPUC and Paul Michel/MBNMS*, August 15, 2018.

HWG, *HWG Comments on Technical Presentations and Letters/Memorandum Prepared by HGC, EKI, and MCWD for City of Marina Public Workshop on MPWSP Coastal Development Permit Held on January 8, 2019*, January 25, 2019.

HWG, *HWG Responses to Dr. Knight Letter Addressed to HWG and Submitted During City of Marina Planning Commission Hearing on MPWSP Coastal Development Permit Held on February 14, 2019*, March 6, 2019.

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LIST OF ACRONYMS & ABBREVIATIONS

AEM	Aerial Electromagnetics
bgs	below ground surface
Cal Am or CalAm	California American Water Company
CPUC	California Public Utilities Commission
DSA	Dune Sand Aquifer
FO-SVA	Ford Ord Salinas Valley Aquitard
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCM	Hydrogeologic Conceptual Model
HWG	Hydrologic Working Group
MCWD	Marina Coast Water District
MCWRA	Monterey County Water Resources Agency
MPL	Monterey Peninsula Landfill
mg/L	Milligrams per Liter
MGSA	Marina Groundwater Sustainability Agency
MPWSP	Monterey Peninsula Water Supply Project
MW	Monitoring Well
SGMA	Sustainable Groundwater Management Act
SVB	Salinas Valley Basin
TDS	Total Dissolved Solids
USGS	United States Geological Survey

Salinas Basin Water Alliance

Salinas Basin Water Alliance Board of Directors

George Fontes

David Bunn

Greg Scattini

Gary Tanimura

Tom Bengard

April 21, 2021

Dear Chair Hardgrave and Monterey Subbasin Committee Members,

As landowners, growers, and agricultural businesses throughout the Salinas Valley, we are writing to support the Monterey Subbasin's emphasis on closing water data gaps ahead of the draft GSP to achieve true sustainability both in the subbasin and the entire Salinas Valley.

As the chair and members of the public have noted, there is a clear lack of data to reflect the impact that activities in neighboring subbasins have on the Monterey subbasin. Without understanding those impacts (including pumping in the 180/400 subbasin or even the GSA's divvying up of agricultural and housing developments between neighboring subbasins), it will be difficult to define sustainability in the Monterey subbasin or have confidence that proposed projects or management actions will have any impact at all.

We are writing to encourage the GSA to address this data gap before pushing the subbasin committee to prematurely approve a draft GSP with projects and management actions. Achieving sustainability will require a true understanding of groundwater flow to and from the subbasin and will ensure community support and engagement if stakeholders see the clear and demonstrable benefits of proposed projects.

Our alliance represents more than 41,000 acres throughout the Salinas Valley. All of our producers carefully monitor and report their water usage and several have property in the Monterey Subbasin. We believe a universal reported metering system that relies on data, not merely estimates, is an essential aspect of groundwater storage monitoring and sustainability efforts.

Our alliance is dedicated to protecting groundwater supply for the long-term. That requires honest data throughout the valley. Closing the data gaps in the Monterey Subbasin is an critical step in that direction.

Sincerely,

George Fontes, President, Salinas Basin Water Alliance

Salinas Basin Water Alliance | P.O. Box 247 Salinas, CA 93902

From:	bobj83@comcast.net
To:	Patrick Breen; Tina Wang
Cc:	Bob Jaques; Laura Paxton; Jonathan Lear
Subject:	Monitoring Well FO-10 Induction Logging Results and Request
Date:	Thursday, April 22, 2021 5:33:23 PM
Attachments:	Martin Feeney FO-9 and FO-10 MW Logging Rpt-final 4-5-21.pdf

Patrick and Tina,

Attached is the Tech Memo prepared by Martin Feeney after the recent completion of induction logging of monitoring wells FO-9 and FO-10.

As his Memo reports, he does not have an explanation for the findings in FO-10 in which the logging showed high conductivity over nearly the entire depth of the well, whereas the E-log from the original construction of this well did not show this. One theory, that there is leakage in this casing just as is believe to be the case in the casing of FO-9, does not bear out, since there are clearly different water level readings in the different depth wells at FO-10. That indicates that these wells are not cross-connected through casing leakage.

Our TAC asked that you please include investigating the cause of these findings in the GSP for this portion of the Monterey Subbasin, and developing any response action that the investigation finds should be taken.

With regard to FO-9 Shallow, MPWMD plans to video inspect this well, and also FO-10 Shallow, to confirm the suspected casing leakage in FO-9 Shallow and to determine the structural integrity of FO-10 Shallow. They plan to do that work in the next couple of weeks and I will share with you the results of that inspection.

If it is found that the casing in FO-9 Shallow is leaking, and that it is not feasible to repair it, MPWMD said that as the owner of the well they plan to destroy it to avoid having it be a cross-aquifer contamination source. Since water level and water quality data from that part of the Seaside Basin is important not only to the Watermaster and MPWMD, but also to MCWD to provide information for your development of the Monterey Subbasin GSP, if the well needs to be destroyed we would like to discuss with you a cost-sharing arrangement to have a replacement monitoring well installed near that location.

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

From: Martin Feeney
To: Jonathan Lear
Cc: bobj83@comcast.net; Tina Wang; Patrick Breen
Subject: Re: Monitoring Well FO-10 Induction Logging Results and Request
Date: Friday, April 23, 2021 4:06:27 PM

Yes, the plan is to do FO-9 Shallow and Deep. This scheduled for Wednesday.

Cheers

Martin

____
Martin B. Feeney PG CEG CHg
Consulting Hydrogeologist
831-915-1115

> On Apr 23, 2021, at 2:55 PM, Jonathan Lear <jlear@mpwmd.net> wrote:
>
> Martin's recommendation to the District was only to video log FO-09 because the fluid resistivity log from FO-10 proves the increased chloride in the samples taken from FO-10 are representative of water in the screens. In the TAC meeting I stated we were going to perform 2 video logs, but I was referring to FO-09 Shallow and Deep, not Fo-09 and FO-10.
>
> ---
>
> **From:** bobj83@comcast.net <bobj83@comcast.net>
> **Sent:** Friday, April 23, 2021 2:39 PM
> **To:** Jonathan Lear <jlear@mpwmd.net>
> **Cc:** Bob Jaques <bobj83@comcast.net>
> **Subject:** RE: Monitoring Well FO-10 Induction Logging Results and Request
>
> Jon,
> I thought you were going to check the structural integrity of FO-10 too, to make sure it didn't have any leaks.
> Bob
>
> ---
>
> **From:** Jonathan Lear <jlear@mpwmd.net>
> **Sent:** Friday, April 23, 2021 1:40 PM
> **To:** Tina Wang <twang@ekiconsult.com>; bobj83@comcast.net; Patrick Breen <pbreen@mcwd.org>
> **Cc:** Laura Paxton <watermasterlaura@sbcglobal.net>
> **Subject:** RE: Monitoring Well FO-10 Induction Logging Results and Request
>
> Hi,

One correction. The District is planning to video FO-09 shallow and deep and not FO-10.

-Jon

From: Tina Wang <twang@ekiconsult.com>
Sent: Friday, April 23, 2021 1:18 PM
To: bobj83@comcast.net; Patrick Breen <pbreen@mcwd.org>
Cc: Laura Paxton <watermasterlaura@sbcglobal.net>; Jonathan Lear <jlear@mpwmd.net>
Subject: RE: Monitoring Well FO-10 Induction Logging Results and Request

Bob – Thank you for this information and forwarding the request from the Seaside TAC. We'll review and incorporate them into the GSP.

Tina Wang, P.E.
EKI Environment & Water, Inc.
2001 Junipero Serra Boulevard, Suite 300
Daly City, California 94014
T: (650) 292-9100 | D: (650) 292-9050
twang@ekiconsult.com | www.ekiconsult.com

From: bobj83@comcast.net <bobj83@comcast.net>
Sent: Thursday, April 22, 2021 5:33 PM
To: Patrick Breen <pbreen@mcwd.org>; Tina Wang <twang@ekiconsult.com>
Cc: Bob Jaques <bobj83@comcast.net>; Laura Paxton <watermasterlaura@sbcglobal.net>; Jonathan Lear <jlear@mpwmd.net>
Subject: Monitoring Well FO-10 Induction Logging Results and Request

Patrick and Tina,

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As his Memo reports, he does not have an explanation for the findings in FO-10 in which the logging showed high conductivity over nearly the entire depth of the well, whereas the E-log from the original construction of this well did not show this. One theory, that there is leakage in this casing just as is believe to be the case in the casing of FO-9, does not bear out, since there are clearly different water level readings in the different depth wells at FO-10. That indicates that these wells are not cross-connected through casing leakage.

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Thanks,

Robert S. Jaques, PE
Technical Program Manager
Seaside Basin Watermaster
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Monterey, CA 93940
Office: (831) 375-0517
Cell: (831) 402-7673

Martin B. Feeney
Consulting Hydrogeologist

P.G. 4634
C.E.G. 1454
C.Hg 145

April 5, 2021

Seaside Basin Watermaster
PO Box 51502
Pacific Grove, CA
93950

Attention: Bob Jaques, PE

Subject: Geophysical Investigation Fort Ord Monitoring Wells FO-9 and FO-10 – Preliminary Findings

Dear Bob:

Two monitoring wells in the Seaside Basin monitoring program, FO-9 Shallow and FO-10 Shallow, have recently displayed increasing concentrations of chloride ions; raising the possibility that these data are indicative of advancement of seawater into the basin. However, these data are difficult to reconcile with other data from the more seaward Sentinel Wells that have seen no changes. The ad-hoc advisory team discussed this and generally believed that the data from the monitoring wells would benefit from further confirmation. It was suggested that the monitoring wells be induction logged and the data from the induction logs be compared to the original electric logs to assist in evaluating if there have been conductivity changes in the formation since the time of the well installations. This work has been completed and I'm pleased to provide the initial data and preliminary interpretations.

Background.
Monitoring Wells Clusters FO-9 and FO-10 were drilled in 1994 and 1996, respectively. The wells are nested completions with multiple casings of varying lengths in the same borehole. FO-9 has two completions - a shallow completion in the Paso Robles Formation and a deeper completion in the Santa Margarita Sandstone. FO-10 has 3 completions - one in the Paso Robles Formation, one in the Santa Margarita Sandstone and a third completion in an intermediate depth. The details of well construction are shown on Figures 1 and 2.

Findings

Prior to the recent field work, the original elogs from both of the borings were digitized so the original elogs could be easily compared to the inverse of the induction logs (elog measures resistivity, induction log measures the inverse, i.e., conductivity). After acquiring digital versions of the elogs, the wells were geophysically logged on March 23, 2021. Both induction logs and temperature/fluid resistivity logs were performed. The induction logging measures the bulk conductivity of a sphere of earth materials (including the borehole contents - gravel envelope and casings) of approximately 6 feet in diameter. The temperature/fluid resistivity measures temperature/resistivity of the fluid in the casing. The temperature data allows for the resistivity data to be corrected for temperature. At each location, the deepest accessible well was induction logged while the shallow well was temperature/fluid resistivity logged. The data from the logging and the well construction are attached as Figure 1 and 2.

<u>**FO-09**</u>

- Both of the completions (shallow and deep) at this site have debris (airlift pipe, suction pipe?) in the bottom of the wells so we were not able to get to bottom or even into perforations.

- As can be seen in the Fluid Resistivity log for this well, FO-09 Shallow is leaking poor quality water into the well at about 185 feet bgs (about -40 ft msl). The data suggest the well has a structural flaw (crack, open joint?) at this depth.
- Below this depth, water quality is impacted but as the log approaches the perforations, the quality improves.
- The induction logging matches the original elog reasonably well. Although the magnitude of the recent trace appears higher than the original, no area looks more conductive than it was in 1994. The higher magnitude of the recent trace is likely a function relating to the legacy elog to which it is compared, which reflects the higher conductivity fluid in the borehole at the time of original logging. The drilling mud had a conductivity (EC) of about 625 µS at time of drilling whereas now the water (where not impacted by the leak) in the well (and formation) is closer to 400 µS.
- The elevated chloride values in the water quality samples from this well are the result of the entry of water from higher in the casing, not recently advancing SWI.

FO-10

- The induction tool was not able descend in the deep well as the upper section has a bend in the casing that is too tight for passage. The intermediate and shallow wells were successfully logged to bottom.
- The induction log is severely muted when compared with the original elog. At first glance it looks like seawater intrusion, but on further reflection the shift is along the entire profile, which is considered unlikely. The reason for the muted response is unclear. Discussions with the geophysical contractor suggest that all the intermediate well seals are leaking and allowing poor quality water from above. Whereas that theory would explain the data, it again is consider highly unlikely because water level data from these wells consistently show significant differences between shallow and deep completions.
- The fluid resistivity logs show elevated EC in the screen section relative to the standing water in the casing, suggesting the quality in the screen section may be changing and the water quality samples from this well maybe valid.

The two shallow wells were displaying elevated chloride values. The new data confirms that the water quality samples from FO-09 Shallow are impacted by a structural flaw in the casing that is allowing poor quality water to enter the casing and contaminate the perforated area from which samples are taken. The recent samples are not representative of the in-situ aquifer water from the screened interval at this location. It is recommended that this well be video surveyed to assess the nature of the flaw. After confirmation of the nature of the structural flaw, the well should be repaired or destroyed to prevent continued contamination of the Paso Robles Formation at this location.

The data also confirms that the recent increase in chlorides in FO-10 Shallow is representative of the water in the perforations. The reason for the increase is not known. Ongoing routine sampling may assist in better determining water quality trends and any additional well investigative recommendations at this location.

The opportunity to perform this work is appreciated. Please call if you have any questions.

Sincerely,

Figure 1

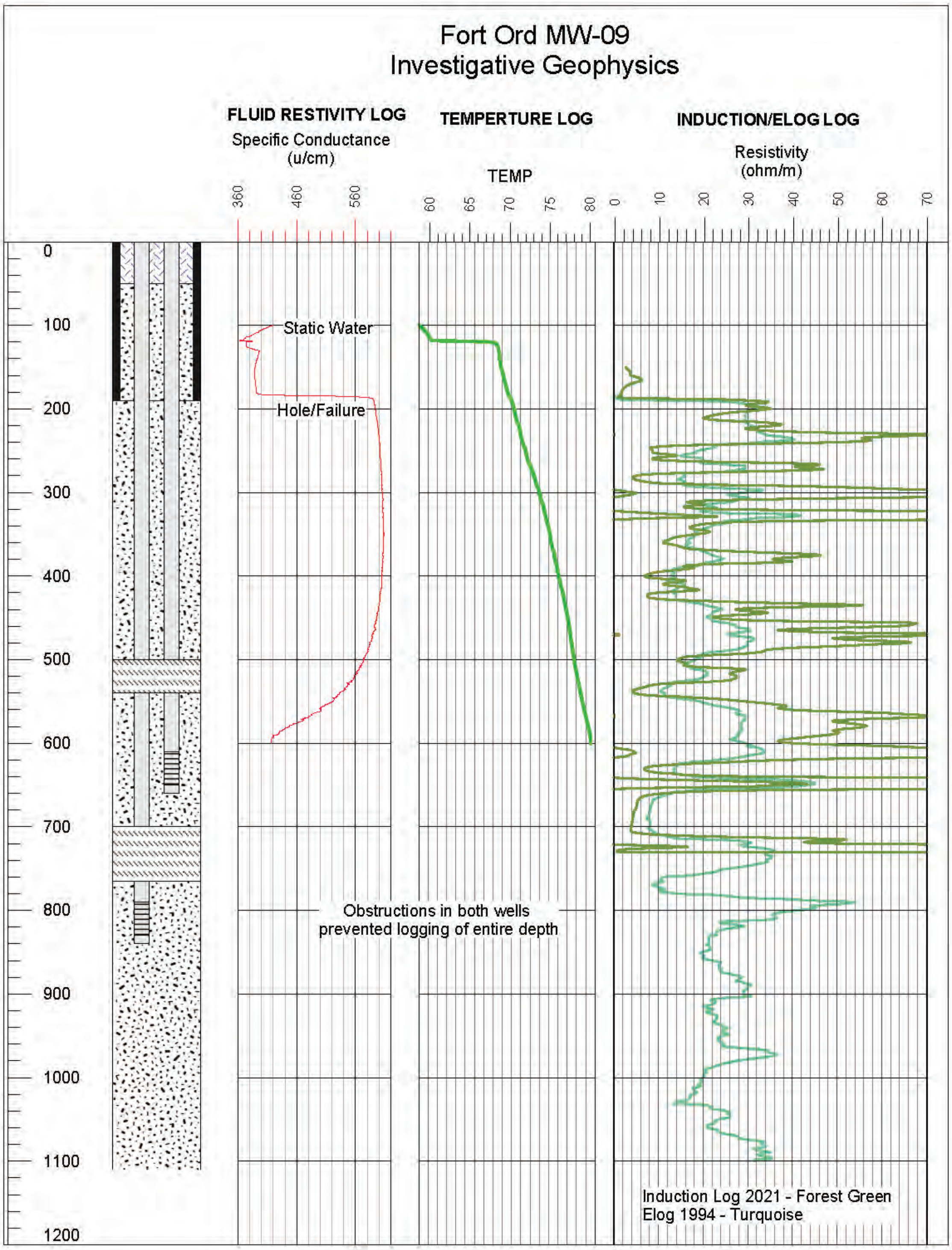
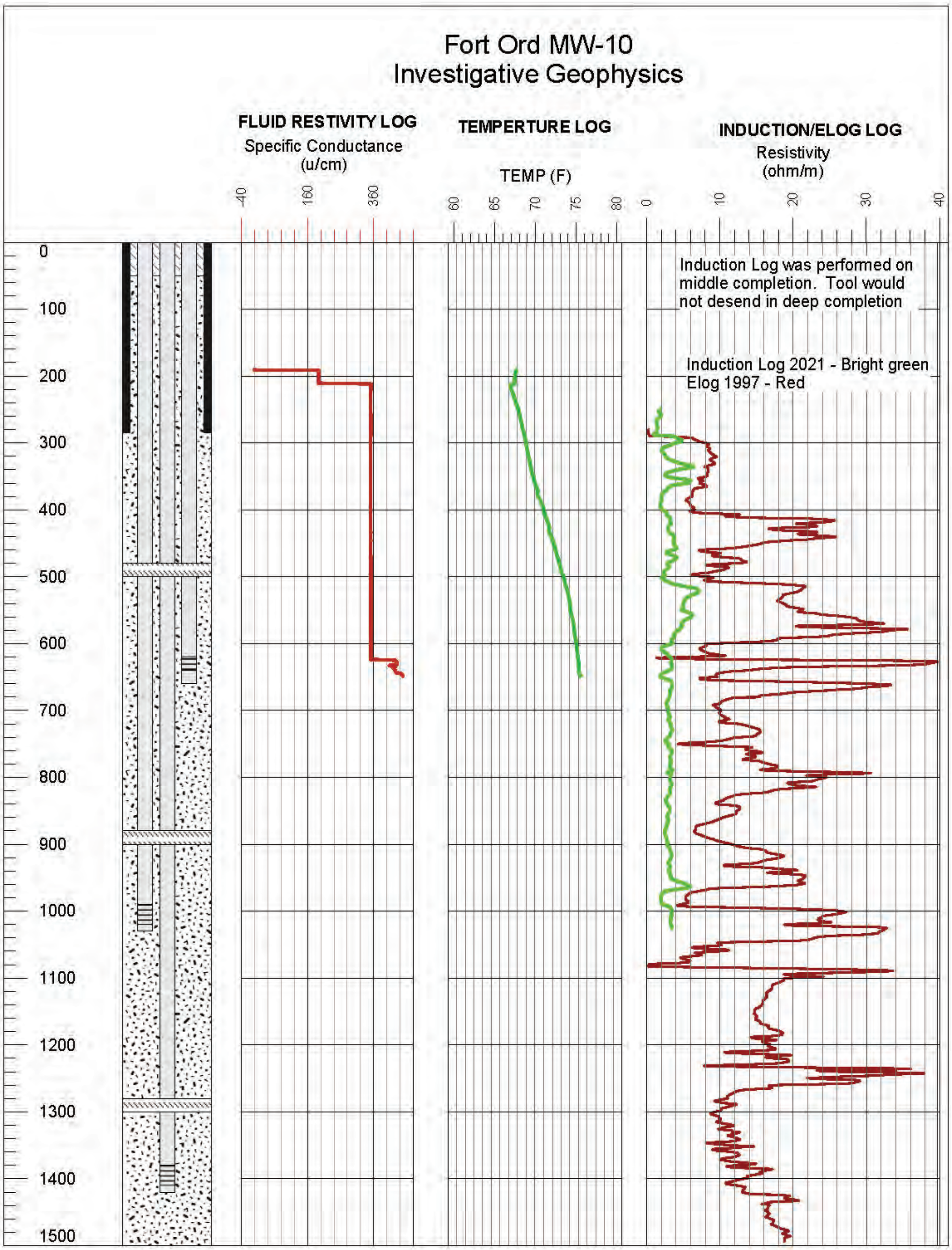

Fort Ord MW-09
Investigative Geophysics
FLUID RESTIVITY LOG
Specific Conductance
(u/cm)
360
460
560
TEMPERTURE LOG
TEMP
60
65
70
75
80
INDUCTION/ELOG LOG
Resistivity
(ohm/m)
0
10
20
30
40
50
60
70
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
Static Water
Hole/Failure
Obstructions in both wells
prevented logging of entire depth
Induction Log 2021 - Forest Green
Elog 1994 - Turquoise

Figure 2


Fort Ord MW-10
Investigative Geophysics
FLUID RESTIVITY LOG
Specific Conductance
(u/cm)
-40
160
360
TEMPERTURE LOG
TEMP (F)
60
65
70
75
80
INDUCTION/ELOG LOG
Resistivity
(ohm/m)
0
10
20
30
40
Induction Log was performed on middle completion. Tool would not desend in deep completion
Induction Log 2021 - Bright green
Elog 1997 - Red
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500

COMMUNITY WATER CENTER
EL CENTRO COMUNITARIO POR EL AGUA

San Jerardo Cooperative, Inc.

April 23, 2021

Salinas Valley Basin Groundwater Sustainability Agency

Submitted electronically to:

Emily Gardner, Deputy General Manager

Donna Meyers, General Manager

Subject Comments on the Draft Salinas Valley GSP Chapters 1-8 for the Langley, East Side, Forebay, Upper Valley and Monterey Subbasins

Dear Salinas Valley Basin Groundwater Sustainability Agency:

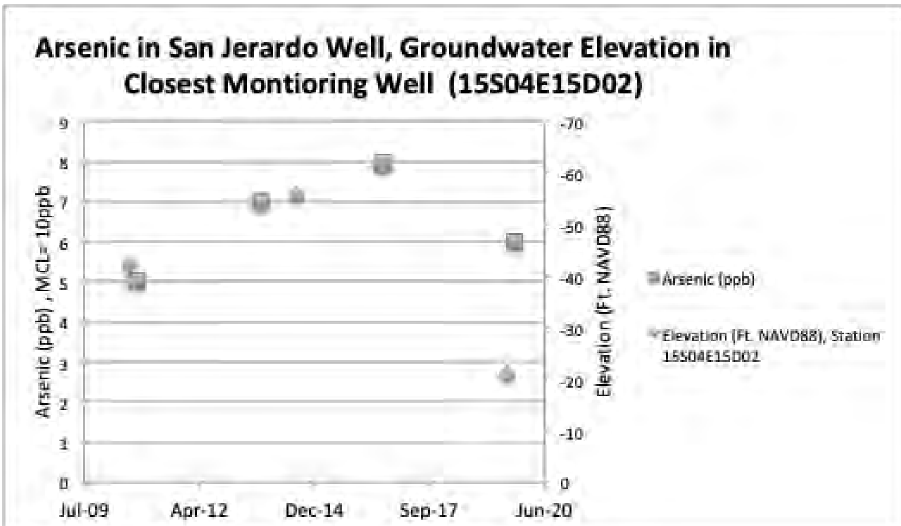
The Community Water Center (CWC) and the San Jerardo Cooperative would like to offer comments and recommendations in response to the draft Groundwater Sustainability Plans (GSPs) Chapter 1-8 for the Langley, East Side, Forebay, and Upper Valley Subbasins as well as Chapters 1-5 and 7 for the Monterey Subbasin that were released in 2020 and early 2021 by the Salinas Valley Basin Groundwater Sustainability Agency (SVB GSA). In addition, we offer preliminary comments on the draft Chapter 9 Implementation Actions that were shared with subbasin committees in April 2020. These comments are intended to add to the public record and are submitted in addition to previous written and spoken comments.

The challenges facing San Jerardo and similar communities throughout all the subbasins in the Salinas Valley are the foundation of our comments in this letter. The San Jerardo Cooperative's well is highly vulnerable to changes in groundwater levels and groundwater quality. Over decades of living and working at San Jerardo Cooperative, Horacio Amezquita has observed firsthand how the irrigation practices on properties surrounding the cooperative impact the water quality in their current and former wells. The San Jerardo Cooperative receives drinking water from a small public water system (CA2701904) and is very concerned that pumping, irrigation practices, and groundwater management in the East Side Subbasin will cause their drinking water well, which currently meets all drinking water standards, to exceed the maximum contaminant levels for arsenic and/or nitrate. Unfortunately, data from the State Water Board indicates increasing levels of nitrate and arsenic in their well with a high arsenic level of 8 ppb on 8/22/2016 that also corresponds to a low groundwater elevation of -61.5 in Station 15S04E15D02, the closest monitoring well to the San Jerardo Cooperative's well (See CWC Figures 1 and 2).[1] While there are too few monitoring data points to draw significant conclusions, CWC Figure 1 does suggest that arsenic levels are higher when groundwater levels are lower. Scientifics studies confirm that contaminants like arsenic, uranium, and chromium (including hexavalent chromium)

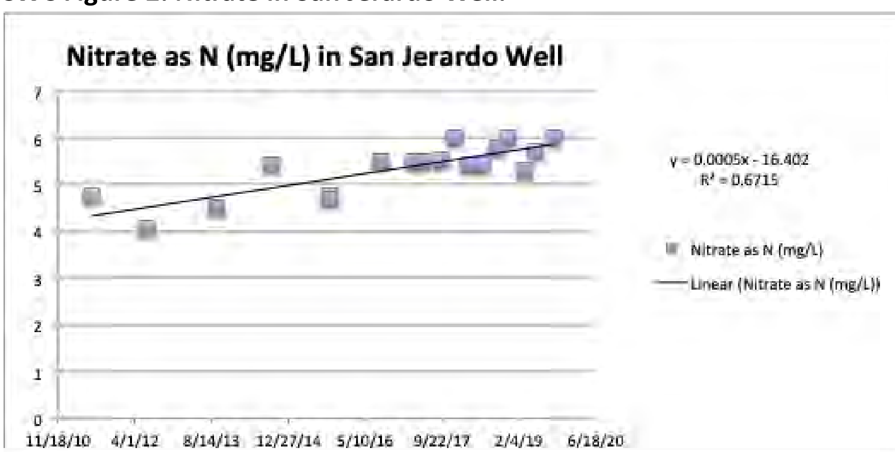
[1] CWC Figure 1 contains all available arsenic data from the State Water Board's Drinking Water Watch online database (https://sdwis.waterboards.ca.gov/PDWW/) which was collected in October 2010, 9/11/13, 8/22/16, and 9/23/19. We then added the monitoring data for Station 15S04E15D02 for the dates most close to the arsenic sampling dates (August 2010, August 2014, August 2016, and August 2019). CWC Figure 2 data was also downloaded from the same online database.

are more likely to be released under certain geochemical conditions influenced by pumping rates, geological materials, and water level fluctuations.[2]

CWC Figure 1: Arsenic in San Jerardo Well, Groundwater Elevation in Closest Monitoring Well
(Note: The groundwater elevation y-axis is reversed to illustrate that lower groundwater elevations are associated with higher arsenic levels.)



CWC Figure 2: Nitrate in San Jerardo Well.



We provide more specific chapter-by-chapter comments in this comment letter. We recommend the GSP should be revised throughout to acknowledge the science showing that groundwater pumping and groundwater level changes can influence water quality.

We strongly recommend that the GSPs incorporate a more robust and representative monitoring network and minimum thresholds to protect vulnerable communities like San Jerardo and those

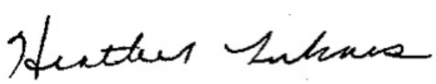
[2] Community Water Center and Stanford University, 2019. Factsheet “Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium” for more information.https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896.

dependent on shallow domestic drinking water wells. This network should include state and local small water systems.

We also firmly agree with the State Water Board's December 8, 2020 comments to the Department of Water Resources on the 180/400 Foot Aquifer GSP, have included them as a reference throughout this comment letter, and recommend that the SVB GSA implement their recommendations in all the other Subbasins GSPs currently in development.[3]

Thank you for reviewing this letter and for the consideration of our comments on the draft GSP chapters. We look forward to working with the SVB GSA to ensure that the GSPs are 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. We also look forward to meeting with you in the future to further discuss issues raised in this and past comments.

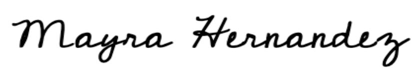
Sincerely,



Heather Lukacs
Community Water Center

Horacio Amezquita
General Manager, San Jerardo Cooperative, Inc.

Justine Massey
Community Water Center



Mayra Hernandez
Community Water Center

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 Disadvantaged Communities (DACs) and all drinking water users including domestic well communities are explicitly addressed early on in the GSP. In addition to comments previously submitted to the GSA on July 10, 2020, we recommend the following updates to this chapter:

- **Include a map of all disadvantaged communities (DACs) and their drinking water sources in the subbasin including private wells** 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. We appreciate that the SVB GSA added "Appendix 11E Disadvantaged Communities" to the 180/400 foot aquifer GSP (Pages 928-941, January 3, 2020) with important information about the location and drinking water challenges, both water quality and seawater intrusion, facing DACs. This information is critical to inform the

[3] DWR SGMA GSP Portal: https://sgma.water.ca.gov/portal/gsp/comments/29.

rest of the GSP. We recommend that it be moved into Chapters 3 and 5 and augmented in the ways described in this section.

- **Correct small error in text in Section 3.2.1 Water Source Types** that incorrectly states that "small state water systems" are included in the Tracking California database. The Tracking California database only includes public water systems serving 15 or more connections.
- **Clarify the number and type of public water systems in the subbasins throughout the entire plan.** In each subbasin plan, there are discrepancies between types and numbers of public water systems in different chapters. For example, the East Side GSP lists the following:
    - Table 3-2 Well Count Summary shows "Public Supply= **24 wells**"
    - Table 5-3 GAMA Water Quality Summary shows "Number of Existing Wells in Monitoring Network Sampled in Water Year 2019" to be **41** for 123-TCP, **46** for Nitrate, and 9 for TDS.
    - Section 7.5 "All the municipal supply wells in the Subbasin are part of the RMS network." A total of **51 public supply** wells were sampled in WY 2019.
    - Table 8-4 Groundwater Quality Minimum Thresholds - **No well count shown**.

  We recognize that different data sources have different limitations and recommend using the best available data consistently throughout the plan.
- **Add a table of all public water systems, their names, locations, number of connections, and number of active wells** in the text or in an appendix that is consistent with the numbers of wells in Table 3-2, Table 5-3, Section 7.5, and other locations where mentioned in the GSPs.
- **Add state and local small water systems to Figure 3-5.** While these systems are currently not in Figure 3-5, their services areas do appear on the SVB GSA GIS portal (svbgsa.maps.arcgis.com) and are labeled as "Parcels served by small water systems (fewer than 15 connections).
- Consider using the same terminology as the Monterey County Department of Health for the state and local small water systems serving 2-14 connections and not using "small public water systems" in Section 3.4.4.2 and throughout the plan. Some definitions of small public water systems include water systems serving up to 199 or even 3300 connections.[4]
- **Revise Section 3.6.3 on the Agricultural Order to indicate that Agricultural Order 4.0 was adopted in April 2021 and include monitoring requirements including on-farm domestic well monitoring of nitrate and 123-trichloropropane, as well as irrigation well monitoring of nitrate.**

GSP Chapter 4: Hydrogeologic Conceptual Model

The hydrogeologic conceptual model is a key component of the basin setting. The basin setting represents the baseline assumptions that the GSA relies on throughout the GSP when choosing minimum thresholds, measurable objectives, and undesirable results, as well as when planning projects and management actions. We recommend that the GSA:

- **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.**[5] As indicated

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[4] California Code, Health and Safety Code - HSC § 116275

[5] 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.

in our cover letter, this is of particular importance for the San Jerardo Cooperative who has experienced increases in nitrate and arsenic in their well.

GSP Chapter 5: Groundwater Conditions

In Chapter 5, we recommend that the GSA make the following changes to all subbasin GSPs (East Side, Langley, Monterey, Upper Valley, and Forebay). The goal is to clearly represent current and past water quality conditions in the subbasin in order to inform the monitoring network sustainable management criteria, planning, management actions, and projects.

Groundwater Quality Distribution and Trends

- **Clearly state in the introduction to Section 5.4 that the amount and location of pumping can impact groundwater quality distribution and trends.** We recommend including this language in the letter submitted by the State Water Board to DWR regarding the 180/400 foot aquifer GSP (Dec. 2020): "Not all water quality impacts to groundwater must be addressed in the GSP, but significant and unreasonable water quality degradation due to groundwater conditions occurring throughout the subbasin, and that were not present prior to January 1, 2015, must be addressed in the GSP's minimum thresholds."[6] High rates of groundwater pumping can pull in contaminant plumes towards drinking water wells, cause the release of arsenic from the strata in the ground, and when shallow wells go dry or are too contaminated to use, new wells must be drilled into deeper portions of the aquifer where they are more likely to encounter high arsenic levels.[7] As previously mentioned, this is of direct concern to the San Jerardo Cooperative who has observed increasing arsenic levels in their relatively new drinking water well, which was drilled to replace a more shallow well contaminated with nitrate and 123-trichloropropane.
- **Include trend data for drinking water wells in the subbasins.** In some places, nitrate and other contaminants are increasing in drinking water wells. It is important to understand current contamination values and also whether well water quality is improving, staying the same or declining as well as the relationship of water quality to other sustainability indicators. As indicated by the data provided in this section, Monterey County maintains an exceptional dataset of water quality data for over 900 state and local small water systems serving 2-14 connections that should be utilized throughout the GSPs. Monterey County has sampled many small water systems for decades. CWC Figures 3 and 4 show nitrate concentrations increasing over time in two state small water systems in the East Side sub basin with high levels in one of the systems (Middlefield Rd. Water System #4) in 2015. Figure 5 illustrates arsenic concentrations in the Metz Road Water System #4 in the Forebay Subbasin. In some cases, data shows fluctuations and peaks in concentrations during the 2015-2016 timeframe. This is similar to the San Jerardo example shared previously. Further, the Central Coast Regional Water Board has analyzed data from their Irrigated Lands Regulatory Program to show that many wells across the region are showing increasing levels of nitrate concentrations.[8]

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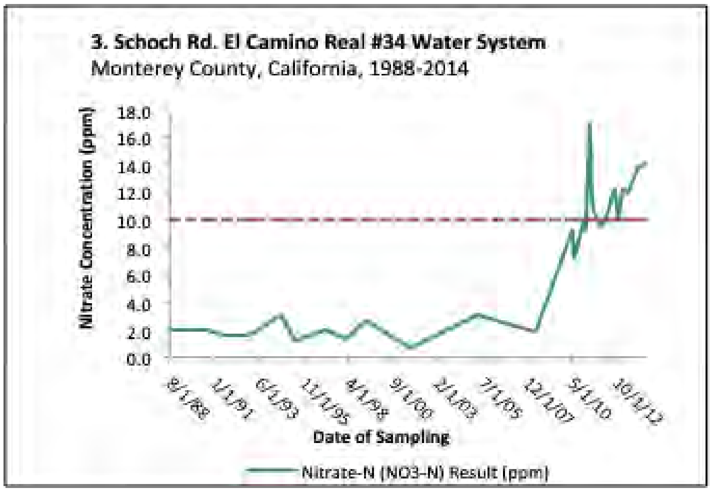
[6] DWR SGMA GSP Portal: https://sgma.water.ca.gov/portal/gsp/comments/29

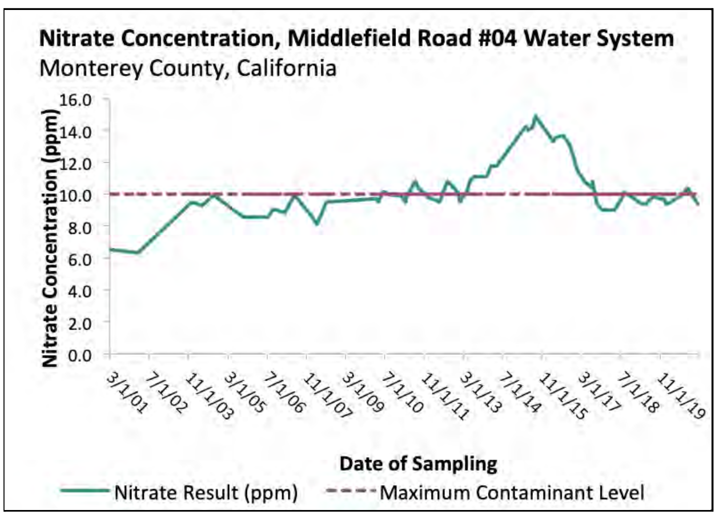
[7] Community Water Center and Stanford University, 2019. Factsheet "Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium" for more information. Available at: https://www.communitywatercenter.org/sgmaresources

[8] Draft Ag Order, Attachment A, 141-143, https://www.waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/docs/ag_order4_renewal/2021april/pao4_att_a_clean.pdf.

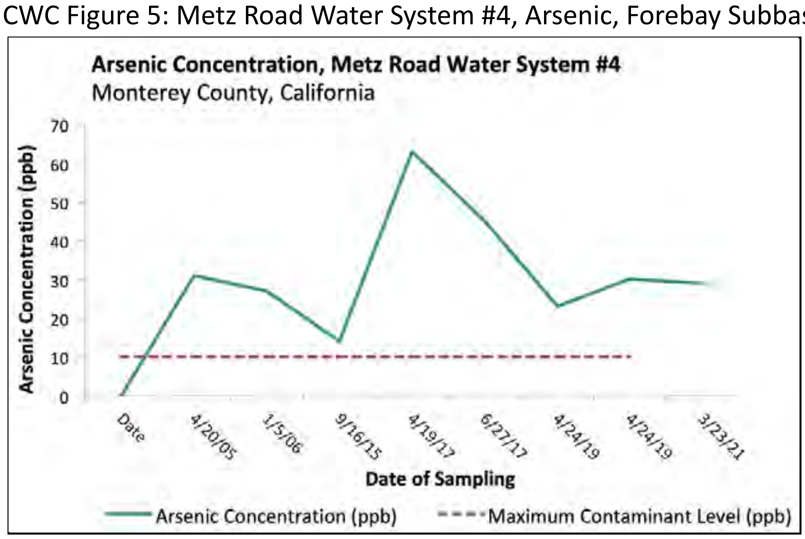
CWC Figure 3: El Camino Real WS #34 - Nitrate as N, East Side Subbasin



CWC Figure 4: Middlefield Road WS #4 - Nitrate as N, East Side Subbasin



CWC Figure 5: Metz Road Water System #4, Arsenic, Forebay Subbasin



- **Revise Section 5.4 to include a specific discussion, supported by maps and charts, of the spatial or temporal water quality trends for all constituents that have been detected in the subbasin and may affect drinking water beneficial users, as required under 23 CCR § 354.16(d).** This section should include water quality data (both in map and tabular form) for all constituents (where available) with primary drinking water standards that have been detected in the subbasin including, but not limited to, **nitrate, 123-trichloropropane, hexavalent chromium,**[9] **arsenic, uranium, and perchlorate for all public drinking water wells, state and local small water system wells, and private domestic wells.** It is especially important for all groundwater stakeholders to be able to understand and visualize the location of contaminant hotspots throughout each subbasin.
    - **Present maps and supporting data for all constituents of concern.** The review of water quality data in the groundwater conditions section of the draft Section 5.4 in the subbasin GSPs is focused primarily on nitrate. The GSPs identify numerous constituents that have been detected in groundwater above drinking water standards, but, with the exception of nitrate, do not present this data spatially. Even though the subbasin GSPs set water quality minimum thresholds for additional constituents (See Tables 8-4 and 8-5), the supporting data is not all 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)).
    - **Augment and clarify data presented in Table 5-3 GAMA Water Quality Data Summary and Section 5.4.1 in the following ways:**
        - **Add all state and local small water systems data.** Table 5-3 should include all state and local small water system data for nitrate, arsenic, hexavalent chromium, and any other contaminants that Monterey County monitors in the subbasin.
        - **Include additional contaminants that have been detected in the subbasin(s) to be consistent with Tables 8-5 and 8-6.** Our review of publicly available data on drinking water wells of all types (private domestic wells, state/local small water systems, and public water systems) indicate that there are additional constituents of concern beyond those currently listed. We included CWC Figure 6 (page 9) to highlight the spatial distribution of arsenic in public water system wells in the **East Side, Langley and Monterey Subbasins**, and CWC Figure 7 (page 10) to highlight the spatial distribution of hexavalent chromium in in public water system wells in the **Langley Subbasin**. We recommend a more comprehensive analysis of all other constituents in the subbasins, including, but not limited to the following[10]:

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[9] The maximum contaminant level for hexavalent chromium should be reinstated in 2021. Data is available from the State Water Resources Control Board and Monterey County Environmental Health Bureau (public water system data, state/local small water system data) as well as on GAMA from the Central Coast Regional Water Quality Control Board's private well testing program.

[10] All Monterey County data shared in this section was collected by the small water system program.
https://www.co.monterey.ca.us/government/departments-a-h/health/environmental-health/drinking-water-protection/state-and-local
It was downloaded from the Greater Monterey County Community Water Tool on April 22, 2021:
http://www.greatermontereyirwmp.org/documents/disadvantaged-community-plan-for-drinking-water-and-wastewater/

- **East Side Subbasin:** Table 5-3 presents data on two primary contaminants in drinking water: nitrate and 123-trichloropropane, but arsenic is also of particular concern to San Jerardo Cooperative and others in the subbasin. GAMA shows that four public water system wells have exceedances of the arsenic MCL in the past three years (CWC Figure 8), and state/local small water system out of compliance lists from the Monterey County Health Department (2021) show that both Old Stage Rd WS #6 and Old Stage Rd WS #7 are out of compliance for arsenic and that at least five other state or local small water systems have between 6-8 ppb of arsenic, which means they are similar to San Jerardo Cooperative in terms of their vulnerability to water level fluctuations or other changes.
- **Forebay Subbasin:** While arsenic is less common in the Forebay than in the Langley, Monterey, and East Side Subbasins, our review of the Monterey County Health Department data indicates that 17 state or local smalls had arsenic at levels above 1 ppb in the 2015-2017 time period, and at least two of these had levels above the MCL. See CWC Figure 5 (page 8) which illustrates trends in one of the out-of-compliance small water systems, Metz Road Water System #4. In addition, three systems monitored by Monterey County as part of their Local Primacy Program for public water systems serving 15-199 connections had hexavalent chromium detections of 2.8 ppb, 3.4 ppb, and 2.1 ppb in the 2014-2017 timeframe.
- **Upper Valley Subbasin:** Although arsenic is not as common in the Upper Valley as other subbasins, it has been detected in levels between 3.2 and 5 ppb in six small water systems monitored by Monterey County.

■ Clarify what is meant by "DDW wells" in Table 5-3. If these are "public supply wells" in GAMA, please clearly state this.

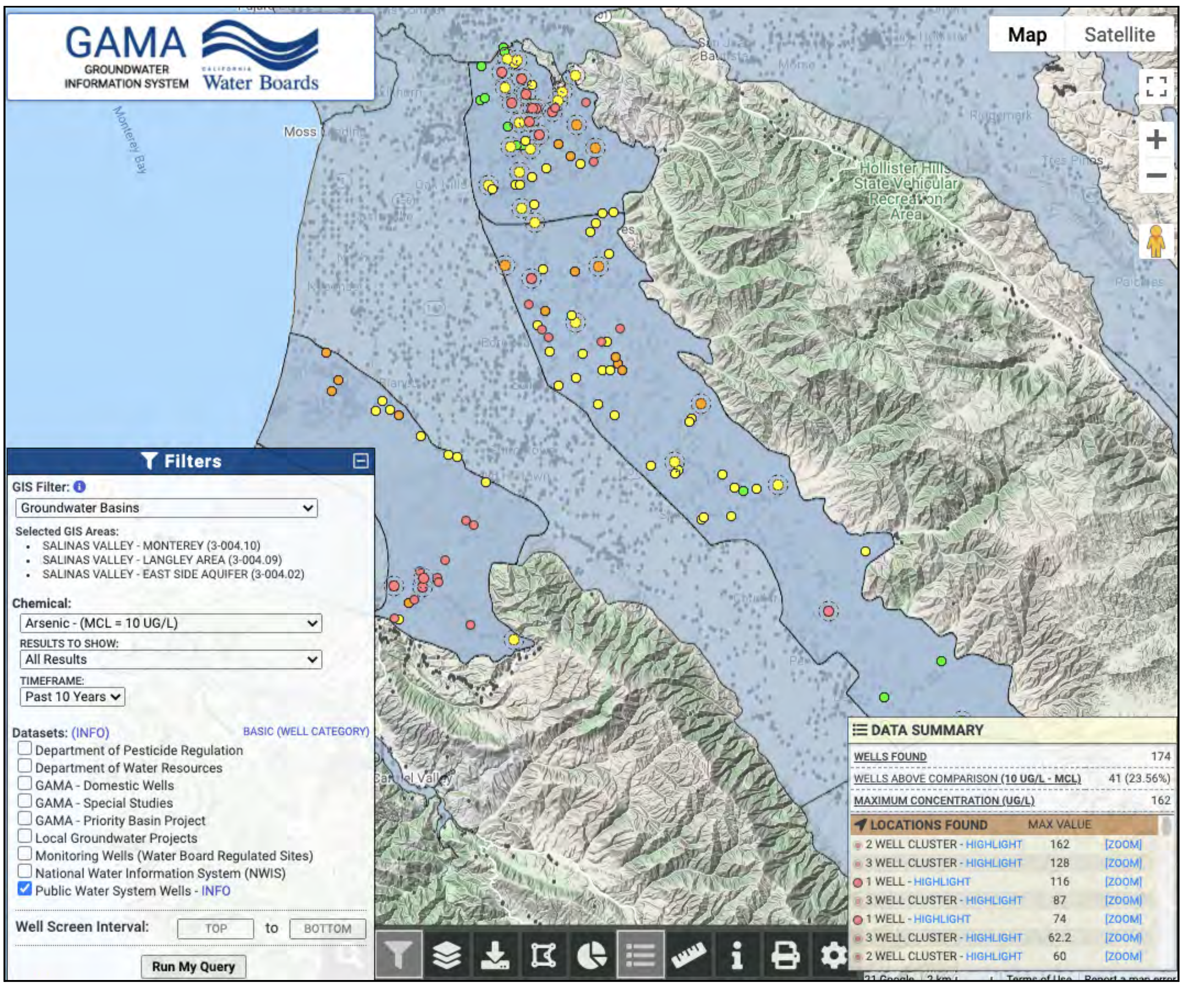
■ **Include the following in Table 5-3: (1) total number of wells of each type, (2) the total number of wells sampled for each constituent, and (3) Of the total number sampled, the number of systems that are out-of-compliance with drinking water standards.** Since public water systems and ILRP wells are monitored on different schedules, there are significant data gaps and inconsistencies when comparing one year to the next in the way that drinking water contaminants are currently represented in GSPs Chapters 5, 7, and 8. For example, we were surprised to see only 15 ILRP Domestic Wells included in Table 5-3 the East Side Subbasin GSP. GAMA shows that there were 139 ILRP wells in the East Side Subbasin sampled for nitrate in the past 3 years, 331 sampled in the last 10 years, and only 8 sampled in the last year. Moreover, CWC Figure 8 illustrates 43 Public Water System Wells in the East Side Subbasin with arsenic data in the past 3 years. On CWC Figure 8, San Jerardo Cooperative's well is shown in orange to indicate that it is at-risk but has not yet exceeded the MCL. However, only 18 Public Water System Wells have sampling data for arsenic from the past year, and during this timeframe, San Jerardo Cooperative's well is not represented (See CWC Figure 9).

■ **Use the compliance status or most recent sample result instead of using the "Number of Wells Exceeding Regulatory Standard in Regulatory Year 2019"**

This is especially important for Table 8-4 and Table 8-5 but also applies to Table 5-3. We recommend the following for different types of drinking water systems:

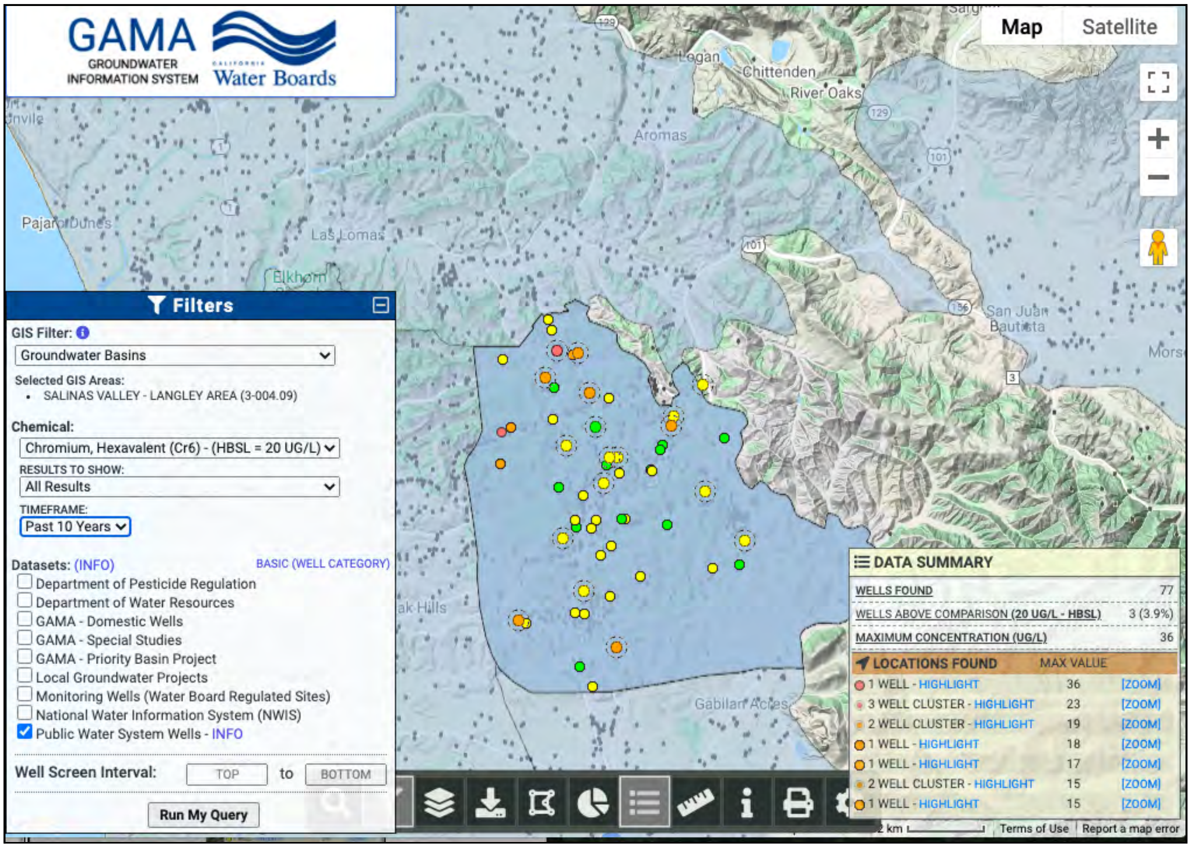
- For public water systems, we recommend using the State Water Board's determination regarding compliance status.
- For state and local small water systems, we recommend using the Monterey County Health Department list of out-of-compliance systems, which is published on their website and available by request on an annual basis based on the most recent sample collected.[11]
- For ILRP wells, we recommend the GSA consider an approach similar to Monterey County and show the most recent sample result for each monitoring well (and not only those sampled in the past year).

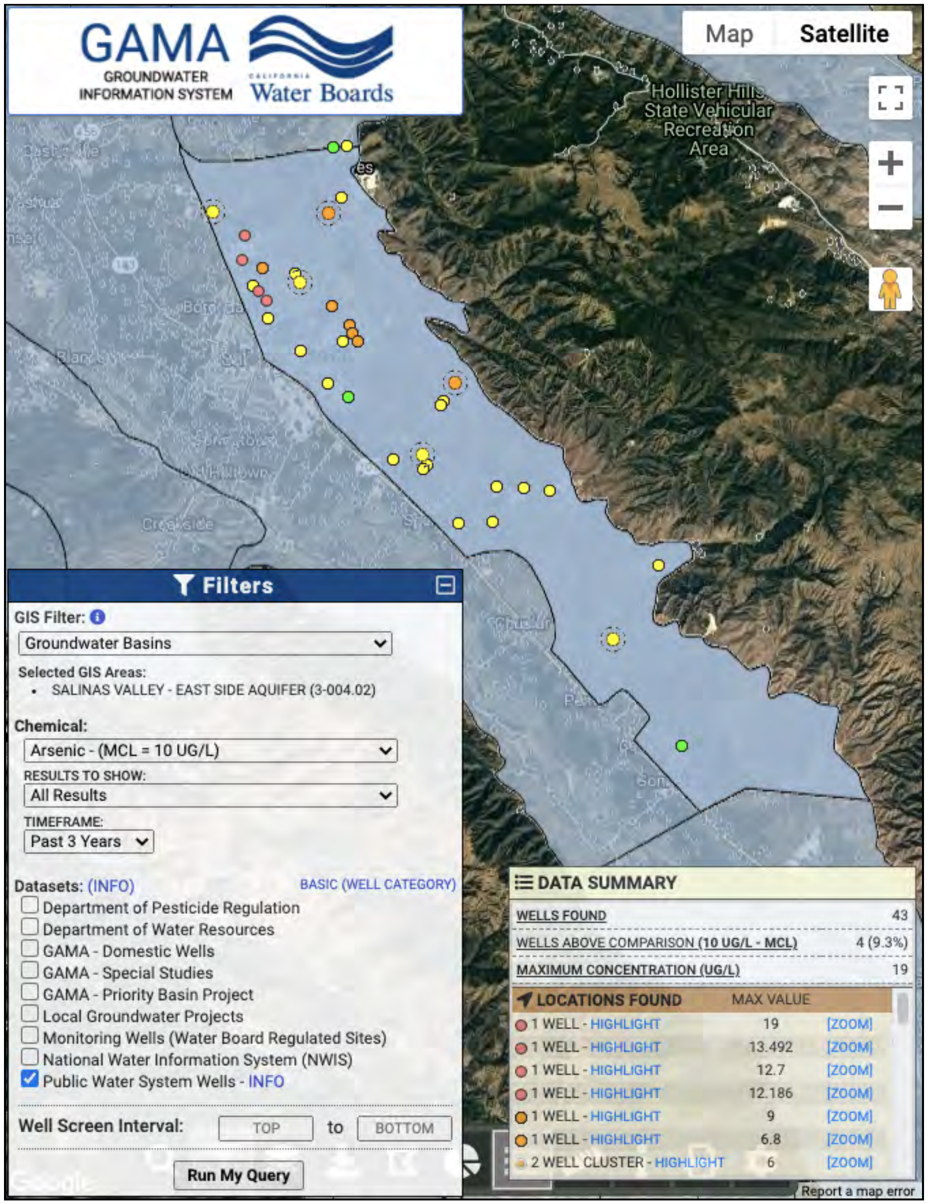
CWC Figure 6: Arsenic Concentrations in Public Water System Wells, Monterey, Langley East Side Subbasins (Red dots = >10 ppb, Orange = 5-9.9 ppb, Yellow = 0.6-5.9 ppb, Green= non-detect)



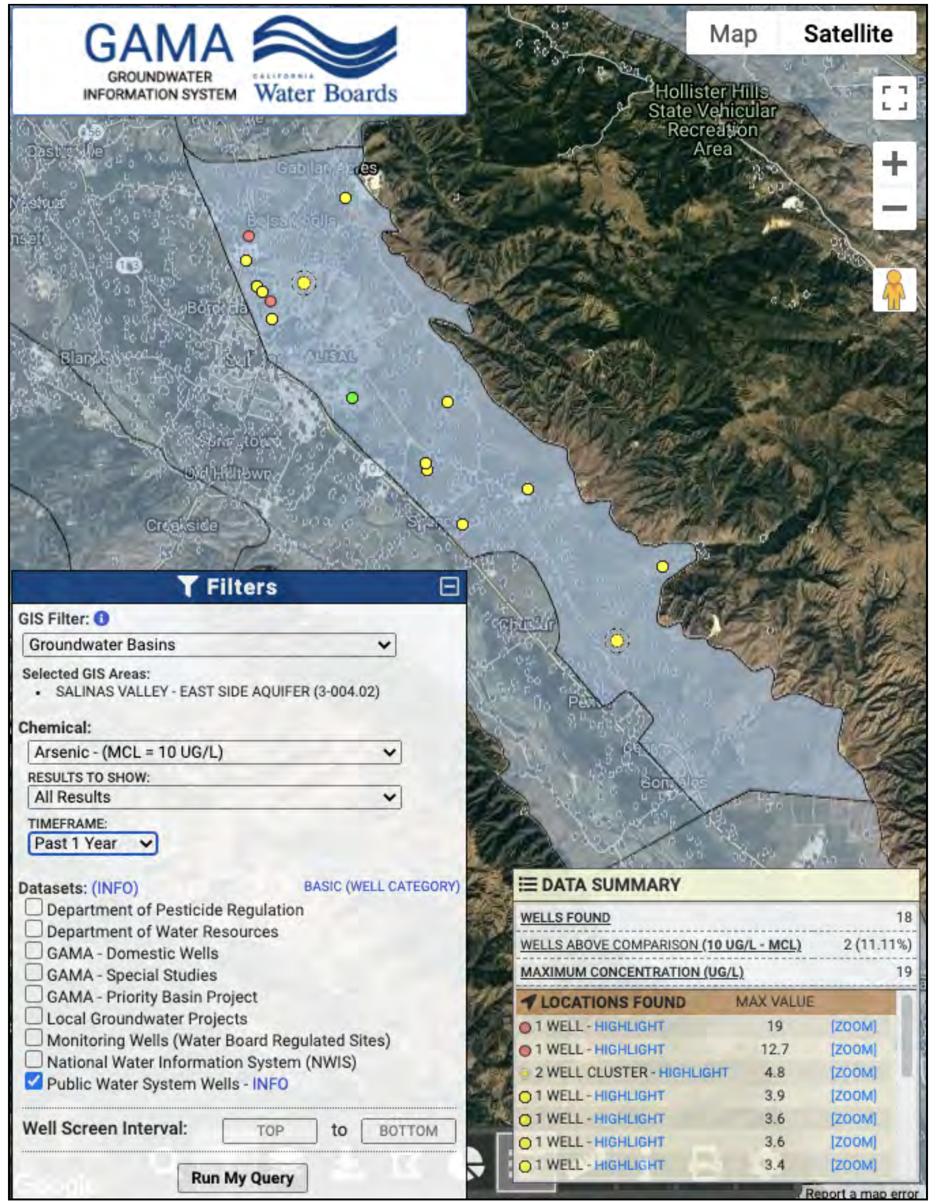
[11] https://www.co.monterey.ca.us/government/departments-a-h/health/environmental-health/drinking-water-protection/state-and-local.

CWC FIgure 7: Hexavalent Chromium Concentrations in Public Water System Wells, Langley Subbasin





CWC Figure 8: 43 Public Water System Wells have arsenic data in the past 3 years. One well at San Jerardo Cooperative appears orange on this map.



CWC Figure 9: Only 18 Public Water Systems Wells have arsenic data in the past year. San Jerardo Cooperative's wells are not shown on this map.

GSP Chapter 6: Water Budgets

SGMA requires a GSP to quantify the water budget in sufficient detail in order to build local understanding of how historic changes have affected the six sustainability indicators in the basin.[12] Ultimately, this information is intended to be used to predict how these same variables may affect or guide future management actions.[13] GSAs must provide adequate water budget information to demonstrate that the GSP adheres to all SGMA and GSP regulation requirements, that the GSA will be able to achieve the sustainability goal within 20 years, and be able to maintain sustainability over the 50 year planning and implementation horizon.[14]

We are concerned that the calculations of sustainable yield and the water budget in this chapter may *overestimate the actual sustainable yield and water availability of the subbasins*. We highlight points of concern below and recommended changes.

6.4 Projected Water Budgets

The SVB GSA Subbasin GSPs explain that "[p]rojected water budgets are extracted from the SVOM, which simulates future hydrologic conditions with assumed climate change. Two projected water budgets are presented, one incorporating estimated 2030 climate change projections and one incorporating estimated 2070 climate change projections. … The climate change projections are based on data provided by DWR (2018)."[15] Including climate change scenarios in water planning is an important step for California's increased resiliency, however, which scenarios to include is a critical question.

Climate change is changing when, where, and how the state receives precipitation.[16] Impacts to water supply, particularly drinking water supply, could be devastating if planning is inadequate or too optimistic. GSAs must adequately incorporate climate change scenarios in water budgets. As such, the DWR Climate Change Guidance[17] makes recommendations to GSAs for how to conduct their climate change analysis while preparing water budgets. DWR also provides climate data for a 2030 Central Tendency scenario and 2070 Central Tendency, 2070 Dry-Extreme Warming (DEW), and 2070 Wet-Moderate Warming (WMW) scenarios. While DWR's Guidance should be improved with more specific guidelines and requirements, the current Guidance specifically encourages GSAs to analyze the more extreme DEW and WMW projections for 2070 to plan for likely events that may have costly outcomes. Therefore, we recommend that the SVB GSA subbasin GSPs:

- **Include water budget analyses based on DWR's 2070 DEW and WMW scenarios in order to analyze the full range of likely scenarios[18] that the region faces.**

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[12] 23 CCR § 354.18.
[13] California Department of Water Resources (DWR), 2016. Best Management Practices for the Sustainable Management of Groundwater, Modeling (BMP #5), December 2016.
[14] 23 CCR § 354.24.
[15] California Department of Water Resources (DWR), 2018. Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development. https://data.cnra.ca.gov/dataset/sgma-climate-change-resources/resource/f824eb68-1751-4f37-9a15-d9edbc854e1f?inner_span=True.
[16] Union of Concerned Scientists. Troubled Waters: Preparing for Climate Threats to California's Water System, 2020. https://www.ucsusa.org/resources/troubled-waters#top.
[17] See DWR (2018) reference above.
[18] Terminology used in the California Climate Change Assessment, 2019. (Table 3). https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf.

- Currently, the SVB GSA's exclusive use of the "central tendency" climate scenario predicts an increase in surface water availability, as represented in the tables in Section 6.4.3 of the subbasin GSPs. The Projected Groundwater Budgets show increases in deep percolation of stream flow, deep percolation of precipitation, and irrigation. The subbasin GSPs are relying on this presumed increase for their water budgets. However, the 2070 DEW scenario provided by DWR could likely result in a significant decrease in precipitation and increase in evapotranspiration, which would have substantial effects on the subbasin water budgets. By analyzing only the central tendency scenario and not other likely scenarios such as the extremely dry and wet scenarios provided by DWR, the SVB GSA is ignoring the specific 2070 DEW and WMW scenarios provided by DWR as well as an increasing trend in drought frequency. In doing so, the GSP could be overestimating groundwater recharge or underestimating water demands, inadequately planning, and jeopardizing groundwater sustainability. This will waste precious time to prepare and reduce the vulnerability of the basin's agriculture and already vulnerable communities.
- DWR's guidance (2018) states that the central tendency scenarios *might* be considered most likely future conditions -- that is not a clear endorsement of a higher statistical probability. It appears that they are calling it the central tendency merely because it falls in the middle of the other two projections, not because it's significantly more probable.
- DWR (2018) explicitly encourages GSAs to plan for more stressful future conditions:
    - "GSAs should understand the uncertainty involved in projecting future conditions. The recommended 2030 and 2070 central tendency scenarios describe what might be considered 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. Therefore, GSAs are encouraged to plan for future conditions that are more stressful than those evaluated in the recommended scenarios by analyzing the 2070 DEW and 2070 WMW scenarios."[19]
- Including the DEW and WMW climate scenarios as part of the 2070 water budget analysis is necessary to meet the statutory requirement to use the "best available information and best available science."[20] Sustainable planning must include planning for foreseeable negative and challenging scenarios. The extreme scenarios provided by DWR are certainly foreseeable, as they have been modeled and made available to the GSA for analysis.
- It is important for the SVB GSA to include the 2070 DEW and WMW scenarios, because shallow drinking water wells in the area are particularly vulnerable to various extreme conditions, especially drought.

[19] California Department of Water Resources (DWR), 2018. Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development. Section 4.7.1. https://data.cnra.ca.gov/dataset/sgma-climate-change-resources/resource/f824eb68-1751-4f37-9a15-d9edbc854e1f?inner_span=True. (In red is a statement about the central tendency scenarios referenced in SVB GSA public meetings and email communications by the GSA's engineering consultant, and in blue is the important text accompanying it, urging GSAs to analyze the more extreme scenarios. CWC staff cited this complete paragraph in email communications with the consultant and GSA staff on April 8, 2021. CWC also raised this point at Forebay and Upper Valley Subbasin Committee meetings in March and at the April SVB GSA Board Meeting.)

[20] See 23 CCR § 355.4(b)(1).

- **Share water budget results based on the 2070 central tendency, DEW and WMW scenarios that DWR has provided with the Subbasin committees, the Advisory Committee, and the GSA board**. This should be done at a *minimum* to see what the difference in outcomes could be, and to provide a transparent process for selecting the preferred scenario. This analysis is particularly important because of the drastic differences between the dry and wet scenarios for this region. Drought and/or intensified rainfall (more water falling over a shorter period of time) would pose severe challenges[21] to the Subbasins' plans for recharge, which is a critical component of their plans to reach sustainability.
- **Plan for potential adverse climate conditions when determining Projects and Management Actions.** The results of limited-scope planning will be detrimental to beneficial users throughout the SVB GSA. "If water planning continues to fail to account for the full range of likely climate impacts, California risks wasted water investments, unmet sustainability goals, and increased water supply shortfalls."[22] This is true not just generally across California, but also specifically on the Central Coast. "Without effective adaptations, projected future extreme droughts will challenge the management of the Central Coast region's already stressed water supplies, including existing local surface storage and groundwater recharge as well as imported surface water supplies from the State Water Project which will become less reliable, and more expensive."[23]

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 all beneficial users, including domestic well owners and S/DACs. We have the following overarching recommendations for this chapter and provide more details for sub-sections below:

- **Require well registration and metering for all wells in the Salinas Valley, and begin implementation of a well registration and metering program in early 2022 with a dedicated budget.** We voice our strong support, with modifications indicated in our comments below, for proposed "Implementation Action 12: Well Registration" in Section 9.1 of Chapter 9 released in April 2021 and recommend that this action be updated and moved to Chapter 7. We agree with the SVB GSA's statement in Section 7.3.2 Groundwater Storage Monitoring Data Gaps that: "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 SVB GSA will finalize a database of existing and active groundwater wells in the Eastside Aquifer Subbasin." This is essential for the plan to achieve sustainability for all beneficial users and influences many different chapters including:

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[21] Union of Concerned Scientists. Inter-model agreement on projected shifts in California hydroclimate characteristics critical to water management. 2020, p. 13. https://link.springer.com/content/pdf/10.1007/s10584-020-02882-4.pdf.

[22] See Union of Concerned Scientists. Troubled Waters (2020) cited above.

[23] Regional Climate Change Assessment for the Central Coast, 2019. (Discussing drought pp. 21-23. Internal citations omitted). https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-006_CentralCoast_ADA.pdf.

    - Monitoring networks: In order to develop a monitoring network that is representative, it will be essential to understand the number, location, well construction, and type (domestic, irrigation, other) of all wells located in the subbasins.
    - Water budget and minimum thresholds: Understanding the amount and location of pumping of all water users will be essential for creating an accurate water budget and minimum thresholds consistent with achieving sustainability.
    - Projects and management actions: Section 9.2.1 Well Registration and Metering is a key management action and component of the Water Charges Framework (in the 180/400 foot aquifer) and forthcoming subbasin GSPs. This will underpin the funding structure for many future projects.
- **Require flowmeter calibration to ensure consistent and fair monitoring among all agricultural groundwater users (Section 7.3.1).** Rather than "consider the value of developing protocols for flowmeter calibration," the GSPs should require flowmeter calibration. The water budget and sustainable yield calculation depend on reliable and fair monitoring and reporting of pumping.
- **Provide a plan and schedule for data gap resolution in forthcoming Chapter 10 of the subbasin GSPs.** In the 180/400 foot aquifer GSP, there was not a clear plan or schedule for the resolution of data gaps in Chapter 7 even though it indicated that this would be included in Chapter 10.
- **Revise GSP monitoring chapters such that monitoring networks for groundwater storage (pumping), groundwater elevation, and groundwater quality adequately monitor how groundwater management actions could impact vulnerable communities including those reliant on domestic wells and shallow portions of the aquifers** (see more detail below).

7.2 Groundwater Elevation Monitoring Network

- **Include groundwater elevation monitoring sites in the network that are representative in terms of the depth and geographic distribution of private domestic wells, and that takes into account areas of high agricultural pumping and wells vulnerable to groundwater decline.**
    - The draft East Side Subbasin GSP Table 7-1 of "Eastside Aquifer Groundwater Elevation Representative Monitoring Site Network" shows all irrigation and observation wells (and no domestic wells) which range in depth from 299 to 1122 feet.[24] Yet, the DWR Well Completion Report Map Application[25] shows that 1 mile by 1 mile square sections near San Jerardo Cooperative include private domestic wells with the following minimum depths: 110 ft, 210 ft, 172 ft, 208 ft, and 132 ft which are more shallow than all the wells in the current monitoring network (See CWC Figure 10).
- **Overlay the private well density map (Figure 3-7), the DWR Well Completion Report Map Application (with minimum, average, and maximum depths), the water level monitoring network (with well depths), and available pumping data to better illustrate if and how representative the proposed groundwater elevation monitoring network is of private domestic wells and which areas are vulnerable to water elevation changes.** The GSPs state: "The BMP notes that professional judgment should be used to design the monitoring network to account for high-pumping areas, proposed projects, and other subbasin-specific factors. " This will also help to better visualize where there are gaps in the monitoring network which the GSAs can address.

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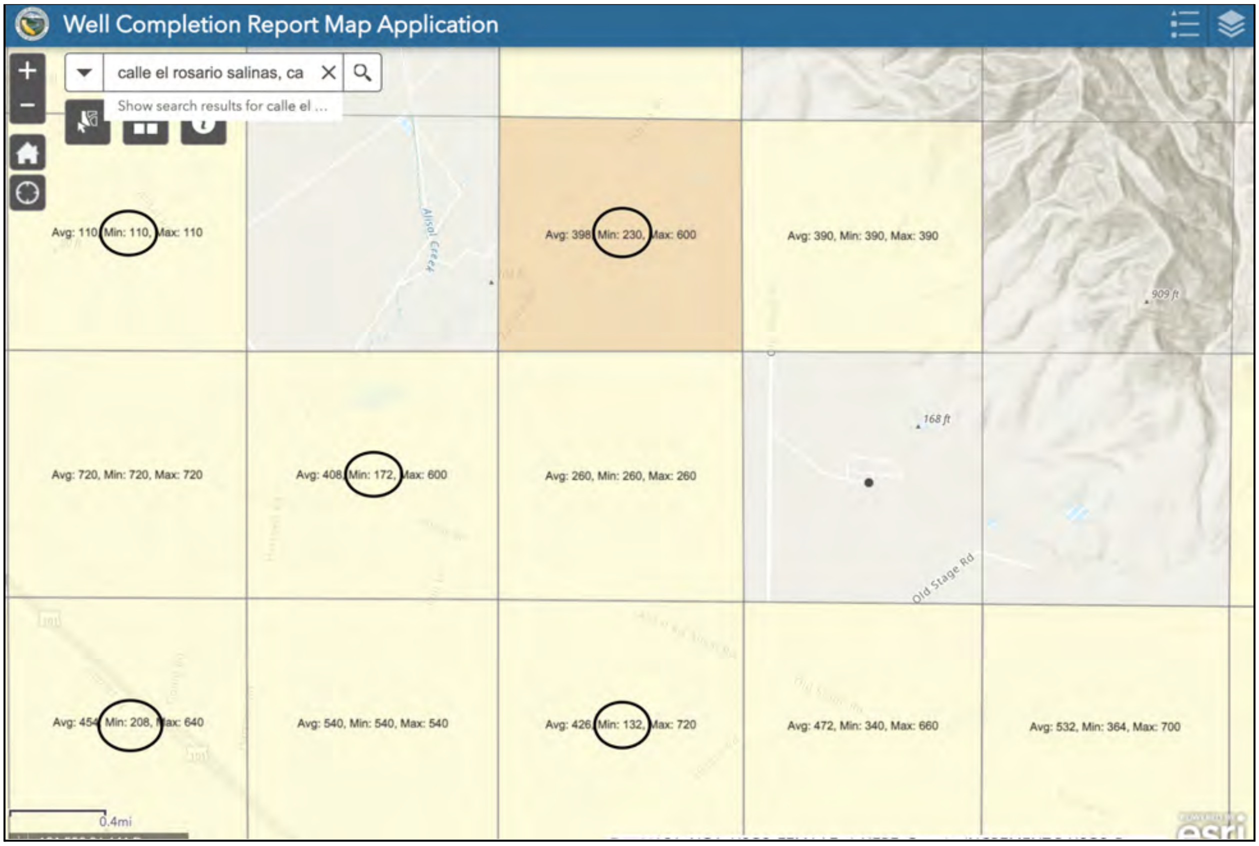
[24] One well shows "0" depth but that must be an error or missing value.
[25] https://water.ca.gov/Programs/Groundwater-Management/Wells/Well-Completion-Reports



CWC Figure 10: Screenshot of DWR Well Completion Report Map application in the area near San Jerardo Cooperative highlighting that several 1 mi. by 1 mi. square sections include private domestic wells less than 250 feet deep.

7.5 Water Quality Monitoring Network

- **Clarify the number of public water system wells that will be included in the water quality monitoring network.** We strongly support the GSPs inclusion stated in Section 7.5 that "All the municipal supply wells in the Subasin are part of the RMS network." As indicated in Chapter 3 and Chapter 5 comments, the GSPs should also clearly identify the number of public supply wells as well as the number of public supply wells that are out of compliance and at risk in each subbasin. Section 7.5 currently states that "A total of 51 public supply wells were sampled in WY 2019" and indicates that all wells are listed in Appendix 7E (which is not publicly available at this time). This section and appendix should be consistent with the total number of wells represented in Table 8-4 which includes groundwater quality minimum thresholds.
- **Representative Water Quality Monitoring Wells for the shallow aquifer should be established in the GSPs based on all currently available data sources with direct agreements with landowners or public entities established.**
    - **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 GSPs 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. In order to maintain consistency for future sustainability analyses, the SVB GSA should also consider conducting its own water quality analysis of wells where access agreements have already been established to water quality RMWs.

- **Clarify that state and local small water systems will be added to the water quality monitoring network and that well construction information is no longer needed in order to fill this data gap.** Monterey County Environmental Health Bureau permits and monitors over 900 state and local small water systems in the County and have managed the data collected for decades. This dataset has advantages over the ILRP domestic well dataset in that it includes data on contaminants like arsenic and hexavalent chromium in addition to nitrate. Local small water systems serve 2-4 households and are much more similar to private domestic wells than public water systems in terms of depth, well construction, age, size, and maintenance - thus this data would provide a broader representation of shallow drinking water wells. State and local small water systems are located in areas of irrigated agricultural lands as well as rural residential and other land uses. This dataset should complement and not replace ILRP domestic well data.
    - **Clearly add state and local small water system data as a data gap in Section 7.5.2.** In Section 7.5 Water Quality Monitoring Network, the draft GSPs state: "These [state and local small] wells are not in the current monitoring system because well location coordinates and construction information are currently missing. SVB GSA will 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 7-4." However Section 7.5.2 Groundwater Quality Monitoring Data Gaps states: "There is adequate spatial coverage to assess impacts to beneficial uses and users."
- **Do not rely solely on ILRP well data to represent private domestic wells (which are often more shallow than public water system wells).** Similar to CASGEM, the current groundwater quality monitoring network includes monitoring points on private property including ILRP domestic and irrigation wells, but it should not be restricted to ILRP sites only. While on-farm domestic and irrigation wells monitored through the ILRP provide a potentially useful, though limited, 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 wells located on agricultural irrigated lands, and not all ILRP properties include domestic wells. Agricultural land use is not the primary land use in the Langley and Monterey Subbasins so this monitoring network offers very limited coverage. While agricultural land use is the primary land use in the East Side, Upper Valley, and Forebay Subbasins, there are private domestic wells in areas with different primary land uses (e.g. rural), and SGMA requires that monitoring networks are geographically representative. Monitoring network wells must also be sufficiently representative to cover all uses and users in the basin, (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, (3) Ag Order 4.0 was adopted on April 15, 2021, which means the first year of monitoring data will not be

available until late 2022, (4) The GSA has no authority to determine the robustness or enforcement of monitoring in the irrigated lands network, and (5) while Ag Order 4.0 proposes to require testing for 1,2,3-TCP as well as nitrate, the current ILRP domestic well data only samples for nitrate, and neither Order tests for other contaminants found in the region. In our experience, not all growers are consistent with their water quality and other reporting, despite the regulatory requirements in place.

- **Update Domestic ILRP and Irrigation ILRP wells in a different color on Figure 7-5 Locations of ILRP Wells Monitored under Ag Order 3.0.** Since these wells are monitored for different constituents and serve different beneficial users, it is important to illustrate them separately.

GSP Chapter 8: Sustainable Management Criteria

We have grouped our comments in this section into general recommendations related to all sustainable management criteria (SMCs) followed by a section specific to the water quality SMCs. We recommend that the Salinas Valley GSA implement the following recommendations in the subbasin GSPs:

- **Undertake a drinking water well impact analysis that adequately quantifies and captures well impacts at the minimum thresholds, proposed undesirable results, and potential interim conditions.** Include this analysis during the annual reporting process. We disagree with the assumption included in all draft GSPs that the exact location of wells needs to be known in order to include them in a drinking water well impact analysis. In the 180/400 Foot Aquifer Subbasin GSP, the SVB GSA included a domestic well impact analysis. Although the SVB GSA did not describe the methods used in this analysis,[26] it is CWC's understanding that the analysis was based on Public Land Survey System (PLSS) section location data, demonstrating that such an analysis is feasible. Similar analyses in the Water Foundation Whitepaper (June 2020)[27] and in the Kings River East GSP[28] were completed using the same PLSS section location data for private domestic wells that is available to the SVB GSA. The current analysis is incomplete as it includes very few wells in all subbasins. The current analysis is also substantially inaccurate as it relies on the "average computed depth of domestic wells in the Subbasin," and groundwater elevations vary significantly across the subbasin and also on an annual basis. For example, only 8 of the 154 domestic wells in the Forebay GSP with an average depth of 292.45 feet, and only 20 of 2016 domestic wells in the East Side GSP with an average depth of 365.5 feet were included. CWC Figure 10 illustrates that the average computive depth is not representative of conditions in shallow domestic wells. Therefore, we recommend revising Section 8.5.2.2 Minimum Threshold Impact on Domestic wells following the process explained below:
    - **Include a map of potentially impacted wells so the public can better assess well impacts specific to DACs, small water systems, or other beneficial users of water.**

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[26] Community Water Center and San Jerardo Cooperative, Inc. Comments on the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan. May 15, 2020. https://sgma.water.ca.gov/portal/service/gspdocument/download/4012

[27] The Water Foundation Whitepaper, April 2020: "Estimated Numbers of Californians Reliant on Domestic Wells Impacted as a Result of the Sustainability Criteria Defined in Selected San Joaquin Valley Groundwater Sustainability Plans and Associated Costs to Mitigate Those Impacts." April 9, 2020. http://waterfdn.org/wp-content/uploads/2020/05/Domestic-Well-Impacts_White-Paper_2020-04-09.pdf

[28] Kings River East Groundwater Sustainability Agency. Groundwater Sustainability Plan. Adopted December 13, 2019.

- **Quantify impacts for all drinking water wells in the subbasin for which approximate location (PLSS section) and well depth are available.** Similar analyses based on the PLSS section location of private domestic wells have been completed by Water Foundation (June 2020)[29] and in the Kings River East GSP[30].
- **Account for well screen and pump depth when available.** When not available, well screen and pump depth should be estimated conservatively to capture potential impacts to well operability under water scarcity conditions.
- **Quantify impacts for potential unfavorable interim conditions, such as droughts and short-term lowering of groundwater levels while implementation measures are put in effect.**
- **Quantify the elevation difference (in feet) between current groundwater levels and well bottoms, screens, and pumps.** If current groundwater levels are nearing well bottoms, screens or pumps, that indicates that the wells are vulnerable to interim lowering of groundwater levels.
- **Quantify the elevation difference (in feet) between the minimum threshold groundwater levels and well bottoms, screens, and pumps.** If the minimum threshold is near the well bottom, screen or pump, that well will be impacted if groundwater levels in the vicinity drop below the minimum threshold (even if minimum thresholds are met at 90 percent of monitoring wells and an undesirable result has not technically occurred).
- **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.**

Groundwater Quality

We are pleased that the Salinas Valley Subbasin GSPs establish minimum thresholds based on maximum contaminant levels (MCLs) for contaminants of concern for drinking water supply systems. There are however other 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. Therefore, we recommend the following revisions:

- **Revise Section 8.3 General Process for Establishing Sustainable Management Criteria to include a sensitivity analysis around "average hydrogeologic conditions" following our recommendations outlined in Chapter 6.**
- **Add state and local small water systems to the monitoring network with the same water quality minimum thresholds and measurable objectives for reasons stated in Chapter 7 comments.** A table for state and local small water system minimum thresholds was included in the 180/400 foot aquifer GSP, but in the draft subbasin GSPs, there is no such table and Table 8-1 only mentions public supply and on-farm domestic wells.

[29] See previous reference.
[30] See previous reference.

- **If a contaminant was already above the MCL as of January 1, 2015, subbasin GSPs should set a MT 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 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. Further, residents who rely upon domestic wells, state small water systems, or local small water systems may not even know what contaminants are in their water and at what levels. Users of these drinking water sources are not required to conduct testing, and many times do not have the resources necessary to conduct regular testing. Rising contaminant levels put these users and their health at serious risk. 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. This recommendation is consistent with the State Water Board's recommendations regarding this topic in their letter to DWR regarding the 180/400 foot aquifer GSP in which they state: "Increasing concentrations of nitrate, arsenic, and other constituents at monitoring wells with existing exceedances may represent worsening of existing conditions due to groundwater pumping. Staff recommend setting concentration threshold levels for these wells in order to determine if impacts due to pumping are occurring."[31]
    - **Develop management areas to protect areas where drinking water wells have water quality that are vulnerable, including the San Jerardo area.**
- **For monitoring network wells with contamination less than 75% of the MCL for all contaminants, the GSPs should set MOs at 75% of the MCLs.** Subbasin GSPs should include MOs as action triggers at 75% of MCL for each constituent of concern so that groundwater can be managed in that area to prevent a minimum threshold exceedance at a representative monitoring well. This buffer is particularly critical with contaminants like nitrate that can cause acute health effects. 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. *We also recommend that groundwater quality and trigger levels at 75% are added to Section 9.1.3 Implementation Action 11: Local Groundwater Elevation Trigger (April 2021 draft) which currently only includes groundwater elevations.*
- **Clearly identify and describe past and present levels of contamination and salinity at each representative monitoring well (RMW) and attribute specific numeric values for MTs/MOs at each RMW for each contaminant of concern.** Quantitative values need to be established for MTs/MOs for each applicable sustainability indicator at each RMW as required by 23 CCR § 354.28 and 23 CCR § 354.30. The GSPs should include a map and tables that include each individual RMW along with water quality data for each RMW (this data is currently summarized in Table 8-4 and Table 8-5). This information should be presented clearly so that both the public can determine how the proposed monitoring network and sustainable management criteria (SMCs) relate to their own drinking water well or water supply system.

[31] State Water Board comments to DWR on 180/400 Foot Aquifer GSP (Dec. 2020). Downloaded from SGMA GSP Portal: https://sgma.water.ca.gov/portal/gsp/comments/29

- **Include hexavalent chromium as a contaminant of concern and plan to add contaminants of emerging concern to the 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 MCL. In addition to including hexavalent chromium, the GSPs must explain how the Plans will be updated to align groundwater monitoring efforts and the sustainable management criteria with any contaminants of emerging concern in the basin and any future new MCLs.
- **Include an analysis of the relationship between changes in groundwater levels and groundwater quality concentrations.** Section 8.5.2.3 of the draft GSPs discusses the relationship between individual minimum thresholds and other sustainability indicators, and states: "Decreasing groundwater elevations can cause wells to draw poor-quality groundwater from deeper zone. No additional poor groundwater quality issues were identified due to low groundwater elevations when groundwater elevations were previously at minimum threshold levels." We ask that justification is provided to backup the second statement or that it is removed until an analysis is conducted. It is our understanding that groundwater quality issues did, in fact, worsen during low groundwater elevations years. Arsenic in the San Jerardo well was at its highest during the lowest groundwater elevation measurement (See CWC Figure 1). The text should 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. 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 constituent concentrations relative to change in water levels,[32] particularly over drought periods, to evaluate the potential relationship between water quality and groundwater management activities.[33]
- **Add the total number of wells in each category that will be included in the water quality monitoring network and have SMCs evaluated to Table 8-4. For each constituent of concern, add the number of wells included in the chart and the number exceeding the MT/MO based on the latest sample.** This comment has the same goal as the comment we provided in Chapter 7. SMCs should be set at every public drinking water well and a representative network of drinking water wells that rely on more shallow aquifers. It is essential to track the same wells each year in the monitoring network. If a well is no longer active, it should be removed from the network. In the current representation, it is not clear which wells are included in the monitoring

[32] 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/.

[33] 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.

network, which wells have data for each constituent, and which wells are exceeding the regulatory standard.

- **Engage stakeholders and scientists in a transparent discussion regarding "the process the GSAs would use to decide whether or not an exceedance of an MT for water quality degradation was caused by GSP implementation."**[34] The State Water Board recommended that the 180/400 foot aquifer GSP outline this process "otherwise, it is difficult to judge how adequately the GSP addresses undesirable results related to water quality degradation." This relates to the undesirable result for water quality which currently reads: "There shall be no additional minimum threshold exceedances beyond existing groundwater quality conditions during any one year as a direct result of projects or management actions taken as part of GSP implementation."

[34] State Water Board comments to DWR on 180/400 Foot Aquifer GSP (Dec. 2020). Downloaded from SGMA GSP Portal: https://sgma.water.ca.gov/portal/gsp/comments/29 .

April 28, 2021

Salinas Valley Basin Groundwater Sustainability Agency

Submitted electronically to:

Emily Gardner, Deputy General Manager

Donna Meyers, General Manager

Re: Comments on Draft Chapter 9 Project and Management Actions for the Langley, East Side, Forebay, Upper Valley and Monterey Subbasins

Dear Salinas Valley Basin Groundwater Sustainability Agency:

The Community Water Center (CWC) offers the following comments and recommendations regarding key components of the draft Chapter 9 Projects and Management Actions (Implementation Actions) that were shared with SVB GSA subbasin committees in April 2020. These comments are intended to add to the public record and are submitted in addition to previous written and spoken comments.

Chapter 9 Projects and Management Actions

During the April 7, 2021 East Side and Upper Valley subbasin committee meetings, feedback was requested on a draft list of project and management actions. As outlined in the April 7 meeting materials, "[p]rojects implement the GSP and enable the subbasin to reach sustainability by 2042, then maintain sustainability for another 30 years." Both groundwater levels and water quality degradation can have adverse impacts on drinking water users and disadvantaged communities (DACs), who are protected as beneficial users under SGMA[1]. Therefore, projects and management actions (also referred to as implementation actions) should address sustainability issues facing drinking water and other domestic water uses, in order to ensure their continued availability.

As this chapter is further revised for the East Side and Upper Valley subbasins and as potential projects and management actions are considered for the Forebay, Langley, and Monterey, the GSPs should (1) clearly identify potential impacts to water quality from all projects and management actions, (2) include management actions that respond to immediate needs and (3) develop a more robust implementation schedule and funding plan for projects and management actions. We acknowledge that the implementation actions are currently in the beginning stages of design but encourage incorporating these elements early on.

9.1.3 Implementation Action: Local Groundwater Elevation Trigger

The Local Groundwater Elevation Trigger is a significant start to tracking and addressing impacts to domestic wells. We support the inclusion of a "notification system whereby well owners can notify the GSA or relevant partner agency if their well goes dry." Because SVB GSA defines its sustainability criteria in a way that potentially allows for drinking water well impacts and because there is so much uncertainty regarding potential domestic well impacts, we recommend that this implementation action be updated to incorporate a **Robust Drinking Water Well Mitigation Program.** This program should include the Local Groundwater Elevation Trigger as well as (1) a plan to prevent impacts to drinking water users from

[1] WAT § **10723.2.**

dewatering, increases in contaminant levels and increases in salinity, and (2) a plan to mitigate the drinking water impacts that occur even when precautions are taken.

CWC together with other organizations published a Framework for a Drinking Water Well Mitigation Program (2020) that we recommend the SVB GSA uses as a guide when further developing this implementation action. We are also interested in sharing more with staff and are willing to provide a presentation to SVB GSA staff, board members, and/or the advisory committee on this Framework. The framework describes the importance of adaptive management and affirms the intent of the draft Local Groundwater Elevation Trigger management action and states, "Developing a protective warning system... can alert groundwater managers when groundwater levels and groundwater quality are dropping to a level that could potentially negatively affect drinking water users. These "triggers" are essential for groundwater management and can be adjusted to fit the needs of different management actions as well as the basin as a whole."[2] We also support the provision in the draft "Local Groundwater Elevation Trigger" Implementation Action that offers "referral to assistance with short-term supply solutions, technical assistance to assess why it went dry, and/or long-term supply solutions." This type of adaptive management implementation action is crucial to ensuring that all beneficial users within the basin are protected under the GSP. As we have highlighted in previous comments[3]:

> A GSP that 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 (HR2W).[4] The California legislature has recognized that water used for domestic purposes has priority over all other uses since 1913[5] 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 and that the next highest use is for irrigation."[6] The passage of the Safe and Affordable Drinking Water Fund by Governor Newsom indicates a clear State-level commitment to provide safe and affordable drinking water to California's most vulnerable residents.[7] 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.[8] Therefore, GSPs that cause disparate impacts to domestic water use are in violation of the HR2W, SGMA, and Water Code § 106.6.

In order to effectively protect drinking water users during GSP implementation, we recommend that the GSA's **Drinking Water Well Impact Mitigation Program Implementation Action,** in line with and expanding upon the currently proposed Local Groundwater Elevation Trigger, should include the following components:

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[2] *See* Self-Help Enterprises, Leadership Counsel for Justice and Accountability, Community Water Center (2020) *Framework for a Drinking Water Well Impact Mitigation Program*.
https://static1.squarespace.com/static/5e83c5f78f0db40cb837cfb5/t/5f3ca9389712b732279e5296/1597811008129/Well_Mitigation_English.pdf.

[3] Community Water Center and San Jerardo Cooperative, Inc. Comments on the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan. May 15, 2020.
https://sgma.water.ca.gov/portal/service/gspdocument/download/4012.

[4] WAT § 106.3 (a).

[5] Senate Floor Analysis, AB 685, 08/23/2012.

[6] This policy is also noted in the Legislative Counsel's Digest for AB 685.

[7] SB 200 (Monning, 2019).

[8] WAT § 106.3 (b).

- **Include a vulnerability analysis of Disadvantaged Communities (DACs) and drinking water supplies in order to protect drinking water for these vulnerable beneficial uses and users.** Although rural domestic and small water system demand does not contribute substantially to the overdraft conditions, drinking water users could face significant impacts, particularly if the region faces another drought. Without a clear commitment and timeline for actions regarding establishing groundwater allocations or reductions in groundwater pumping, the SVB GSA may create disparate impacts on already vulnerable communities. See comments submitted by CWC and San Jerardo Cooperative on April 23, 2021 regarding Chapter 8 of SVB GSA Subbasin GSPs for further recommendations for conducting well impact analyses.
- **Develop the trigger system in collaboration with stakeholders, in particular groups that are more susceptible to groundwater elevation and quality changes, and then connect stakeholder recommendations back to quantifiable measures such as the GSP measurable objectives, MCLs, and numbers of partially or fully dry drinking water wells.**[9]
- **Ensure that the monitoring network is representative of conditions in all aquifers in general, including the shallow aquifer upon which domestic wells rely.** This comment aligns with comments submitted April 23, 2021 regarding Chapter 7 of the SVB GSA Subbasin GSPs, and is particularly crucial as part of a “Trigger” Management Action (or Well Impact Mitigation Program).
- **Routinely monitor for all contaminants that could impact public health (not only nitrate, but also chromium-6, arsenic, 123-TCP, uranium, and DBCP) through the representative water quality monitoring network.** Contaminated drinking water can cause both acute and long-term health impacts and can affect the long-term viability of impacted regions.[10] Among other causes, groundwater contamination can result through the use of man-made chemicals, fertilizers, or naturally-occurring elements in soils and sediments.[11] Routinely monitoring for contaminants will allow the GSA to accurately monitor for impacts on the most vulnerable beneficial users, and protect DACs’ and domestic well owners’ access to safe and affordable drinking water.[12]
  - **For monitoring network wells with contamination less than 75% of the MCL for all contaminants, the GSP should set MOs at 75% of the MCLs.** The GSP should include MOs as action triggers at 75% of MCL for each constituent of concern so that groundwater can be managed in that area to prevent a minimum threshold exceedance at a representative monitoring well.[13] This buffer is particularly critical with contaminants like nitrate that can cause acute health effects. As discussed in previous

[9] See previous reference for *Framework for a Drinking Water Well Impact Mitigation Program.*

[10] Community Water Center. Guide to Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act. (2019). https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858.

[11] See previous Community Water Center (2019) reference.

[12] See previous reference for *Framework for a Drinking Water Well Impact Mitigation Program.*

[13] This recommendation was also made previously in a comment letter to SVB GSA from CWC and San Jerardo Cooperative regarding Chapter 8 of the 180/400 ft Aquifer GSP on November 25, 2020, as well as in our comments to the SVB GSA on April 23, 2021 regarding Chapter 8 of drafts for the SVB GSA Subbasin GSPs.

submitted comments, water quality impacts can intensify as water levels decrease.[14] 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.

- **Include a combination of different strategies for mitigation including: replacing impacted wells with new, deeper wells, connecting domestic well users to a nearby public water system, or providing interim bottled water.**
- **Include an implementation timeframe, budget, and funding source**.[15] As currently written, the Local Groundwater Elevation Trigger suggests convening "a working group to assess the groundwater situation if the number of wells that go dry in a specific area cross a specified threshold." We support emergency response if one or more wells are impacted, and also request that this section be updated to include strategies to prevent impacts from occuring in the first place. Additionally, plans to address and mitigate those impacts should be solidified beforehand so resources can be mobilized in a timely manner. Drinking water users cannot afford to wait for interim plans to be developed once their primary sources of water for drinking, cooking and hygiene are compromised.

9.1.3 Implementation Action: Domestic Water Partnership

CWC would like to voice preliminary support for the Domestic Water Partnership Implementation Action, as a step towards coordinating local and regional responses to water quality issues. However, we reiterate that the GSA remains directly responsible for recognizing and resolving water quality degradation that results from its policies and projects. We also would like to affirm our previous comments encouraging the SVB GSA to include - without delay - Monterey County water quality data for state and local small water systems. This data is readily available and would add significantly to the proposed water quality monitoring network in draft subbasin Chapters 7. We do not want this potential partnership implementation action to delay the incorporation of this important data source. This action can and should, however, integrate this County data into current draft subbasin plans in order to identify potentially vulnerable populations and create management actions to protect them. We will offer further comments and recommendations on this subject as future drafts are released. To echo recommendations made previously regarding Suggested Partnerships for Multi-Benefit Remediation Projects:

- **The GSA should work 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**

[14] Community Water Center and Stanford University. Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium. (2019). https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896.

[15] See previous reference for *Framework for a Drinking Water Well Impact Mitigation Program.*

quality.[16] 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, GSPs 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.

[16] Community Water Center and San Jerardo Cooperative, Inc. Comments on the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan. May 15, 2020. https://sgma.water.ca.gov/portal/service/gspdocument/download/4012.

From:	Emily Gardner
To:	Patrick Breen (pbreen@mcwd.org); Tina Wang; Abby Ostovar; Bonnie Gradillas
Subject:	Fwd: My additional input on GSP for Monterey Subbasin
Date:	Tuesday, April 27, 2021 9:28:35 PM
Attachments:	Monterey Subbasin GSP - Coppernoll.docx

Monterey Subbasin Comments

---------- Forwarded message ---------
From: <mcopperma@aol.com>
Date: Tue, Apr 27, 2021 at 9:15 PM
Subject: My additional input on GSP for Monterey Subbasin
To: gardnere@svbgsa.org <gardnere@svbgsa.org>

Hello Emily,

Thank you so much for your kind message. I am attaching the edits I promised along with a few questions/observations. If you have any questions, please let me know. I hope the input is helpful re the edits.

We all appreciate all the conscientious hard work that has been invested in these GSP chapters, which represent a solid, substantial beginning to assist us in developing further information and projects. Bravissimo to the authors.

Very respectfully,
Margaret-Anne Coppernoll

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Monterey Subbasin GSP:

Edits recommended:

1. Page 41: last paragraph before item 3.2.2.5, 2nd sentence: implementation **of** other options. Add word "of" which is missing in the sentence.
2. Page 43: paragraph 3.3, 2nd sentence: the word "by" seems misplaced: recommend change place of the word by: with a conjunctive use component under development **by** MPWMD – not under by development.
3. Page 44: 2nd paragraph, 1st sentence: Fort Ord lead by the Army began in 1986 – should be **led** by the Army…
4. Page 44: 2nd paragraph, 2nd sentence: the cleanup activities at Ft Ord has included groundwater … should be "activities **have** included groundwater…"
5. Page 44: last paragraph, 1st sentence: "…limitations are in place **at the** such as zoning… **at the** are extra words to be deleted" "…limitations are in place such as zoning".
6. Page 49: PS 3.12: Remove the extra **d.** at beginning of d)
7. Page 53: 3.5.1.3 City of Seaside: 2nd paragraph, 2nd line: "MCWRA, which is **as** the entity responsible…." Should be "MCWRA which is the entity responsible."
8. Page 54: 3.5.1.4: 1st sentence: Ft Ord, which cover…. Should be **covers…**
9. Page 55: 3.5.1.5: Ca Coastal Act: 2nd paragraph, last line: "islocated" should be "**is located".**

Questions/Observations:

1. The HWG comment letter diminishes the importance of the Dune Sand Aquifer which is a Principal Aquifer. Along with the Perched Dune Sand Aquifer this aquifer provides freshwater groundwater and is considered a Principal Aquifer, per my understanding. The AEM scientific research technology that provides data on groundwater and aquifer/aquitard conditions is a very important tool used worldwide to explore underground information with amazing accuracy.
2. Do current agriculture enterprises use the most advanced water conservation technology to irrigate crops?
3. How can we monitor private domestic wells (drinking water systems) with less than 15 residential service connections, industrial, and irrigation wells, that are not regulated by the DDW? Their pumping does impact aquifer health, so it seems there should be a way to include these wells in a monitoring system to obtain their usage data. Even if the impact is minor, this impact, when added to all the other pumping, could exceed sustainability yet we would not be including that factor in water use assessments.
4. Does testing/monitoring for water quality include herbicides/pesticides, pharmaceuticals, etc., such as glyphosate?

From:	Emily Gardner
To:	Patrick Breen (pbreen@mcwd.org); Tina Wang
Subject:	Fwd: CWC and San Jerardo Cooperative Comments on draft subbasin GSP Chapters 1-8
Date:	Monday, April 26, 2021 10:27:39 PM
Attachments:	CWC and San Jerardo Cooperative_Salinas Valley Subbasin GSP Ch 1-8 comments 4.23.21.pdf

Good evening,

I have attached a comment letter that is addressed to the Monterey Subbasin.

Sincerely,

Emily Gardner

---------- Forwarded message ---------
From: **Heather Lukacs** <heather.lukacs@communitywatercenter.org>
Date: Fri, Apr 23, 2021 at 6:32 PM
Subject: CWC and San Jerardo Cooperative Comments on draft subbasin GSP Chapters 1-8
To: Emily Gardner <gardnere@svbgsa.org>
Cc: Donna Meyers <meyersd@svbgsa.org>, Mayra Hernandez <mayra.hernandez@communitywatercenter.org>, Justine Massey <justine.massey@communitywatercenter.org>, Horacio Amezqutia <horacioamezquita@yahoo.com>

Dear Emily and Donna,

Please see the attached comments and recommendations submitted on behalf of the Community Water Center (CWC) and San Jerardo Cooperative to the Salinas Valley Basin Groundwater Sustainability Agency on draft GSP Chapters 1-8 for the Langley, East Side, Forebay, and Upper Valley Subbasins as well as draft Chapters 1-5 and 7 for the Monterey Subbasin.

We look forward to continuing to work with the SVB GSA to ensure that the GSPs are 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. We also look forward to meeting with you in the future to further discuss issues raised in these and past comments.

Best,

Heather Lukacs, CWC
Horacio Amezquita, San Jerardo Cooperative
Justine Massey, CWC
Mayra Hernandez, CWC

--
Heather Lukacs, PhD
Pronouns: She/Her/Hers
Director of Community Solutions

Community Water Center

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www.communitywatercenter.org

All CWC staff are currently working remotely. Please reach all staff via email and cell phone.

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COMMUNITY WATER CENTER
EL CENTRO COMUNITARIO POR EL AGUA

San Jerardo Cooperative, Inc.

April 23, 2021

Salinas Valley Basin Groundwater Sustainability Agency

Submitted electronically to:

Emily Gardner, Deputy General Manager

Donna Meyers, General Manager

Subject Comments on the Draft Salinas Valley GSP Chapters 1-8 for the Langley, East Side, Forebay, Upper Valley and Monterey Subbasins

Dear Salinas Valley Basin Groundwater Sustainability Agency:

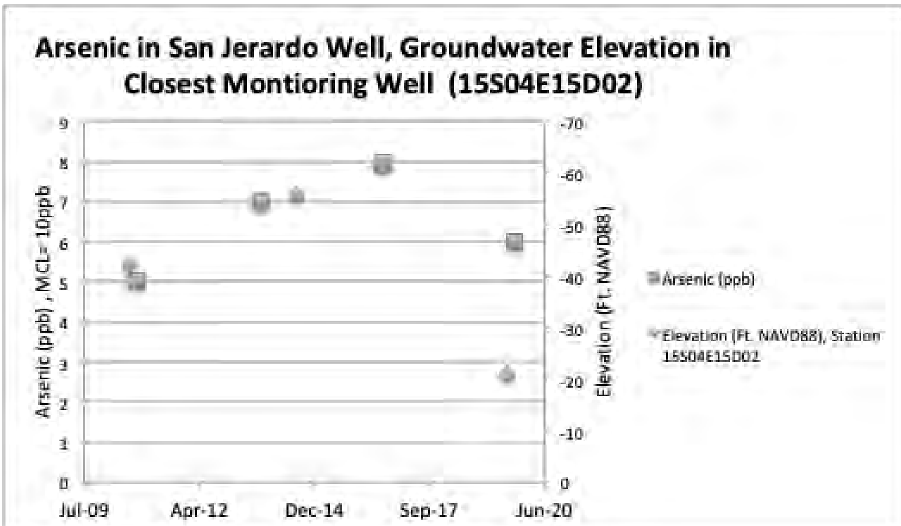
The Community Water Center (CWC) and the San Jerardo Cooperative would like to offer comments and recommendations in response to the draft Groundwater Sustainability Plans (GSPs) Chapter 1-8 for the Langley, East Side, Forebay, and Upper Valley Subbasins as well as Chapters 1-5 and 7 for the Monterey Subbasin that were released in 2020 and early 2021 by the Salinas Valley Basin Groundwater Sustainability Agency (SVB GSA). In addition, we offer preliminary comments on the draft Chapter 9 Implementation Actions that were shared with subbasin committees in April 2020. These comments are intended to add to the public record and are submitted in addition to previous written and spoken comments.

The challenges facing San Jerardo and similar communities throughout all the subbasins in the Salinas Valley are the foundation of our comments in this letter. The San Jerardo Cooperative's well is highly vulnerable to changes in groundwater levels and groundwater quality. Over decades of living and working at San Jerardo Cooperative, Horacio Amezquita has observed firsthand how the irrigation practices on properties surrounding the cooperative impact the water quality in their current and former wells. The San Jerardo Cooperative receives drinking water from a small public water system (CA2701904) and is very concerned that pumping, irrigation practices, and groundwater management in the East Side Subbasin will cause their drinking water well, which currently meets all drinking water standards, to exceed the maximum contaminant levels for arsenic and/or nitrate. Unfortunately, data from the State Water Board indicates increasing levels of nitrate and arsenic in their well with a high arsenic level of 8 ppb on 8/22/2016 that also corresponds to a low groundwater elevation of -61.5 in Station 15S04E15D02, the closest monitoring well to the San Jerardo Cooperative's well (See CWC Figures 1 and 2).[1] While there are too few monitoring data points to draw significant conclusions, CWC Figure 1 does suggest that arsenic levels are higher when groundwater levels are lower. Scientifics studies confirm that contaminants like arsenic, uranium, and chromium (including hexavalent chromium)

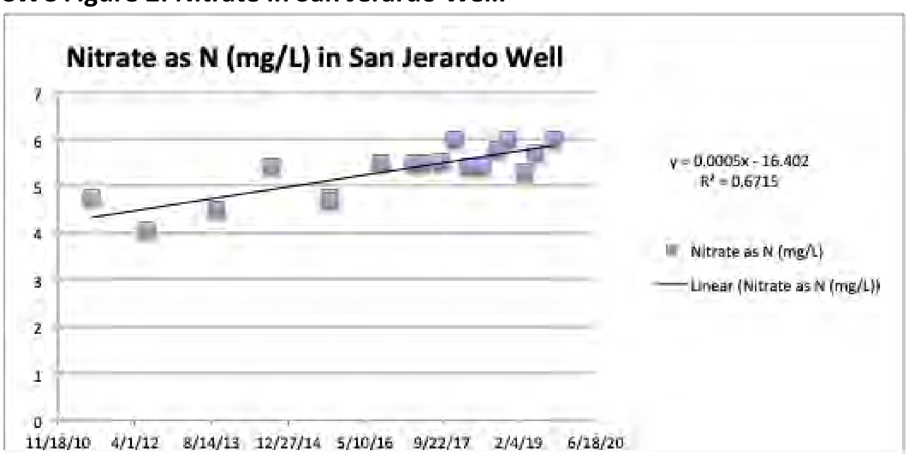
[1] CWC Figure 1 contains all available arsenic data from the State Water Board's Drinking Water Watch online database (https://sdwis.waterboards.ca.gov/PDWW/) which was collected in October 2010, 9/11/13, 8/22/16, and 9/23/19. We then added the monitoring data for Station 15S04E15D02 for the dates most close to the arsenic sampling dates (August 2010, August 2014, August 2016, and August 2019). CWC Figure 2 data was also downloaded from the same online database.

are more likely to be released under certain geochemical conditions influenced by pumping rates, geological materials, and water level fluctuations.[2]

CWC Figure 1: Arsenic in San Jerardo Well, Groundwater Elevation in Closest Monitoring Well
(Note: The groundwater elevation y-axis is reversed to illustrate that lower groundwater elevations are associated with higher arsenic levels.)



CWC Figure 2: Nitrate in San Jerardo Well.



We provide more specific chapter-by-chapter comments in this comment letter. We recommend the GSP should be revised throughout to acknowledge the science showing that groundwater pumping and groundwater level changes can influence water quality.

We strongly recommend that the GSPs incorporate a more robust and representative monitoring network and minimum thresholds to protect vulnerable communities like San Jerardo and those

[2] 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.

dependent on shallow domestic drinking water wells. This network should include state and local small water systems.

We also firmly agree with the State Water Board's December 8, 2020 comments to the Department of Water Resources on the 180/400 Foot Aquifer GSP, have included them as a reference throughout this comment letter, and recommend that the SVB GSA implement their recommendations in all the other Subbasins GSPs currently in development.[3]

Thank you for reviewing this letter and for the consideration of our comments on the draft GSP chapters. We look forward to working with the SVB GSA to ensure that the GSPs are 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. We also look forward to meeting with you in the future to further discuss issues raised in this and past comments.

Sincerely,

Heather Lukacs
Community Water Center

Horacio Amezquita
General Manager, San Jerardo Cooperative, Inc.

Justine Massey
Community Water Center

Mayra Hernandez
Community Water Center

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 Disadvantaged Communities (DACs) and all drinking water users including domestic well communities are explicitly addressed early on in the GSP. In addition to comments previously submitted to the GSA on July 10, 2020, we recommend the following updates to this chapter:

- **Include a map of all disadvantaged communities (DACs) and their drinking water sources in the subbasin including private wells** 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. We appreciate that the SVB GSA added "Appendix 11E Disadvantaged Communities" to the 180/400 foot aquifer GSP (Pages 928-941, January 3, 2020) with important information about the location and drinking water challenges, both water quality and seawater intrusion, facing DACs. This information is critical to inform the

[3] DWR SGMA GSP Portal: https://sgma.water.ca.gov/portal/gsp/comments/29.

rest of the GSP. We recommend that it be moved into Chapters 3 and 5 and augmented in the ways described in this section.

- **Correct small error in text in Section 3.2.1 Water Source Types** that incorrectly states that "small state water systems" are included in the Tracking California database. The Tracking California database only includes public water systems serving 15 or more connections.
- **Clarify the number and type of public water systems in the subbasins throughout the entire plan.** In each subbasin plan, there are discrepancies between types and numbers of public water systems in different chapters. For example, the East Side GSP lists the following:
    - Table 3-2 Well Count Summary shows "Public Supply= **24 wells**"
    - Table 5-3 GAMA Water Quality Summary shows "Number of Existing Wells in Monitoring Network Sampled in Water Year 2019" to be **41** for 123-TCP, **46** for Nitrate, and 9 for TDS.
    - Section 7.5 "All the municipal supply wells in the Subbasin are part of the RMS network." A total of **51 public supply** wells were sampled in WY 2019.
    - Table 8-4 Groundwater Quality Minimum Thresholds - **No well count shown**.

  We recognize that different data sources have different limitations and recommend using the best available data consistently throughout the plan.
- **Add a table of all public water systems, their names, locations, number of connections, and number of active wells** in the text or in an appendix that is consistent with the numbers of wells in Table 3-2, Table 5-3, Section 7.5, and other locations where mentioned in the GSPs.
- **Add state and local small water systems to Figure 3-5.** While these systems are currently not in Figure 3-5, their services areas do appear on the SVB GSA GIS portal (svbgsa.maps.arcgis.com) and are labeled as "Parcels served by small water systems (fewer than 15 connections).
- Consider using the same terminology as the Monterey County Department of Health for the state and local small water systems serving 2-14 connections and not using "small public water systems" in Section 3.4.4.2 and throughout the plan. Some definitions of small public water systems include water systems serving up to 199 or even 3300 connections.[4]
- **Revise Section 3.6.3 on the Agricultural Order to indicate that Agricultural Order 4.0 was adopted in April 2021 and include monitoring requirements including on-farm domestic well monitoring of nitrate and 123-trichloropropane, as well as irrigation well monitoring of nitrate.**

GSP Chapter 4: Hydrogeologic Conceptual Model

The hydrogeologic conceptual model is a key component of the basin setting. The basin setting represents the baseline assumptions that the GSA relies on throughout the GSP when choosing minimum thresholds, measurable objectives, and undesirable results, as well as when planning projects and management actions. We recommend that the GSA:

- **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.**[5] As indicated

[4] California Code, Health and Safety Code - HSC § 116275

[5] 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.

in our cover letter, this is of particular importance for the San Jerardo Cooperative who has experienced increases in nitrate and arsenic in their well.

GSP Chapter 5: Groundwater Conditions

In Chapter 5, we recommend that the GSA make the following changes to all subbasin GSPs (East Side, Langley, Monterey, Upper Valley, and Forebay). The goal is to clearly represent current and past water quality conditions in the subbasin in order to inform the monitoring network sustainable management criteria, planning, management actions, and projects.

Groundwater Quality Distribution and Trends

- **Clearly state in the introduction to Section 5.4 that the amount and location of pumping can impact groundwater quality distribution and trends.** We recommend including this language in the letter submitted by the State Water Board to DWR regarding the 180/400 foot aquifer GSP (Dec. 2020): "Not all water quality impacts to groundwater must be addressed in the GSP, but significant and unreasonable water quality degradation due to groundwater conditions occurring throughout the subbasin, and that were not present prior to January 1, 2015, must be addressed in the GSP's minimum thresholds."[6] High rates of groundwater pumping can pull in contaminant plumes towards drinking water wells, cause the release of arsenic from the strata in the ground, and when shallow wells go dry or are too contaminated to use, new wells must be drilled into deeper portions of the aquifer where they are more likely to encounter high arsenic levels.[7] As previously mentioned, this is of direct concern to the San Jerardo Cooperative who has observed increasing arsenic levels in their relatively new drinking water well, which was drilled to replace a more shallow well contaminated with nitrate and 123-trichloropropane.
- **Include trend data for drinking water wells in the subbasins.** In some places, nitrate and other contaminants are increasing in drinking water wells. It is important to understand current contamination values and also whether well water quality is improving, staying the same or declining as well as the relationship of water quality to other sustainability indicators. As indicated by the data provided in this section, Monterey County maintains an exceptional dataset of water quality data for over 900 state and local small water systems serving 2-14 connections that should be utilized throughout the GSPs. Monterey County has sampled many small water systems for decades. CWC Figures 3 and 4 show nitrate concentrations increasing over time in two state small water systems in the East Side sub basin with high levels in one of the systems (Middlefield Rd. Water System #4) in 2015. Figure 5 illustrates arsenic concentrations in the Metz Road Water System #4 in the Forebay Subbasin. In some cases, data shows fluctuations and peaks in concentrations during the 2015-2016 timeframe. This is similar to the San Jerardo example shared previously. Further, the Central Coast Regional Water Board has analyzed data from their Irrigated Lands Regulatory Program to show that many wells across the region are showing increasing levels of nitrate concentrations.[8]

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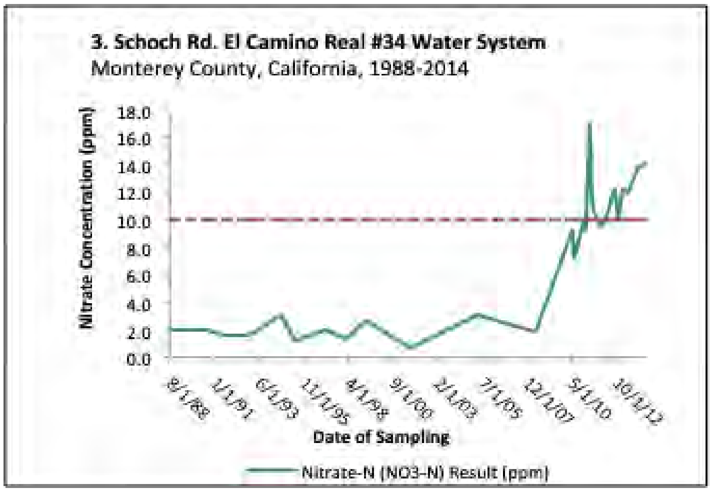
[6] DWR SGMA GSP Portal: https://sgma.water.ca.gov/portal/gsp/comments/29

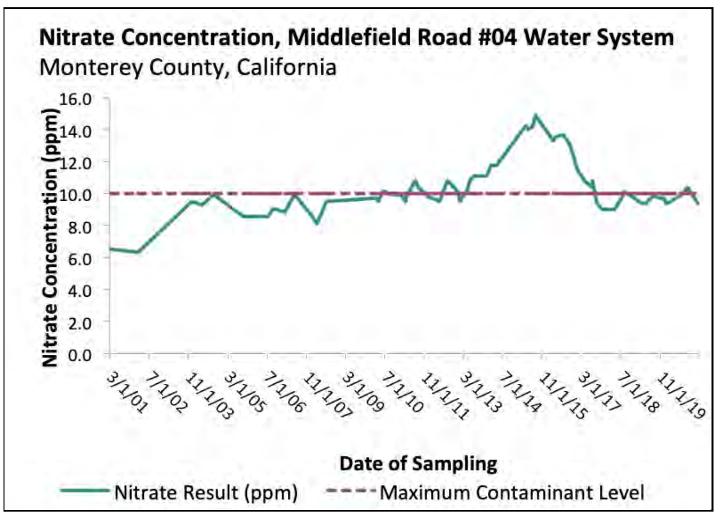
[7] Community Water Center and Stanford University, 2019. Factsheet "Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium" for more information. Available at: https://www.communitywatercenter.org/sgmaresources

[8] Draft Ag Order, Attachment A, 141-143, https://www.waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/docs/ag_order4_renewal/2021april/pao4_att_a_clean.pdf.

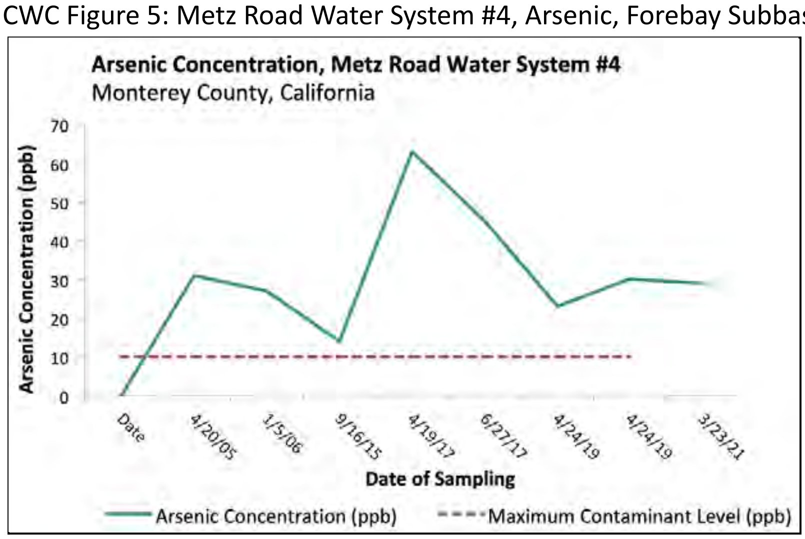
CWC Figure 3: El Camino Real WS #34 - Nitrate as N, East Side Subbasin



CWC Figure 4: Middlefield Road WS #4 - Nitrate as N, East Side Subbasin



CWC Figure 5: Metz Road Water System #4, Arsenic, Forebay Subbasin



- **Revise Section 5.4 to include a specific discussion, supported by maps and charts, of the spatial or temporal water quality trends for all constituents that have been detected in the subbasin and may affect drinking water beneficial users, as required under 23 CCR § 354.16(d).** This section should include water quality data (both in map and tabular form) for all constituents (where available) with primary drinking water standards that have been detected in the subbasin including, but not limited to, **nitrate, 123-trichloropropane, hexavalent chromium,**[9] **arsenic, uranium, and perchlorate for all public drinking water wells, state and local small water system wells, and private domestic wells.** It is especially important for all groundwater stakeholders to be able to understand and visualize the location of contaminant hotspots throughout each subbasin.
    - **Present maps and supporting data for all constituents of concern.** The review of water quality data in the groundwater conditions section of the draft Section 5.4 in the subbasin GSPs is focused primarily on nitrate. The GSPs identify numerous constituents that have been detected in groundwater above drinking water standards, but, with the exception of nitrate, do not present this data spatially. Even though the subbasin GSPs set water quality minimum thresholds for additional constituents (See Tables 8-4 and 8-5), the supporting data is not all 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)).
    - **Augment and clarify data presented in Table 5-3 GAMA Water Quality Data Summary and Section 5.4.1 in the following ways:**
        - **Add all state and local small water systems data.** Table 5-3 should include all state and local small water system data for nitrate, arsenic, hexavalent chromium, and any other contaminants that Monterey County monitors in the subbasin.
        - **Include additional contaminants that have been detected in the subbasin(s) to be consistent with Tables 8-5 and 8-6.** Our review of publicly available data on drinking water wells of all types (private domestic wells, state/local small water systems, and public water systems) indicate that there are additional constituents of concern beyond those currently listed. We included CWC Figure 6 (page 9) to highlight the spatial distribution of arsenic in public water system wells in the **East Side, Langley and Monterey Subbasins**, and CWC Figure 7 (page 10) to highlight the spatial distribution of hexavalent chromium in in public water system wells in the **Langley Subbasin**. We recommend a more comprehensive analysis of all other constituents in the subbasins, including, but not limited to the following[10]:

[9] The maximum contaminant level for hexavalent chromium should be reinstated in 2021. Data is available from the State Water Resources Control Board and Monterey County Environmental Health Bureau (public water system data, state/local small water system data) as well as on GAMA from the Central Coast Regional Water Quality Control Board's private well testing program.

[10] All Monterey County data shared in this section was collected by the small water system program. https://www.co.monterey.ca.us/government/departments-a-h/health/environmental-health/drinking-water-protection/state-and-local
It was downloaded from the Greater Monterey County Community Water Tool on April 22, 2021: http://www.greatermontereyirwmp.org/documents/disadvantaged-community-plan-for-drinking-water-and-wastewater/

- **East Side Subbasin:** Table 5-3 presents data on two primary contaminants in drinking water: nitrate and 123-trichloropropane, but arsenic is also of particular concern to San Jerardo Cooperative and others in the subbasin. GAMA shows that four public water system wells have exceedances of the arsenic MCL in the past three years (CWC Figure 8), and state/local small water system out of compliance lists from the Monterey County Health Department (2021) show that both Old Stage Rd WS #6 and Old Stage Rd WS #7 are out of compliance for arsenic and that at least five other state or local small water systems have between 6-8 ppb of arsenic, which means they are similar to San Jerardo Cooperative in terms of their vulnerability to water level fluctuations or other changes.
- **Forebay Subbasin:** While arsenic is less common in the Forebay than in the Langley, Monterey, and East Side Subbasins, our review of the Monterey County Health Department data indicates that 17 state or local smalls had arsenic at levels above 1 ppb in the 2015-2017 time period, and at least two of these had levels above the MCL. See CWC Figure 5 (page 8) which illustrates trends in one of the out-of-compliance small water systems, Metz Road Water System #4. In addition, three systems monitored by Monterey County as part of their Local Primacy Program for public water systems serving 15-199 connections had hexavalent chromium detections of 2.8 ppb, 3.4 ppb, and 2.1 ppb in the 2014-2017 timeframe.
- **Upper Valley Subbasin:** Although arsenic is not as common in the Upper Valley as other subbasins, it has been detected in levels between 3.2 and 5 ppb in six small water systems monitored by Monterey County.

■ Clarify what is meant by "DDW wells" in Table 5-3. If these are "public supply wells" in GAMA, please clearly state this.

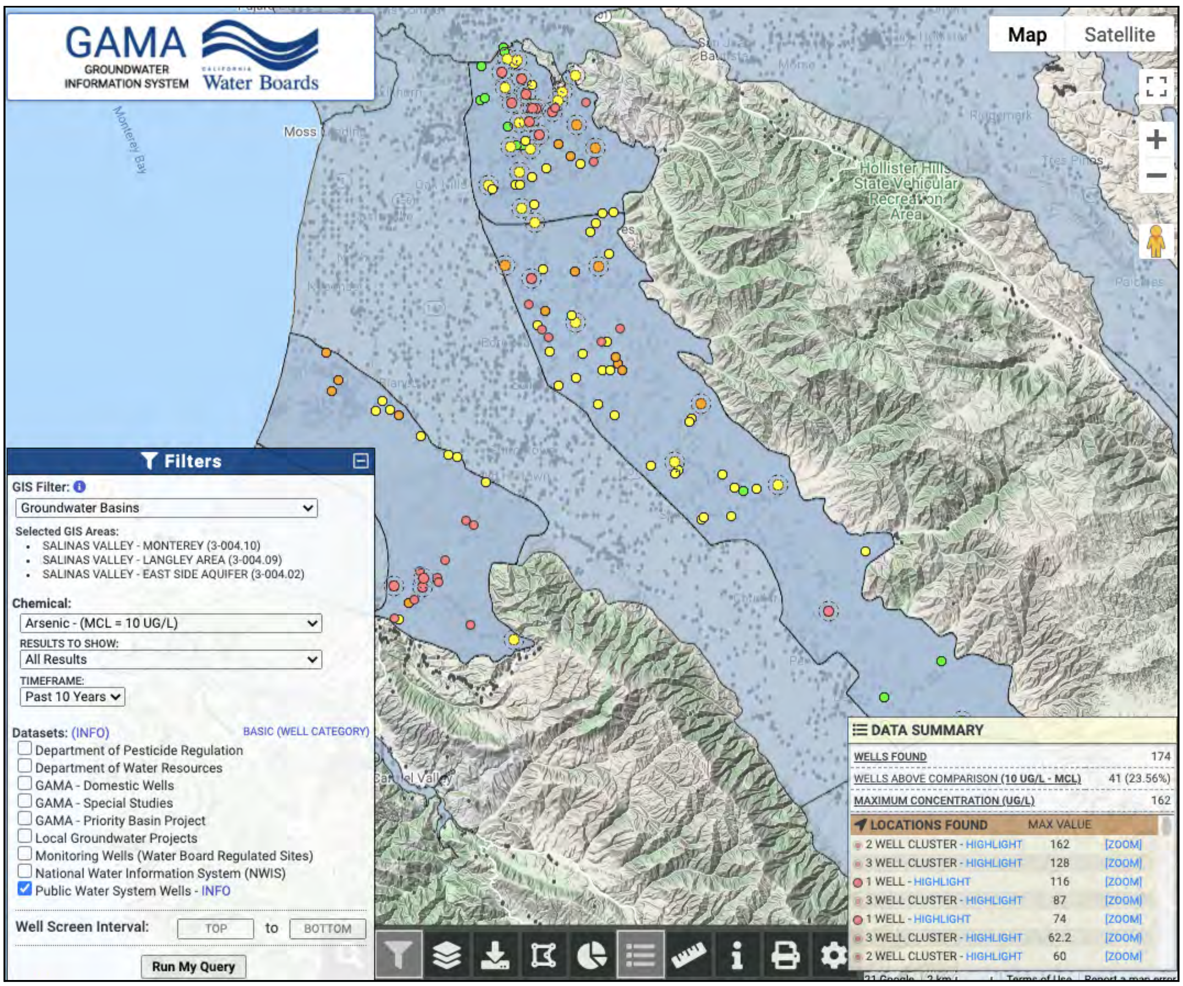
■ **Include the following in Table 5-3: (1) total number of wells of each type, (2) the total number of wells sampled for each constituent, and (3) Of the total number sampled, the number of systems that are out-of-compliance with drinking water standards.** Since public water systems and ILRP wells are monitored on different schedules, there are significant data gaps and inconsistencies when comparing one year to the next in the way that drinking water contaminants are currently represented in GSPs Chapters 5, 7, and 8. For example, we were surprised to see only 15 ILRP Domestic Wells included in Table 5-3 the East Side Subbasin GSP. GAMA shows that there were 139 ILRP wells in the East Side Subbasin sampled for nitrate in the past 3 years, 331 sampled in the last 10 years, and only 8 sampled in the last year. Moreover, CWC Figure 8 illustrates 43 Public Water System Wells in the East Side Subbasin with arsenic data in the past 3 years. On CWC Figure 8, San Jerardo Cooperative's well is shown in orange to indicate that it is at-risk but has not yet exceeded the MCL. However, only 18 Public Water System Wells have sampling data for arsenic from the past year, and during this timeframe, San Jerardo Cooperative's well is not represented (See CWC Figure 9).

■ **Use the compliance status or most recent sample result instead of using the "Number of Wells Exceeding Regulatory Standard in Regulatory Year 2019"**

This is especially important for Table 8-4 and Table 8-5 but also applies to Table 5-3. We recommend the following for different types of drinking water systems:

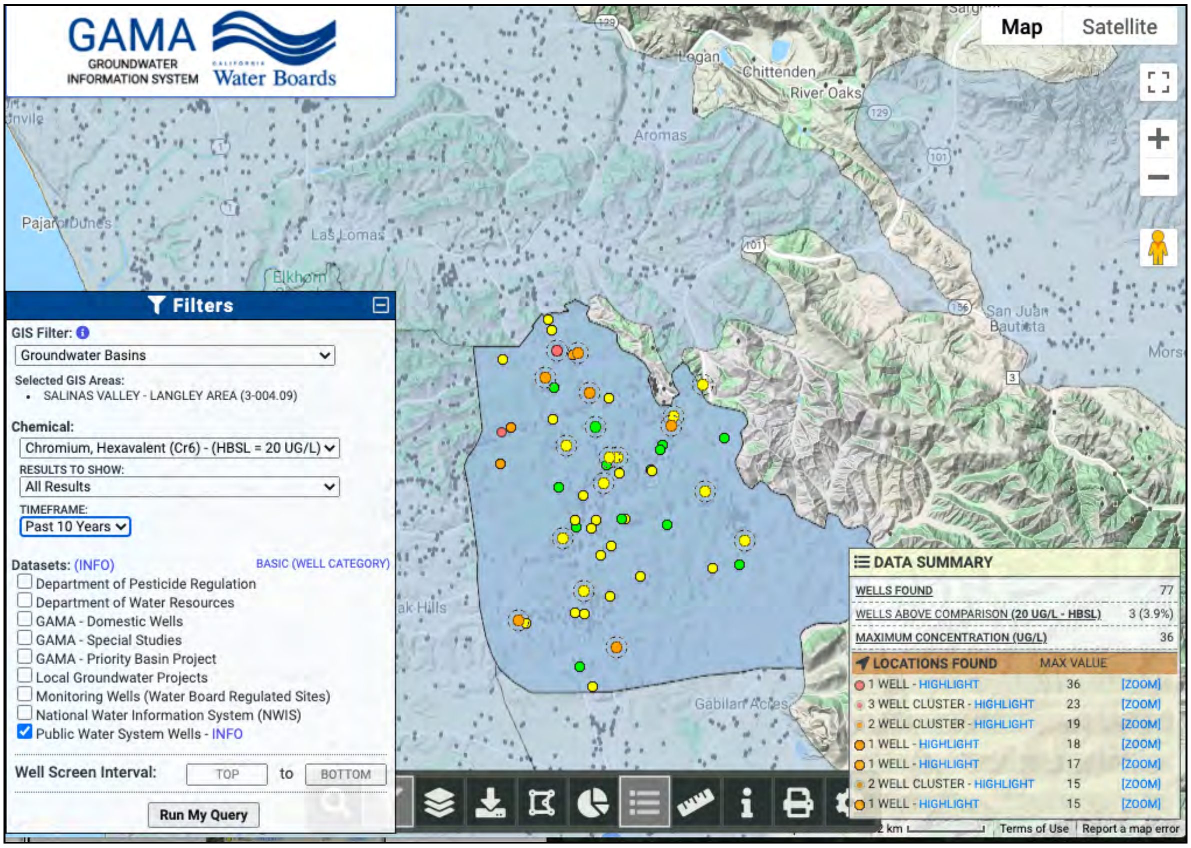
- For public water systems, we recommend using the State Water Board's determination regarding compliance status.
- For state and local small water systems, we recommend using the Monterey County Health Department list of out-of-compliance systems, which is published on their website and available by request on an annual basis based on the most recent sample collected.[11]
- For ILRP wells, we recommend the GSA consider an approach similar to Monterey County and show the most recent sample result for each monitoring well (and not only those sampled in the past year).

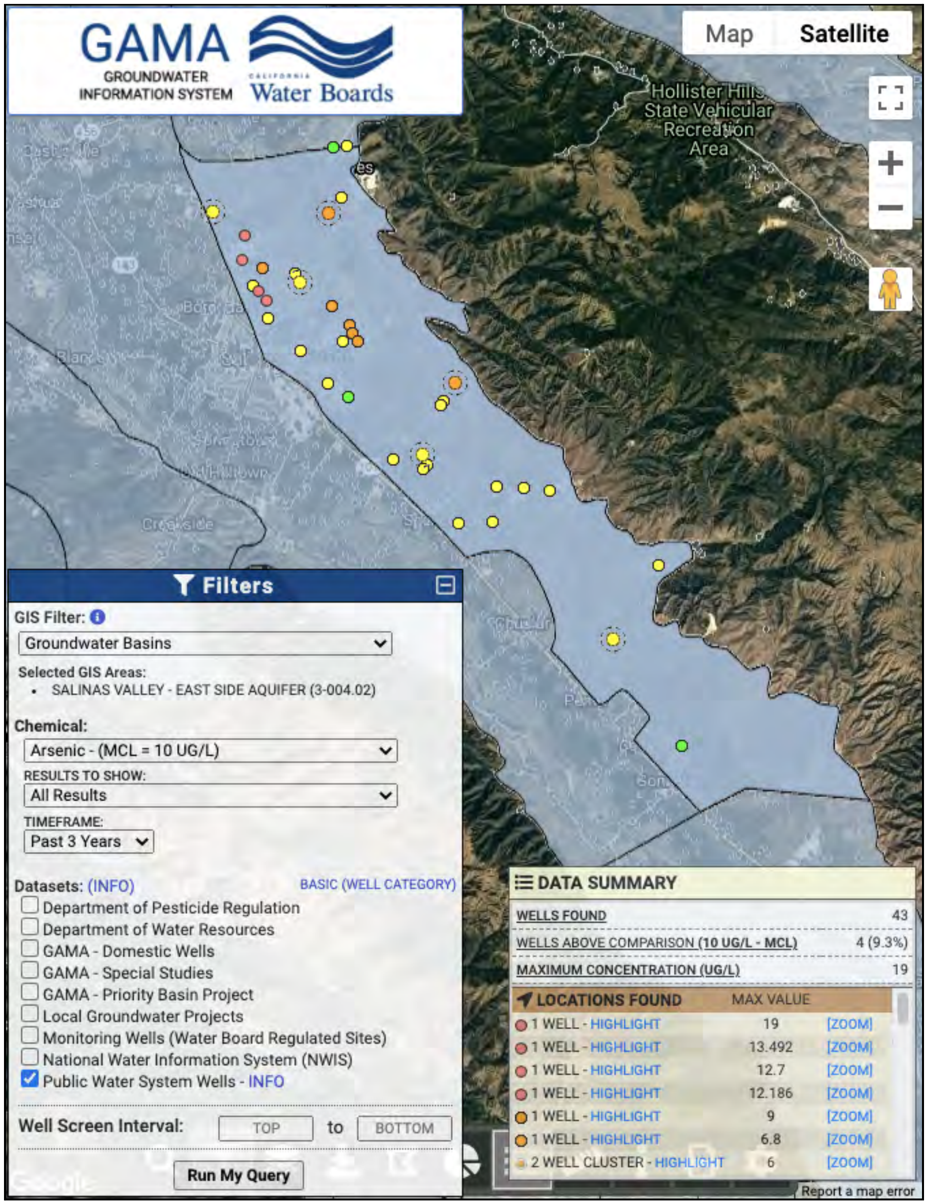
CWC Figure 6: Arsenic Concentrations in Public Water System Wells, Monterey, Langley East Side Subbasins (Red dots = >10 ppb, Orange = 5-9.9 ppb, Yellow = 0.6-5.9 ppb, Green= non-detect)



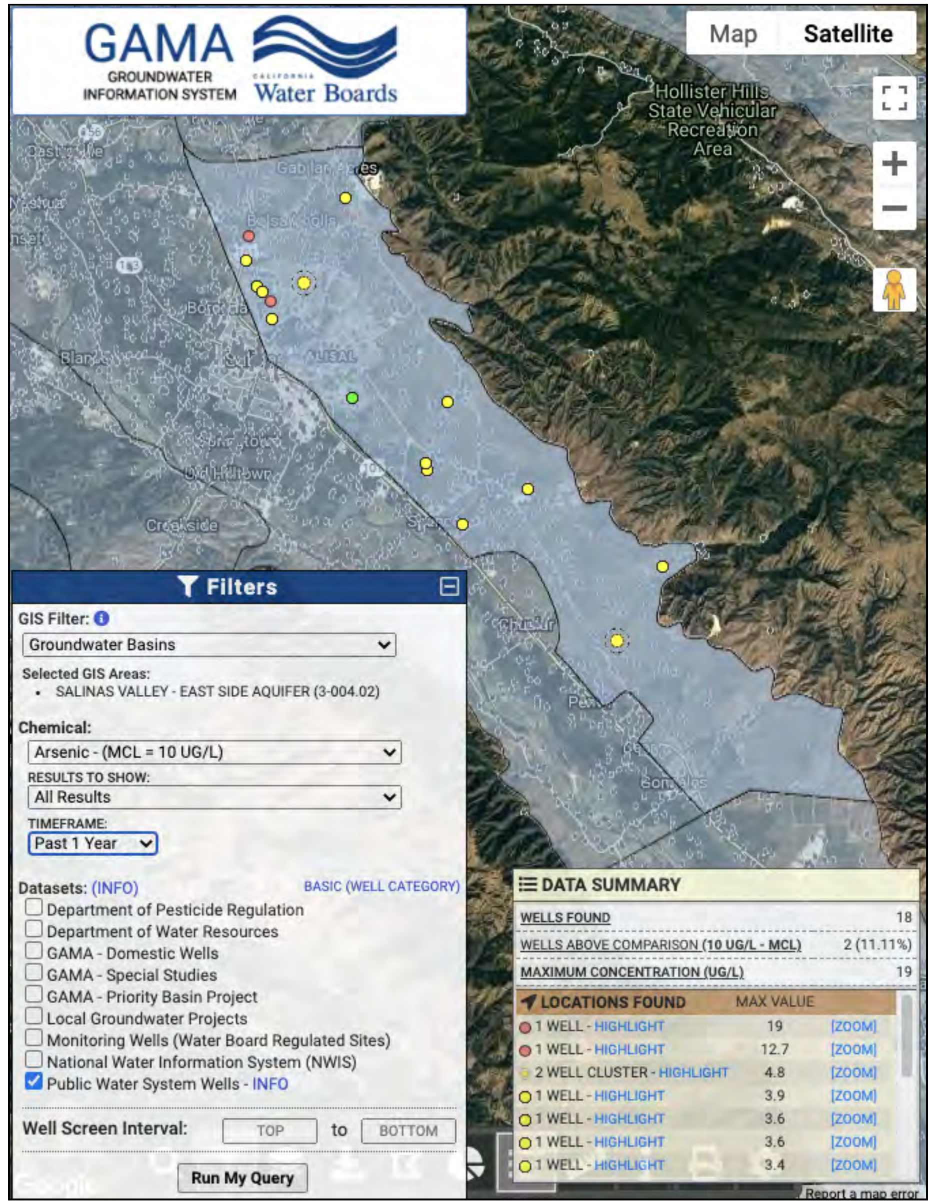
[11] https://www.co.monterey.ca.us/government/departments-a-h/health/environmental-health/drinking-water-protection/state-and-local.

CWC FIgure 7: Hexavalent Chromium Concentrations in Public Water System Wells, Langley Subbasin





CWC Figure 8: 43 Public Water System Wells have arsenic data in the past 3 years. One well at San Jerardo Cooperative appears orange on this map.



CWC Figure 9: Only 18 Public Water Systems Wells have arsenic data in the past year. San Jerardo Cooperative's wells are not shown on this map.

GSP Chapter 6: Water Budgets

SGMA requires a GSP to quantify the water budget in sufficient detail in order to build local understanding of how historic changes have affected the six sustainability indicators in the basin.[12] Ultimately, this information is intended to be used to predict how these same variables may affect or guide future management actions.[13] GSAs must provide adequate water budget information to demonstrate that the GSP adheres to all SGMA and GSP regulation requirements, that the GSA will be able to achieve the sustainability goal within 20 years, and be able to maintain sustainability over the 50 year planning and implementation horizon.[14]

We are concerned that the calculations of sustainable yield and the water budget in this chapter may *overestimate the actual sustainable yield and water availability of the subbasins*. We highlight points of concern below and recommended changes.

6.4 Projected Water Budgets

The SVB GSA Subbasin GSPs explain that "[p]rojected water budgets are extracted from the SVOM, which simulates future hydrologic conditions with assumed climate change. Two projected water budgets are presented, one incorporating estimated 2030 climate change projections and one incorporating estimated 2070 climate change projections. … The climate change projections are based on data provided by DWR (2018)."[15] Including climate change scenarios in water planning is an important step for California's increased resiliency, however, which scenarios to include is a critical question.

Climate change is changing when, where, and how the state receives precipitation.[16] Impacts to water supply, particularly drinking water supply, could be devastating if planning is inadequate or too optimistic. GSAs must adequately incorporate climate change scenarios in water budgets. As such, the DWR Climate Change Guidance[17] makes recommendations to GSAs for how to conduct their climate change analysis while preparing water budgets. DWR also provides climate data for a 2030 Central Tendency scenario and 2070 Central Tendency, 2070 Dry-Extreme Warming (DEW), and 2070 Wet-Moderate Warming (WMW) scenarios. While DWR's Guidance should be improved with more specific guidelines and requirements, the current Guidance specifically encourages GSAs to analyze the more extreme DEW and WMW projections for 2070 to plan for likely events that may have costly outcomes. Therefore, we recommend that the SVB GSA subbasin GSPs:

- **Include water budget analyses based on DWR's 2070 DEW and WMW scenarios in order to analyze the full range of likely scenarios[18] that the region faces.**

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[12] 23 CCR § 354.18.

[13] California Department of Water Resources (DWR), 2016. Best Management Practices for the Sustainable Management of Groundwater, Modeling (BMP #5), December 2016.

[14] 23 CCR § 354.24.

[15] California Department of Water Resources (DWR), 2018. Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development. https://data.cnra.ca.gov/dataset/sgma-climate-change-resources/resource/f824eb68-1751-4f37-9a15-d9edbc854e1f?inner_span=True.

[16] Union of Concerned Scientists. Troubled Waters: Preparing for Climate Threats to California's Water System, 2020. https://www.ucsusa.org/resources/troubled-waters#top.

[17] See DWR (2018) reference above.

[18] Terminology used in the California Climate Change Assessment, 2019. (Table 3). https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf.

- Currently, the SVB GSA's exclusive use of the "central tendency" climate scenario predicts an increase in surface water availability, as represented in the tables in Section 6.4.3 of the subbasin GSPs. The Projected Groundwater Budgets show increases in deep percolation of stream flow, deep percolation of precipitation, and irrigation. The subbasin GSPs are relying on this presumed increase for their water budgets. However, the 2070 DEW scenario provided by DWR could likely result in a significant decrease in precipitation and increase in evapotranspiration, which would have substantial effects on the subbasin water budgets. By analyzing only the central tendency scenario and not other likely scenarios such as the extremely dry and wet scenarios provided by DWR, the SVB GSA is ignoring the specific 2070 DEW and WMW scenarios provided by DWR as well as an increasing trend in drought frequency. In doing so, the GSP could be overestimating groundwater recharge or underestimating water demands, inadequately planning, and jeopardizing groundwater sustainability. This will waste precious time to prepare and reduce the vulnerability of the basin's agriculture and already vulnerable communities.
- DWR's guidance (2018) states that the central tendency scenarios *might* be considered most likely future conditions -- that is not a clear endorsement of a higher statistical probability. It appears that they are calling it the central tendency merely because it falls in the middle of the other two projections, not because it's significantly more probable.
- DWR (2018) explicitly encourages GSAs to plan for more stressful future conditions:
    - "GSAs should understand the uncertainty involved in projecting future conditions. The recommended 2030 and 2070 central tendency scenarios describe what might be considered 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. Therefore, GSAs are encouraged to plan for future conditions that are more stressful than those evaluated in the recommended scenarios by analyzing the 2070 DEW and 2070 WMW scenarios."[19]
- Including the DEW and WMW climate scenarios as part of the 2070 water budget analysis is necessary to meet the statutory requirement to use the "best available information and best available science."[20] Sustainable planning must include planning for foreseeable negative and challenging scenarios. The extreme scenarios provided by DWR are certainly foreseeable, as they have been modeled and made available to the GSA for analysis.
- It is important for the SVB GSA to include the 2070 DEW and WMW scenarios, because shallow drinking water wells in the area are particularly vulnerable to various extreme conditions, especially drought.

[19] California Department of Water Resources (DWR), 2018. Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development. Section 4.7.1. https://data.cnra.ca.gov/dataset/sgma-climate-change-resources/resource/f824eb68-1751-4f37-9a15-d9edbc854e1f?inner_span=True. (In red is a statement about the central tendency scenarios referenced in SVB GSA public meetings and email communications by the GSA's engineering consultant, and in blue is the important text accompanying it, urging GSAs to analyze the more extreme scenarios. CWC staff cited this complete paragraph in email communications with the consultant and GSA staff on April 8, 2021. CWC also raised this point at Forebay and Upper Valley Subbasin Committee meetings in March and at the April SVB GSA Board Meeting.)

[20] See 23 CCR § 355.4(b)(1).

- **Share water budget results based on the 2070 central tendency, DEW and WMW scenarios that DWR has provided with the Subbasin committees, the Advisory Committee, and the GSA board**. This should be done at a *minimum* to see what the difference in outcomes could be, and to provide a transparent process for selecting the preferred scenario. This analysis is particularly important because of the drastic differences between the dry and wet scenarios for this region. Drought and/or intensified rainfall (more water falling over a shorter period of time) would pose severe challenges[21] to the Subbasins' plans for recharge, which is a critical component of their plans to reach sustainability.
- **Plan for potential adverse climate conditions when determining Projects and Management Actions.** The results of limited-scope planning will be detrimental to beneficial users throughout the SVB GSA. "If water planning continues to fail to account for the full range of likely climate impacts, California risks wasted water investments, unmet sustainability goals, and increased water supply shortfalls."[22] This is true not just generally across California, but also specifically on the Central Coast. "Without effective adaptations, projected future extreme droughts will challenge the management of the Central Coast region's already stressed water supplies, including existing local surface storage and groundwater recharge as well as imported surface water supplies from the State Water Project which will become less reliable, and more expensive."[23]

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 all beneficial users, including domestic well owners and S/DACs. We have the following overarching recommendations for this chapter and provide more details for sub-sections below:

- **Require well registration and metering for all wells in the Salinas Valley, and begin implementation of a well registration and metering program in early 2022 with a dedicated budget.** We voice our strong support, with modifications indicated in our comments below, for proposed "Implementation Action 12: Well Registration" in Section 9.1 of Chapter 9 released in April 2021 and recommend that this action be updated and moved to Chapter 7. We agree with the SVB GSA's statement in Section 7.3.2 Groundwater Storage Monitoring Data Gaps that: "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 SVB GSA will finalize a database of existing and active groundwater wells in the Eastside Aquifer Subbasin." This is essential for the plan to achieve sustainability for all beneficial users and influences many different chapters including:

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[21] Union of Concerned Scientists. Inter-model agreement on projected shifts in California hydroclimate characteristics critical to water management. 2020, p. 13. https://link.springer.com/content/pdf/10.1007/s10584-020-02882-4.pdf.

[22] See Union of Concerned Scientists. Troubled Waters (2020) cited above.

[23] Regional Climate Change Assessment for the Central Coast, 2019. (Discussing drought pp. 21-23. Internal citations omitted). https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-006_CentralCoast_ADA.pdf.

- Monitoring networks: In order to develop a monitoring network that is representative, it will be essential to understand the number, location, well construction, and type (domestic, irrigation, other) of all wells located in the subbasins.
- Water budget and minimum thresholds: Understanding the amount and location of pumping of all water users will be essential for creating an accurate water budget and minimum thresholds consistent with achieving sustainability.
- Projects and management actions: Section 9.2.1 Well Registration and Metering is a key management action and component of the Water Charges Framework (in the 180/400 foot aquifer) and forthcoming subbasin GSPs. This will underpin the funding structure for many future projects.

- **Require flowmeter calibration to ensure consistent and fair monitoring among all agricultural groundwater users (Section 7.3.1).** Rather than "consider the value of developing protocols for flowmeter calibration," the GSPs should require flowmeter calibration. The water budget and sustainable yield calculation depend on reliable and fair monitoring and reporting of pumping.
- **Provide a plan and schedule for data gap resolution in forthcoming Chapter 10 of the subbasin GSPs.** In the 180/400 foot aquifer GSP, there was not a clear plan or schedule for the resolution of data gaps in Chapter 7 even though it indicated that this would be included in Chapter 10.
- **Revise GSP monitoring chapters such that monitoring networks for groundwater storage (pumping), groundwater elevation, and groundwater quality adequately monitor how groundwater management actions could impact vulnerable communities including those reliant on domestic wells and shallow portions of the aquifers** (see more detail below).

7.2 Groundwater Elevation Monitoring Network

- **Include groundwater elevation monitoring sites in the network that are representative in terms of the depth and geographic distribution of private domestic wells, and that takes into account areas of high agricultural pumping and wells vulnerable to groundwater decline.**
  - The draft East Side Subbasin GSP Table 7-1 of "Eastside Aquifer Groundwater Elevation Representative Monitoring Site Network" shows all irrigation and observation wells (and no domestic wells) which range in depth from 299 to 1122 feet.[24] Yet, the DWR Well Completion Report Map Application[25] shows that 1 mile by 1 mile square sections near San Jerardo Cooperative include private domestic wells with the following minimum depths: 110 ft, 210 ft, 172 ft, 208 ft, and 132 ft which are more shallow than all the wells in the current monitoring network (See CWC Figure 10).
- **Overlay the private well density map (Figure 3-7), the DWR Well Completion Report Map Application (with minimum, average, and maximum depths), the water level monitoring network (with well depths), and available pumping data to better illustrate if and how representative the proposed groundwater elevation monitoring network is of private domestic wells and which areas are vulnerable to water elevation changes.** The GSPs state: "The BMP notes that professional judgment should be used to design the monitoring network to account for high-pumping areas, proposed projects, and other subbasin-specific factors. " This will also help to better visualize where there are gaps in the monitoring network which the GSAs can address.

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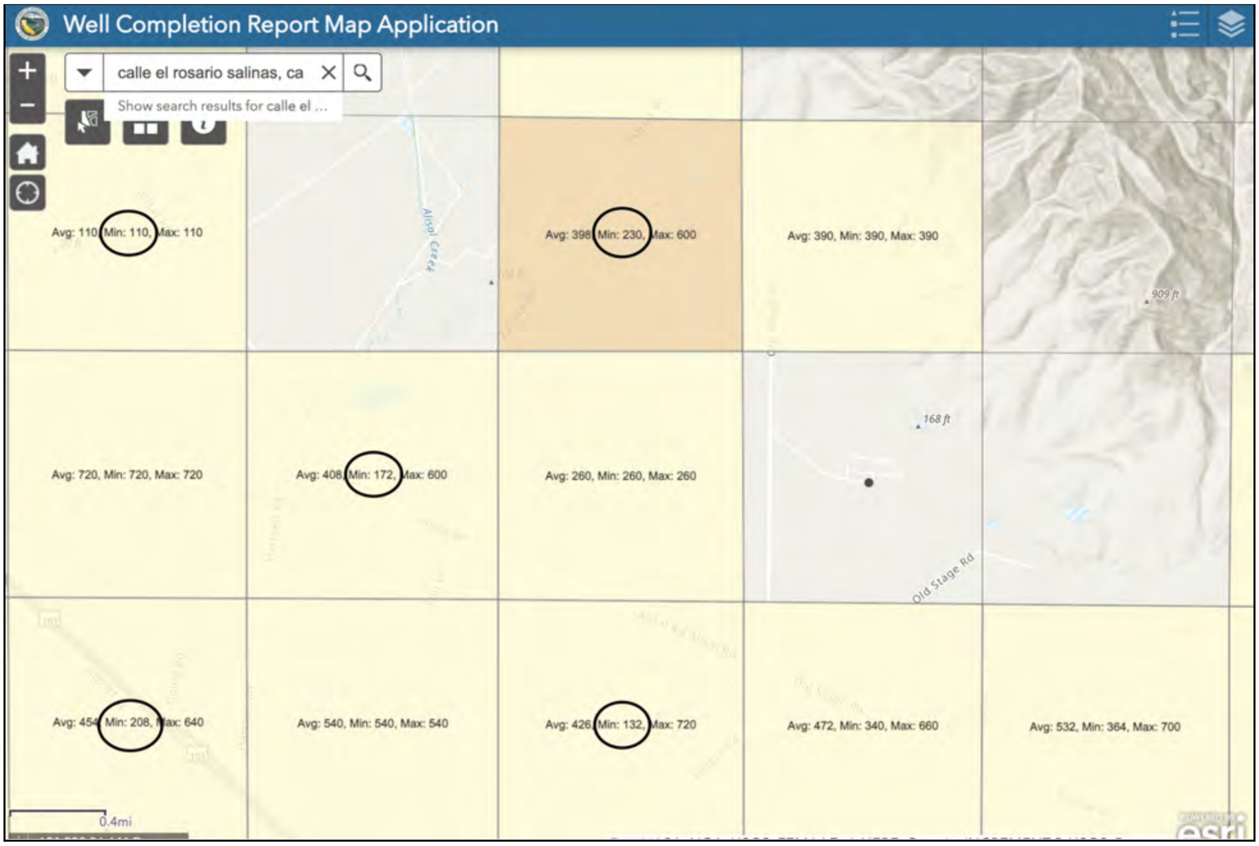
[24] One well shows "0" depth but that must be an error or missing value.

[25] https://water.ca.gov/Programs/Groundwater-Management/Wells/Well-Completion-Reports



CWC Figure 10: Screenshot of DWR Well Completion Report Map application in the area near San Jerardo Cooperative highlighting that several 1 mi. by 1 mi. square sections include private domestic wells less than 250 feet deep.

7.5 Water Quality Monitoring Network

- **Clarify the number of public water system wells that will be included in the water quality monitoring network.** We strongly support the GSPs inclusion stated in Section 7.5 that "All the municipal supply wells in the Subasin are part of the RMS network." As indicated in Chapter 3 and Chapter 5 comments, the GSPs should also clearly identify the number of public supply wells as well as the number of public supply wells that are out of compliance and at risk in each subbasin. Section 7.5 currently states that “A total of 51 public supply wells were sampled in WY 2019” and indicates that all wells are listed in Appendix 7E (which is not publicly available at this time). This section and appendix should be consistent with the total number of wells represented in Table 8-4 which includes groundwater quality minimum thresholds.
- **Representative Water Quality Monitoring Wells for the shallow aquifer should be established in the GSPs based on all currently available data sources with direct agreements with landowners or public entities established.**
    - **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 GSPs 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. In order to maintain consistency for future sustainability analyses, the SVB GSA should also consider conducting its own water quality analysis of wells where access agreements have already been established to water quality RMWs.

- **Clarify that state and local small water systems will be added to the water quality monitoring network and that well construction information is no longer needed in order to fill this data gap.** Monterey County Environmental Health Bureau permits and monitors over 900 state and local small water systems in the County and have managed the data collected for decades. This dataset has advantages over the ILRP domestic well dataset in that it includes data on contaminants like arsenic and hexavalent chromium in addition to nitrate. Local small water systems serve 2-4 households and are much more similar to private domestic wells than public water systems in terms of depth, well construction, age, size, and maintenance - thus this data would provide a broader representation of shallow drinking water wells. State and local small water systems are located in areas of irrigated agricultural lands as well as rural residential and other land uses. This dataset should complement and not replace ILRP domestic well data.
    - **Clearly add state and local small water system data as a data gap in Section 7.5.2.** In Section 7.5 Water Quality Monitoring Network, the draft GSPs state: "These [state and local small] wells are not in the current monitoring system because well location coordinates and construction information are currently missing. SVB GSA will 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 7-4." However Section 7.5.2 Groundwater Quality Monitoring Data Gaps states: "There is adequate spatial coverage to assess impacts to beneficial uses and users."
- **Do not rely solely on ILRP well data to represent private domestic wells (which are often more shallow than public water system wells).** Similar to CASGEM, the current groundwater quality monitoring network includes monitoring points on private property including ILRP domestic and irrigation wells, but it should not be restricted to ILRP sites only. While on-farm domestic and irrigation wells monitored through the ILRP provide a potentially useful, though limited, 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 wells located on agricultural irrigated lands, and not all ILRP properties include domestic wells. Agricultural land use is not the primary land use in the Langley and Monterey Subbasins so this monitoring network offers very limited coverage. While agricultural land use is the primary land use in the East Side, Upper Valley, and Forebay Subbasins, there are private domestic wells in areas with different primary land uses (e.g. rural), and SGMA requires that monitoring networks are geographically representative. Monitoring network wells must also be sufficiently representative to cover all uses and users in the basin, (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, (3) Ag Order 4.0 was adopted on April 15, 2021, which means the first year of monitoring data will not be

available until late 2022, (4) The GSA has no authority to determine the robustness or enforcement of monitoring in the irrigated lands network, and (5) while Ag Order 4.0 proposes to require testing for 1,2,3-TCP as well as nitrate, the current ILRP domestic well data only samples for nitrate, and neither Order tests for other contaminants found in the region. In our experience, not all growers are consistent with their water quality and other reporting, despite the regulatory requirements in place.

- **Update Domestic ILRP and Irrigation ILRP wells in a different color on Figure 7-5 Locations of ILRP Wells Monitored under Ag Order 3.0.** Since these wells are monitored for different constituents and serve different beneficial users, it is important to illustrate them separately.

GSP Chapter 8: Sustainable Management Criteria

We have grouped our comments in this section into general recommendations related to all sustainable management criteria (SMCs) followed by a section specific to the water quality SMCs. We recommend that the Salinas Valley GSA implement the following recommendations in the subbasin GSPs:

- **Undertake a drinking water well impact analysis that adequately quantifies and captures well impacts at the minimum thresholds, proposed undesirable results, and potential interim conditions.** Include this analysis during the annual reporting process. We disagree with the assumption included in all draft GSPs that the exact location of wells needs to be known in order to include them in a drinking water well impact analysis. In the 180/400 Foot Aquifer Subbasin GSP, the SVB GSA included a domestic well impact analysis. Although the SVB GSA did not describe the methods used in this analysis,[26] it is CWC's understanding that the analysis was based on Public Land Survey System (PLSS) section location data, demonstrating that such an analysis is feasible. Similar analyses in the Water Foundation Whitepaper (June 2020)[27] and in the Kings River East GSP[28] were completed using the same PLSS section location data for private domestic wells that is available to the SVB GSA. The current analysis is incomplete as it includes very few wells in all subbasins. The current analysis is also substantially inaccurate as it relies on the "average computed depth of domestic wells in the Subbasin," and groundwater elevations vary significantly across the subbasin and also on an annual basis. For example, only 8 of the 154 domestic wells in the Forebay GSP with an average depth of 292.45 feet, and only 20 of 2016 domestic wells in the East Side GSP with an average depth of 365.5 feet were included. CWC Figure 10 illustrates that the average computive depth is not representative of conditions in shallow domestic wells. Therefore, we recommend revising Section 8.5.2.2 Minimum Threshold Impact on Domestic wells following the process explained below:
    - **Include a map of potentially impacted wells so the public can better assess well impacts specific to DACs, small water systems, or other beneficial users of water.**

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[26] Community Water Center and San Jerardo Cooperative, Inc. Comments on the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan. May 15, 2020. https://sgma.water.ca.gov/portal/service/gspdocument/download/4012

[27] The Water Foundation Whitepaper, April 2020: "Estimated Numbers of Californians Reliant on Domestic Wells Impacted as a Result of the Sustainability Criteria Defined in Selected San Joaquin Valley Groundwater Sustainability Plans and Associated Costs to Mitigate Those Impacts." April 9, 2020. http://waterfdn.org/wp-content/uploads/2020/05/Domestic-Well-Impacts_White-Paper_2020-04-09.pdf

[28] Kings River East Groundwater Sustainability Agency. Groundwater Sustainability Plan. Adopted December 13, 2019.

- **Quantify impacts for all drinking water wells in the subbasin for which approximate location (PLSS section) and well depth are available.** Similar analyses based on the PLSS section location of private domestic wells have been completed by Water Foundation (June 2020)[29] and in the Kings River East GSP[30].
- **Account for well screen and pump depth when available.** When not available, well screen and pump depth should be estimated conservatively to capture potential impacts to well operability under water scarcity conditions.
- **Quantify impacts for potential unfavorable interim conditions, such as droughts and short-term lowering of groundwater levels while implementation measures are put in effect.**
- **Quantify the elevation difference (in feet) between current groundwater levels and well bottoms, screens, and pumps.** If current groundwater levels are nearing well bottoms, screens or pumps, that indicates that the wells are vulnerable to interim lowering of groundwater levels.
- **Quantify the elevation difference (in feet) between the minimum threshold groundwater levels and well bottoms, screens, and pumps.** If the minimum threshold is near the well bottom, screen or pump, that well will be impacted if groundwater levels in the vicinity drop below the minimum threshold (even if minimum thresholds are met at 90 percent of monitoring wells and an undesirable result has not technically occurred).
- **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.**

Groundwater Quality

We are pleased that the Salinas Valley Subbasin GSPs establish minimum thresholds based on maximum contaminant levels (MCLs) for contaminants of concern for drinking water supply systems. There are however other 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. Therefore, we recommend the following revisions:

- **Revise Section 8.3 General Process for Establishing Sustainable Management Criteria to include a sensitivity analysis around "average hydrogeologic conditions" following our recommendations outlined in Chapter 6.**
- **Add state and local small water systems to the monitoring network with the same water quality minimum thresholds and measurable objectives for reasons stated in Chapter 7 comments.** A table for state and local small water system minimum thresholds was included in the 180/400 foot aquifer GSP, but in the draft subbasin GSPs, there is no such table and Table 8-1 only mentions public supply and on-farm domestic wells.

[29] See previous reference.
[30] See previous reference.

- **If a contaminant was already above the MCL as of January 1, 2015, subbasin GSPs should set a MT 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 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. Further, residents who rely upon domestic wells, state small water systems, or local small water systems may not even know what contaminants are in their water and at what levels. Users of these drinking water sources are not required to conduct testing, and many times do not have the resources necessary to conduct regular testing. Rising contaminant levels put these users and their health at serious risk. 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. This recommendation is consistent with the State Water Board's recommendations regarding this topic in their letter to DWR regarding the 180/400 foot aquifer GSP in which they state: "Increasing concentrations of nitrate, arsenic, and other constituents at monitoring wells with existing exceedances may represent worsening of existing conditions due to groundwater pumping. Staff recommend setting concentration threshold levels for these wells in order to determine if impacts due to pumping are occurring."[31]
  - **Develop management areas to protect areas where drinking water wells have water quality that are vulnerable, including the San Jerardo area.**
- **For monitoring network wells with contamination less than 75% of the MCL for all contaminants, the GSPs should set MOs at 75% of the MCLs.** Subbasin GSPs should include MOs as action triggers at 75% of MCL for each constituent of concern so that groundwater can be managed in that area to prevent a minimum threshold exceedance at a representative monitoring well. This buffer is particularly critical with contaminants like nitrate that can cause acute health effects. 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. *We also recommend that groundwater quality and trigger levels at 75% are added to Section 9.1.3 Implementation Action 11: Local Groundwater Elevation Trigger (April 2021 draft) which currently only includes groundwater elevations.*
- **Clearly identify and describe past and present levels of contamination and salinity at each representative monitoring well (RMW) and attribute specific numeric values for MTs/MOs at each RMW for each contaminant of concern.** Quantitative values need to be established for MTs/MOs for each applicable sustainability indicator at each RMW as required by 23 CCR § 354.28 and 23 CCR § 354.30. The GSPs should include a map and tables that include each individual RMW along with water quality data for each RMW (this data is currently summarized in Table 8-4 and Table 8-5). This information should be presented clearly so that both the public can determine how the proposed monitoring network and sustainable management criteria (SMCs) relate to their own drinking water well or water supply system.

[31] State Water Board comments to DWR on 180/400 Foot Aquifer GSP (Dec. 2020). Downloaded from SGMA GSP Portal: https://sgma.water.ca.gov/portal/gsp/comments/29

- **Include hexavalent chromium as a contaminant of concern and plan to add contaminants of emerging concern to the 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 MCL. In addition to including hexavalent chromium, the GSPs must explain how the Plans will be updated to align groundwater monitoring efforts and the sustainable management criteria with any contaminants of emerging concern in the basin and any future new MCLs.
- **Include an analysis of the relationship between changes in groundwater levels and groundwater quality concentrations.** Section 8.5.2.3 of the draft GSPs discusses the relationship between individual minimum thresholds and other sustainability indicators, and states: "Decreasing groundwater elevations can cause wells to draw poor-quality groundwater from deeper zone. No additional poor groundwater quality issues were identified due to low groundwater elevations when groundwater elevations were previously at minimum threshold levels." We ask that justification is provided to backup the second statement or that it is removed until an analysis is conducted. It is our understanding that groundwater quality issues did, in fact, worsen during low groundwater elevations years. Arsenic in the San Jerardo well was at its highest during the lowest groundwater elevation measurement (See CWC Figure 1). The text should 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. 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 constituent concentrations relative to change in water levels,[32] particularly over drought periods, to evaluate the potential relationship between water quality and groundwater management activities.[33]
- **Add the total number of wells in each category that will be included in the water quality monitoring network and have SMCs evaluated to Table 8-4. For each constituent of concern, add the number of wells included in the chart and the number exceeding the MT/MO based on the latest sample.** This comment has the same goal as the comment we provided in Chapter 7. SMCs should be set at every public drinking water well and a representative network of drinking water wells that rely on more shallow aquifers. It is essential to track the same wells each year in the monitoring network. If a well is no longer active, it should be removed from the network. In the current representation, it is not clear which wells are included in the monitoring

[32] 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/.

[33] 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.

network, which wells have data for each constituent, and which wells are exceeding the regulatory standard.

- **Engage stakeholders and scientists in a transparent discussion regarding "the process the GSAs would use to decide whether or not an exceedance of an MT for water quality degradation was caused by GSP implementation."**[34] The State Water Board recommended that the 180/400 foot aquifer GSP outline this process "otherwise, it is difficult to judge how adequately the GSP addresses undesirable results related to water quality degradation." This relates to the undesirable result for water quality which currently reads: "There shall be no additional minimum threshold exceedances beyond existing groundwater quality conditions during any one year as a direct result of projects or management actions taken as part of GSP implementation."

[34] State Water Board comments to DWR on 180/400 Foot Aquifer GSP (Dec. 2020). Downloaded from SGMA GSP Portal: https://sgma.water.ca.gov/portal/gsp/comments/29 .

From:	Emily Gardner
To:	Patrick Breen (pbreen@mcwd.org); Tina Wang
Cc:	Abby Ostovar; Bonnie Gradillas
Subject:	Fwd: CWC Comments on Draft Subbasin GSP Chapter 9
Date:	Wednesday, April 28, 2021 2:19:07 PM
Attachments:	CWC_Salinas Valley Subbasin GSP Ch 9 comments 4.28.21.pdf

Good afternoon,

Attached you will find a comment letter for the Monterey Subbasin.

Thanks,

Emily

---------- Forwarded message ---------
From: **Justine Massey** <justine.massey@communitywatercenter.org>
Date: Wed, Apr 28, 2021 at 12:45 PM
Subject: CWC Comments on Draft Subbasin GSP Chapter 9
To: Emily Gardner <gardnere@svbgsa.org>, Donna Meyers <meyersd@svbgsa.org>
Cc: Heather Lukacs <heather.lukacs@communitywatercenter.org>, Mayra Hernandez <mayra.hernandez@communitywatercenter.org>

Dear Emily and Donna,

Please see the attached comments and recommendations submitted on behalf of Community Water Center regarding Chapter 9 of the SVB GSA Subbasin GSPs.

We hope that these comments can inform the ongoing development of the Subbasins' Projects and Management Actions (Implementation Actions), and we are available for further discussion.

In particular, we would like to explore the possibility of presenting on the Drinking Water Well Impact Mitigation Framework to SVB GSA staff, Board members, and/or Committee members in the coming months. We look forward to continuing to work together.

Best regards,
Justine

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Justine Massey, J.D.
Policy Advocate
Community Water Center
716 10th St., Suite 300, Sacramento, CA 95814
Office: 916-706-3346 | Cell: 916-717-4880
www.communitywatercenter.org

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April 28, 2021

Salinas Valley Basin Groundwater Sustainability Agency

Submitted electronically to:

Emily Gardner, Deputy General Manager

Donna Meyers, General Manager

Re: Comments on Draft Chapter 9 Project and Management Actions for the Langley, East Side, Forebay, Upper Valley and Monterey Subbasins

Dear Salinas Valley Basin Groundwater Sustainability Agency:

The Community Water Center (CWC) offers the following comments and recommendations regarding key components of the draft Chapter 9 Projects and Management Actions (Implementation Actions) that were shared with SVB GSA subbasin committees in April 2020. These comments are intended to add to the public record and are submitted in addition to previous written and spoken comments.

Chapter 9 Projects and Management Actions

During the April 7, 2021 East Side and Upper Valley subbasin committee meetings, feedback was requested on a draft list of project and management actions. As outlined in the April 7 meeting materials, "[p]rojects implement the GSP and enable the subbasin to reach sustainability by 2042, then maintain sustainability for another 30 years." Both groundwater levels and water quality degradation can have adverse impacts on drinking water users and disadvantaged communities (DACs), who are protected as beneficial users under SGMA[1]. Therefore, projects and management actions (also referred to as implementation actions) should address sustainability issues facing drinking water and other domestic water uses, in order to ensure their continued availability.

As this chapter is further revised for the East Side and Upper Valley subbasins and as potential projects and management actions are considered for the Forebay, Langley, and Monterey, the GSPs should (1) clearly identify potential impacts to water quality from all projects and management actions, (2) include management actions that respond to immediate needs and (3) develop a more robust implementation schedule and funding plan for projects and management actions. We acknowledge that the implementation actions are currently in the beginning stages of design but encourage incorporating these elements early on.

9.1.3 Implementation Action: Local Groundwater Elevation Trigger

The Local Groundwater Elevation Trigger is a significant start to tracking and addressing impacts to domestic wells. We support the inclusion of a "notification system whereby well owners can notify the GSA or relevant partner agency if their well goes dry." Because SVB GSA defines its sustainability criteria in a way that potentially allows for drinking water well impacts and because there is so much uncertainty regarding potential domestic well impacts, we recommend that this implementation action be updated to incorporate a **Robust Drinking Water Well Mitigation Program.** This program should include the Local Groundwater Elevation Trigger as well as (1) a plan to prevent impacts to drinking water users from

[1] WAT § **10723.2.**

dewatering, increases in contaminant levels and increases in salinity, and (2) a plan to mitigate the drinking water impacts that occur even when precautions are taken.

CWC together with other organizations published a Framework for a Drinking Water Well Mitigation Program (2020) that we recommend the SVB GSA uses as a guide when further developing this implementation action. We are also interested in sharing more with staff and are willing to provide a presentation to SVB GSA staff, board members, and/or the advisory committee on this Framework. The framework describes the importance of adaptive management and affirms the intent of the draft Local Groundwater Elevation Trigger management action and states, "Developing a protective warning system... can alert groundwater managers when groundwater levels and groundwater quality are dropping to a level that could potentially negatively affect drinking water users. These "triggers" are essential for groundwater management and can be adjusted to fit the needs of different management actions as well as the basin as a whole."[2] We also support the provision in the draft "Local Groundwater Elevation Trigger" Implementation Action that offers "referral to assistance with short-term supply solutions, technical assistance to assess why it went dry, and/or long-term supply solutions." This type of adaptive management implementation action is crucial to ensuring that all beneficial users within the basin are protected under the GSP. As we have highlighted in previous comments[3]:

> A GSP that 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 (HR2W).[4] The California legislature has recognized that water used for domestic purposes has priority over all other uses since 1913[5] 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 and that the next highest use is for irrigation."[6] The passage of the Safe and Affordable Drinking Water Fund by Governor Newsom indicates a clear State-level commitment to provide safe and affordable drinking water to California's most vulnerable residents.[7] 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.[8] Therefore, GSPs that cause disparate impacts to domestic water use are in violation of the HR2W, SGMA, and Water Code § 106.6.

In order to effectively protect drinking water users during GSP implementation, we recommend that the GSA's **Drinking Water Well Impact Mitigation Program Implementation Action,** in line with and expanding upon the currently proposed Local Groundwater Elevation Trigger, should include the following components:

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[2] *See* Self-Help Enterprises, Leadership Counsel for Justice and Accountability, Community Water Center (2020) *Framework for a Drinking Water Well Impact Mitigation Program*.
https://static1.squarespace.com/static/5e83c5f78f0db40cb837cfb5/t/5f3ca9389712b732279e5296/1597811008129/Well_Mitigation_English.pdf.

[3] Community Water Center and San Jerardo Cooperative, Inc. Comments on the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan. May 15, 2020.
https://sgma.water.ca.gov/portal/service/gspdocument/download/4012.

[4] WAT § 106.3 (a).

[5] Senate Floor Analysis, AB 685, 08/23/2012.

[6] This policy is also noted in the Legislative Counsel's Digest for AB 685.

[7] SB 200 (Monning, 2019).

[8] WAT § 106.3 (b).

- **Include a vulnerability analysis of Disadvantaged Communities (DACs) and drinking water supplies in order to protect drinking water for these vulnerable beneficial uses and users.** Although rural domestic and small water system demand does not contribute substantially to the overdraft conditions, drinking water users could face significant impacts, particularly if the region faces another drought. Without a clear commitment and timeline for actions regarding establishing groundwater allocations or reductions in groundwater pumping, the SVB GSA may create disparate impacts on already vulnerable communities. See comments submitted by CWC and San Jerardo Cooperative on April 23, 2021 regarding Chapter 8 of SVB GSA Subbasin GSPs for further recommendations for conducting well impact analyses.
- **Develop the trigger system in collaboration with stakeholders, in particular groups that are more susceptible to groundwater elevation and quality changes, and then connect stakeholder recommendations back to quantifiable measures such as the GSP measurable objectives, MCLs, and numbers of partially or fully dry drinking water wells.**[9]
- **Ensure that the monitoring network is representative of conditions in all aquifers in general, including the shallow aquifer upon which domestic wells rely.** This comment aligns with comments submitted April 23, 2021 regarding Chapter 7 of the SVB GSA Subbasin GSPs, and is particularly crucial as part of a "Trigger" Management Action (or Well Impact Mitigation Program).
- **Routinely monitor for all contaminants that could impact public health (not only nitrate, but also chromium-6, arsenic, 123-TCP, uranium, and DBCP) through the representative water quality monitoring network.** Contaminated drinking water can cause both acute and long-term health impacts and can affect the long-term viability of impacted regions.[10] Among other causes, groundwater contamination can result through the use of man-made chemicals, fertilizers, or naturally-occurring elements in soils and sediments.[11] Routinely monitoring for contaminants will allow the GSA to accurately monitor for impacts on the most vulnerable beneficial users, and protect DACs' and domestic well owners' access to safe and affordable drinking water.[12]
    - **For monitoring network wells with contamination less than 75% of the MCL for all contaminants, the GSP should set MOs at 75% of the MCLs.** The GSP should include MOs as action triggers at 75% of MCL for each constituent of concern so that groundwater can be managed in that area to prevent a minimum threshold exceedance at a representative monitoring well.[13] This buffer is particularly critical with contaminants like nitrate that can cause acute health effects. As discussed in previous

[9] See previous reference for *Framework for a Drinking Water Well Impact Mitigation Program.*
[10] Community Water Center. Guide to Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act. (2019). https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858.
[11] See previous Community Water Center (2019) reference.
[12] See previous reference for *Framework for a Drinking Water Well Impact Mitigation Program.*
[13] This recommendation was also made previously in a comment letter to SVB GSA from CWC and San Jerardo Cooperative regarding Chapter 8 of the 180/400 ft Aquifer GSP on November 25, 2020, as well as in our comments to the SVB GSA on April 23, 2021 regarding Chapter 8 of drafts for the SVB GSA Subbasin GSPs.

submitted comments, water quality impacts can intensify as water levels decrease.[14] 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.

- **Include a combination of different strategies for mitigation including: replacing impacted wells with new, deeper wells, connecting domestic well users to a nearby public water system, or providing interim bottled water.**
- **Include an implementation timeframe, budget, and funding source**.[15] As currently written, the Local Groundwater Elevation Trigger suggests convening "a working group to assess the groundwater situation if the number of wells that go dry in a specific area cross a specified threshold." We support emergency response if one or more wells are impacted, and also request that this section be updated to include strategies to prevent impacts from occuring in the first place. Additionally, plans to address and mitigate those impacts should be solidified beforehand so resources can be mobilized in a timely manner. Drinking water users cannot afford to wait for interim plans to be developed once their primary sources of water for drinking, cooking and hygiene are compromised.

9.1.3 Implementation Action: Domestic Water Partnership

CWC would like to voice preliminary support for the Domestic Water Partnership Implementation Action, as a step towards coordinating local and regional responses to water quality issues. However, we reiterate that the GSA remains directly responsible for recognizing and resolving water quality degradation that results from its policies and projects. We also would like to affirm our previous comments encouraging the SVB GSA to include - without delay - Monterey County water quality data for state and local small water systems. This data is readily available and would add significantly to the proposed water quality monitoring network in draft subbasin Chapters 7. We do not want this potential partnership implementation action to delay the incorporation of this important data source. This action can and should, however, integrate this County data into current draft subbasin plans in order to identify potentially vulnerable populations and create management actions to protect them. We will offer further comments and recommendations on this subject as future drafts are released. To echo recommendations made previously regarding Suggested Partnerships for Multi-Benefit Remediation Projects:

- **The GSA should work 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**

[14] Community Water Center and Stanford University. Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium. (2019). https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896.

[15] See previous reference for *Framework for a Drinking Water Well Impact Mitigation Program.*

quality.[16] 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, GSPs 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.

[16] Community Water Center and San Jerardo Cooperative, Inc. Comments on the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan. May 15, 2020.
https://sgma.water.ca.gov/portal/service/gspdocument/download/4012.

Draft Chapter 7 – Comments from Seaside Basin Watermaster 5-10-21

Page	Section	Comment
7-6	7.3	This section states in part “The sustainability indicator for chronic lowering of groundwater levels is evaluated by monitoring groundwater elevations in designated monitoring wells.” The list of entities that monitor the 390 wells mentioned here does not include the Watermaster. The Watermaster has numerous wells that are adjacent to the Corral de Tierra subarea, and some that are adjacent to the Marina-Ord subarea. Those should be included in order for the GSP to be able to see how its management actions are affecting the adjacent subbasin.
7-7	7.3	The 3rd bullet on this page states “RMS wells should facilitate monitoring along the existing seawater intrusion front to verify that water levels in these areas are not declining and increasing the risk of seawater intrusion.” Monitoring Well FO-9 is within the Seaside subbasin, just south of the boundary with the Monterey subbasin, and is near the known seawater intrusion front. Therefore, it should be included as an RMS well.
7-12, 7-13,	7.3	Figures 7-4 and 7-5 should include Monitoring Well FO-9 Shallow and/or FO-9 Deep for the reasons stated above.
7-14	7.3	Figure 7-6 should include adjacent monitoring wells in the eastern portion of the Laguna Seca subarea of the Seaside subbasin to see how Corral de Tierra management actions are affecting the adjacent subbasin. Montgomery & Associates has maps showing the names and locations of those wells.
7-18	7.3.2	The statement from one of the reports cited in this section that 0.2 to 10 wells per 100 square miles is the recommended monitoring well density is ridiculous for purposes of performing any type of reliable groundwater modeling. Far greater well density is necessary for that purpose.
7-19	7.3.2	On this page there is the statement “…additional wells are necessary to provide additional groundwater elevation data near the ocean in areas subject to sea water intrusion.” It also states that the generalized locations for monitoring wells was based on “Demonstrating conditions at Subbasin boundaries.“ For the reasons stated above Monitoring Well FO-9 should be included.
7-19	7.3.2	On this page it states “A higher density of monitoring wells is recommended near residential areas or other locations where groundwater withdrawal is significant” and that this is the case in the Corral de Tierra subarea. Per the comment above on page 7-14 the adjacent monitoring wells in the Laguna Seca subarea should be included.
7-20	7.3.2	Although not within the area identified on Figure 7-7 as a “data gap” area, Monitoring Well FO-9 Shallow should be included to help fill that gap.
7-21	7.3.2	Although not within the area identified on Figure 7-8 as a “data gap” area, Monitoring Well FO-9 Deep should be included to help fill that gap.
7-22	7.3.2	Per the comment above on page 7-14, the adjacent monitoring wells in the Laguna Seca subarea should be included in Figure 7-9.
7-23	7.3.3	In the top para on this page it appears that the word “parallel” should be “perpendicular.” In the 2nd para after the words “…Monterey Subbasin…” the words “…or into any adjacent subbasins…” should be inserted. In that same para the word “southeastern” should be replaced with the word “southern.” In the last para on

		this page, after the words "Monterey Subbasin" the words "…and in the adjacent Seaside Subbasin…" should be inserted.
7-25	7.3.3	In Figure 7-10 in the Legend this is a symbol for "Area of Potential Seawater Intrusion." It would be helpful to discuss in the text how that area was determined.
7-28	7.5	In the top para the words "…and the Seaside Groundwater Basin Watermaster…" should be added after the word "MPWMD." In that same para it states "Additional sites are added to the RMS network to facilitate monitoring of significant and unreasonable groundwater conditions…" This supports the need to add monitoring wells in the adjacent Seaside subbasin.
7-29	7.5	The Seaside Groundwater Basin Watermaster should be added to the list of monitoring agencies on this page.
7-33	7.5	Per comments above Monitoring Well FO-9 Shallow should be added to Figure 7-15.
7-34	7.5	Per comments above Monitoring Well FO-9 Deep should be added to Figure 7-16.
7-36	7.5	Per comments above Monitoring Wells FO-9 Shallow and Deep should be added to Table 7-4.
7-37	7.5	Sentinel MW#1 is also monitored by the Seaside Groundwater Basin Watermaster via induction logging and datalogger groundwater elevation monitoring.
7-37	7.5.1	In the 2nd bullet in this section correct the wording to read "The Seaside Basin Watermaster Monitoring and Management Program…"
7-37	7.5.2	In the 1st and 2nd bullets in this section add that Monitoring Well FO-9 should be included.
7-2 (note the page numbering needs to be corrected starting with page 7-1 at this point in the Chapter)	7.6	In Figure 7-17 monitoring wells in the eastern portion of the Laguna Seca subarea should be added to the wells in the groundwater quality monitoring network.
7-3	7.6.2	The statement that the network cannot be expanded by drilling new wells (i.e. monitoring wells) does not make sense.

T0: Salinas Valley Groundwater Sustainability Agency

From: Fred Nolan as public commentary

(montereyfred@gmail.com)

Subject: Suggested Solution to the groundwater sustainability in Monterey County

As I no longer use pen and pencil nor do I type due to Parkinson's disease I am dictating this with Dragon NaturallySpeaking.

The solution to all groundwater sustainability is not desalinisation. It is the reuse of the water we already have. The largest water reuse facility in the world is right here in California. Orange County produces in their ground water replenishment system enough drinkable water for 2 1/2 million people. On a vastly smaller scale we can do the same thing.

Recycling water is one third the cost desalinated ocean water. Building a desalinisation length costs approximately $200 million dollars. The probability of raising that kind of money in central California is ZERO.

I suggest we study Orange County's impressive recycling system. They have a number of very illuminating websites. The time has come to get over unscientific reservations about recycled water. The time for recycled water is here. Plant in Marina produces a small amount of high quality recycled water right now. By dramatically increasing the output of this desirable commodity we can meet our water needs indefinitely. If we are scientifically capable of putting robots on Mars we are capable of producing exquisite water over and over again.

Fred Nolan

Frederick Ernest Nolan Jr.
2280 David Avenue
Monterey ,California 93940

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SALINAS BASIN
AGRICULTURAL WATER ASSOCIATION

SALINAS BASIN
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May 12, 2021

Salinas Valley Basin Groundwater Sustainability Agency
Board of Directors
P.O. Box 1385
Carmel Valley, CA 93924

VIA: Email to SVBGSA General Manager

RE: Groundwater Sustainability Plans – Water Quality Objectives

Dear SVBGSA Chair Adcock and Directors:

Salinas Basin Agricultural Water Association is a coalition of agricultural organizations tasked with overseeing the implementation of the Sustainable Groundwater Management Act (SGMA) and the development of the groundwater sustainability plans for the Salians Valley groundwater aquifer. Our organization has been integrally involved in groundwater management since this passage of SGMA and the formation of the SVBGSA.

Watching the development of the groundwater sustainability plans for the five sub-basins, due in January 2022, there appears to be attention drawn by various stakeholders to specific groundwater quality references that are under the jurisdiction of the Central Coast Regional Water Board (RWB).

On April 15, 2021, a new Irrigation Lands Regulatory Program was adopted by the RWB, also knows as Ag Order 4.0. This program manages farming activities to specific water quality objectives, including the amounts of nitrogen that can be either applied or discharged from production fields, to either surface or groundwaters. Farming operations will be required to calculate their "Applied-Removed ratio" for each crop produced, meeting specific compliance standards that are ratcheted down each successive year. Additionally, each domestic-use

Salinas Basin Agricultural Water Association, Inc., incorporated in 2017, Members are: Monterey County Farm Bureau, Grower-Shipper Association of Central California, Monterey County Vintners & Growers Association, and Sustainable Ag Water Corporation.

well located on a farming operation must be tested annually for a broad set of water quality constituents.

Water quality objectives are heavily managed by Ag Order 4.0 and will be costly for farming operations and their landowners to implement. Record keeping, annual compliance reporting, and cooperative monitoring fees will add heavily to the burden of farm management and financial sustainability.

As the groundwater sustainability plans are developed, discussed by the Sub-basin Committees, and ultimately brought to the Advisory Committee and SVBGSA Board for approval, it should be clearly stated within those forums that water quality objectives for farming operations are managed under Ag Order 4.0 by the RWB, and that SVBGSA should not set any additional water quality parameters within the groundwater sustainability plans.

Conflicting and duplicative water quality objectives, if included in the groundwater sustainability plans, would lead to unnecessary costs for farming operations and landowners. Due consideration should be given to the Ag Order 4.0 program and how water quality objectives will be managed on-farm going forward, limiting groundwater sustainability plans to manage the balance of extractions and recharge for each respective sub-basin.

Thanks for your consideration.

Sincerely,

Norman C. Groot
President

m|r|wolfe
& associates, p.c.
attorneys-at-law

July 12, 2021

Via email

Marina Coast Water District
11 Reservation Road Marina,
CA 93933 Attn: Patrick Breen, Water Resources Manager
Email: pbreen@mcwd.org

Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Attn: Emily Gardner, Deputy General Manager and Derrik Williams, GSP Project Manager Email: gardnere@svbgsa.org; dwilliams@elmontgomery.com

Re: Draft Chapter 8 of Monterey Subbasin Groundwater Sustainability Plan

Dear Mr. Breen, Ms. Gardner, and Mr. Williams:

I write on behalf of LandWatch Monterey County to comment on draft Chapter 8 of the Monterey Subbasin Groundwater Sustainability Plan (GSP).

The sustainable management criteria (SMCs), including the minimum threshold (MT) and measurable objective (MO) for chronic lowering of groundwater levels for the Monterey Subbasin may suffer from the same defect as in the 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan. That defect is that the groundwater level SMCs are not supported by consideration of their effects on other sustainability indicators, in particular, seawater intrusion. There appears to be no evidence that the groundwater level SMCs and their associated interim milestones will support attainment of the seawater intrusion threshold, particularly since the interim milestone would permit continued declines in historic groundwater levels and would not reach the SMCs for almost 20 years.

Furthermore, setting Corral de Tierra subarea groundwater level SMCs at historic levels would cause chronic lowering of groundwater levels in the neighboring Seaside Subbasin. According to the Seaside Basin Watermaster, pumping reductions and groundwater level increases are required in the Corral de Tierra subarea to remedy falling groundwater levels in the Laguna Seca Subarea.

Finally, the water quality sustainable management criteria should not be limited to effects caused by "direct GSA action" through GSA projects. The GSA must also limit excessive third party extractions that cause undesirable water quality results.

A. Groundwater level sustainable management criteria and interim milestones fail to support the seawater intrusion criteria.

1. The groundwater level minimum threshold must support the seawater intrusion minimum threshold.

SGMA requires that each minimum threshold must avoid *each* undesirable result because SGMA 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.

2. The proposed seawater intrusion SMCs do not permit any additional intrusion.

The draft Monterey Subbasin Chapter 8 sets the MT and MO for seawater intrusion for the "lower" 180-Foot Aquifer and the 400-Foot Aquifer at the line of advancement as of 2015. (Monterey Subbasin GSP, draft Chap. 8 ("Chap. 8."), p. 8-55 to 8-56.) Chapter 8 sets the MT and MO for seawater intrusion to the Deep Aquifers at Highway 1, based on the observation that there is limited intrusion in these aquifers. (*Id.*, pp. 8-51, 8-55 to 8-56.) In effect, Chapter 8 commits the GSP not to permit any additional seawater intrusion in these aquifers. This is a proper goal in light of the clear impacts to beneficial users.

3. The groundwater level SMCs and groundwater level interim milestones are set based on their effects on seawater intrusion.

The draft Monterey Subbasin Chapter 8 acknowledges that the MT and MO for groundwater levels must support attainment of the seawater intrusion MT and MO because it identifies the primary consideration in setting the groundwater level MT and MO is the effect on seawater intrusion:

> As discussed in Section 3.1.6, groundwater use within the Marina-Ord Area is almost exclusively limited to generation of municipal supplies by MCWD. Groundwater elevations are significantly higher than municipal production well screen elevations in all aquifers in the Marina-Ord Area, and there is limited concern regarding the potential dewatering of groundwater production wells. Therefore, *groundwater levels that could cause undesirable results associated*

> *with other locally relevant sustainability indicators, such as the lateral or vertical expansion of the existing seawater intrusion extent and/or eventual migration of saline water into Deep Aquifer wells, have been used to define groundwater level minimum thresholds in the Marina-Ord Area*.

(Chap. 8, p. 8-16, emphasis added.) Chapter 8 also provides that

> . . . undesirable results caused by chronic lowering of groundwater levels in the Marina-Ord Area are primarily associated with the expansion of seawater intrusion and other locally relevant sustainability indicators. *These sustainability indicators have been considered when defining groundwater level minimum thresholds in the Marina-Ord Area*.

(Chap. 8, p. 8-18, emphasis added.)

4. Setting the groundwater level SMCs at historic 1995-2015 conditions is purportedly justified by the stability of the lateral extent of seawater intrusion in the Monterey Subbasin during that historic period.

Chapter 8 contends that setting the groundwater level MT and MO for the 180- and 400-Foot Aquifers on the basis of the 1995 to 2015 groundwater levels is justified because the lateral extent of seawater intrusion in the Monterey Subbasin has been "generally stable" in that period:

> As discussed in the preceding sections, the potential effects of undesirable results caused by chronic lowering of groundwater levels in the Marina-Ord Area are primarily associated with the expansion of seawater intrusion. *The observed lateral extent of seawater intrusion within the Subbasin appears to have been generally stable within the 180- and 400-Foot Aquifers between 1995 and 2015. As such, minimum thresholds have been set based upon minimum groundwater elevations observed between 1995 and 2015 in the 180- and 400 Foot aquifers*.. Seawater intrusion is additionally monitored and managed pursuant to seawater intrusion SMCs (Section 8.9 below) to verify seawater intrusion does expand within the Subbasin due to sea-level rise and/or changes in the groundwater gradient.

(Chap. 8, p. 8-29.)

There are several problems with this contention, discussed below.

5. The "stability" rationale for setting groundwater level SMC's based on historic conditions is undercut by Chapter 8's projections that groundwater levels will actually continue to decline and remain below historic conditions and by the interim milestones that permit such declines.

First, the contention that groundwater level SMCs are justified by historic conditions ignores the GSP's own projection that groundwater levels will continue to decline until at least 2033 and will not attain the MO until 2042. Chapter 8 documents and projects in its "Example Trajectory for Groundwater Elevation Interim Milestones" that groundwater levels for a Marina-Ord well fell below the MT in 2019, will continue to fall until 2033, will not rise above the MT until 2039, and will not attain the MO until 2042. (Chap. 8, pp. 8-40 to 8-41, Figure 8-12.) The interim milestones for wells in the 400-Foot Aquifer and the Deep Aquifers assume and permit that groundwater levels will remain below historic levels and the MT for most of the next 20 years:

> Within the Monterey Subbasin, for wells in the 400-Foot Aquifer, Deep, and El Toro Primary Aquifer System Aquifers where groundwater levels have been declining, groundwater elevation interim milestones are defined based on a trajectory informed by current (fourth quarter of 2020) groundwater levels, historical groundwater elevation trends [footnote], and measurable objectives. This trajectory allows for and assumes a continuation of historical groundwater elevation trends during the first 5-year period of GSP implementation, a deviation from that trend over the second 5-year period, and a recovery towards the measurable objectives in the third and fourth (last) 5- year period.

(Chap. 8, p. 8-40.) The proposed interim milestones for wells in the 180-Foot and Deep Aquifers permit substantial declines in groundwater levels from 2020 conditions in the years 2027 and 2032. (*Id*., p. 8-43, Table 8-3.)

Allowing groundwater levels to fall below historic levels is purportedly justified because "there are large volumes of freshwater in the Subbasin that provide additional time and flexibility to reach identified SMCs while projects and management actions are implemented." (*Id.*) However, the draft GSP provides no evidence to suggest that groundwater levels that fall and remain below the historic conditions in the Marina-Ord area will not induce further seawater intrusion in the interim, resulting in a failure to meet the seawater intrusion SMCs.

The historic "stability" rationale cannot be extrapolated to claim that groundwater levels well *below* the historic record will continue to result in a stable areal extent of seawater intrusion. It makes no sense to contend that setting the MT and MO on the basis of historic conditions will not result in seawater intrusion when the GSP *would effectively fail to maintain those historic conditions for the next twenty years* during which the GSP is supposed to attain sustainability.

The historic stability rationale also ignores the fact that Deep Aquifer groundwater levels began dropping in 2014, have continued to drop, and are projected to continue to drop due to increased levels of extractions. MCWRA reported in 2020 that Deep Aquifer groundwater levels have been falling since 2014, are well below sea-level, and that induced vertical migration of contaminated water to the Deep Aquifers themselves is in fact occurring:

> As is the case with the 180-Foot and 400-Foot Aquifers, groundwater levels in the Deep Aquifers are predominantly below sea level. Beginning around 2014, groundwater levels in the Deep Aquifers began declining and are presently at a deeper elevation than groundwater levels in the overlying 400-Foot Aquifer based on comparisons of multiple well sets at selected locations, meaning that there is a downward hydraulic gradient between the impaired 400-Foot Aquifer and the Deep Aquifers (Figure 16 and Figure 17). This decrease in groundwater levels coincides with a noticeable increase in groundwater extractions from the Deep Aquifers (Figure 16 and Figure 17). The potential for inducing additional leakage from overlying impaired aquifers is a legitimate concern documented by previous studies and is something that would be facilitated by the downward hydraulic gradient that has been observed between the 400-Foot Aquifer and Deep Aquifers.
>
> Seawater intrusion has not been observed in the Deep Aquifers. However, the Agency has documented the case of one well, screened in the Deep Aquifers, that is enabling vertical migration of impaired groundwater into the Deep Aquifers. The Agency is working with the well owner on destruction of this well.[1]

In addition to the threat to contaminate the Deep Aquifers, the induced vertical migration of upper aquifer groundwater to the Deep Aquifers aggravates seawater intrusion in those upper aquifers. A 2003 study for MCWD concluded that increasing pumping of the Deep Aquifers from the 2002 baseline level of 2,400 AFY to just 4,000 AFY would (1) induce further seawater intrusion into the upper aquifers (the 180-Foot and 400-Foot Aquifers), which were vertically connected, and (2) risk contamination of the Deep Aquifers themselves.[2] Deep Aquifer pumping is now in excess of 10,000 AFY.[3]

And, in fact, Chap 8 admits that falling groundwater levels in the Deep Aquifer threatens to contaminate the Deep Aquifers and to induce seawater intrusion in the upper aquifers:

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1 Monterey County Water Resources Agency (MCWRA), Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin: 2020 Update, May 2020, p. 31, https://www.co.monterey.ca.us/home/showdocument?id=90578

2 WRIME, Deep Aquifer Investigative Study, May 2003, pp. 4-7, 4-11 to 4-12, pdf available upon request.

3 Monterey County Water Resources Agency (MCWRA), Well Permit Application Activities Update, prepared for May 17, 2021 MCWRA Board of Directors meeting, https://monterey.legistar.com/View.ashx?M=F&ID=9381226&GUID=34ED34CD-3A39-4851-87A3-298BE70D383C

> Seawater intrusion has not been observed in the Deep Aquifer to date. However, groundwater elevations have been declining and are significantly below sea level. The declining groundwater elevations in the Deep Aquifer may be causing groundwater elevations to fall within the 400-Foot Aquifer in the southwestern portion of the Marina-Ord Area (i.e., near wells MPMWD#FO-10S and MPMWD#FO-11S). Although there is some uncertainty whether the Deep Aquifer is subject to seawater intrusion from the ocean, continued decline of groundwater elevations in the Deep Aquifers could increase the risk of seawater intrusion and may eventually cause vertical migration of saline water from overlying aquifers into the Deep Aquifers. As such, minimum thresholds for the Deep Aquifers are set to historically observed minimum groundwater elevations between 1995 and 2015, which is equivalent to the groundwater elevations observed in 2015 for most Deep Aquifer wells.

(Chap. 8, p. 8-40.) Again, setting the groundwater level MT and MO to historic levels but then allowing 20 years to pass before the interim milestones actually require attainment of these historic levels cannot demonstrably ensure that there is no further advancement of seawater intrusion. However, that is precisely what is required by the seawater intrusion MT and MO.

6. Chapter 8 fails to assess the effects on other subbasins of setting groundwater level SMCs based on historic conditions or allowing groundwater levels to decline further through relaxed interim milestones.

As Chapter 8 acknowledges, the interconnectivity between the 180/400-Foot Aquifer Subbasin and the Monterey Subbasin requires coordination of the sustainable management criteria for both subbasins. (*Id.*, p. 8-35.) Coordination is required in order to meet SGMA's requirement that the SMC's for one subbasin do not prevent another subbasin from meeting its sustainability goal.

Setting the groundwater level MT and MO at historic levels and then effectively ignoring these criteria through use of relaxed interim guidelines for 20 years may very well impair attainment of the seawater intrusion criteria for the 180/400-Foot Aquifer GSP, which are also set at a level that permits no further advancement of the seawater intrusion front.

However Chapter 8 provides no analysis of that possibility. Chapter 8 proposes to defer the assessment of the impact of the Monterey Subbasin's groundwater level MTs on the Deep Aquifers in the neighboring 180400-foot Aquifer Subbasin until after completion of the long-delayed Deep Aquifers Study and the eventual establishment of Deep Aquifer SMCs for the 180400-foot Aquifer Subbasin.

The Deep Aquifer Study, recommended almost four years ago, has neither been funded nor initiated.

Furthermore, there is no reason that an assessment of the effects of the Monterey Subbasin's groundwater level MTs should be limited to its effects on the Deep Aquifers in the 180/400-Foot Subbasin. The assessment should also include an assessment of the effects of the Monterey Subbasin's groundwater level MTs on seawater intrusion of each of the principle aquifers in that neighboring subbasin. The Monterey Subbasin GSP argues that pumping in the 180/400-Foot Aquifer Subbasin has caused seawater intrusion in the Monterey Subbasin. In turn, the Monterey Subbasin GSP must assess the reciprocal effects of its own pumping, SMCs, and interim milestones on the 180/400-Foot Aquifer Subbasin.

SGMA's mandate to use the best <u>available</u> science is not an invitation to let the perfect be an enemy of the good pending completion of the Deep Aquifer study. Chapter 8 must use the whatever science is <u>now</u> available to provide <u>some</u> discussion and assessment of the effect on the neighboring subbasins of allowing continued reductions in Monterey Subbasin groundwater levels below historic conditions through relaxed interim thresholds.

Again, it is not reasonable to extrapolate beyond the historic data to assume that lower-than-historic groundwater levels in the Monterey Subbasin will not impair adjacent basins. The purported stability of the lateral extent of seawater intrusion in the Monterey Subbasin from 1995 to 2015 was certainly not matched in the 180/400-Foot Aquifer Subbasin. Chapter 8 provides no evidence to justify the assumption that allowing lower-than-historic groundwater levels in the Monterey Subbasin will not contribute to the continuing seawater intrusion in the neighboring subbasin.

Finally, the Monterey Subbasin GSP must also evaluate and address the effects of reduced groundwater levels in the Corral de Tierra Subarea on the Seaside Subasin. Again, there is no evidence in the record that merely maintaining historic groundwater levels is sufficient to support groundwater levels in the Seaside Subbasin. To the contrary, comments by the Seaside Basin Watermaster indicate that chronic lowering of groundwater levels in the Laguna Seca Subarea of the Seaside Subbasin can only be corrected by *reducing* existing pumping in the Corral de Tierra, i.e., *increasing* groundwater levels *above* historic levels. (Robert Jacques, PE, email to Sarah Hardgrave, et al., March 22, 2021.) Setting Monterey Subbasin groundwater level SMC's at historic levels violates SGMA because it will prevent attainment of groundwater level objectives in the adjacent Seaside Subbasin.

B. Water quality sustainable management criteria should not be limited to effects caused by "direct GSA action;" the GSP must also limit extractions that cause undesirable results.

Chapter 8 purports to limit significant and unreasonable conditions related to groundwater quality degradation to "[l]ocally defined significant and unreasonable changes in groundwater quality resulting from *direct GSA action*." (Chap. 8, p. 8-56, italics added.) Thus, Chapter 8 contends that the GSP need only address water quality degradation that is a "direct result of projects or management actions conducted pursuant to GSP implementation:"

> For the Subbasin, any groundwater quality degradation that leads to an exceedance of MCLs or SMCLs in potable water supply wells or a reduction in crop production in agricultural wells that is a direct result of GSP implementation is unacceptable. 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:
>
>> *Any exceedances of minimum thresholds during any one year as a direct result of projects or management actions conducted pursuant to GSP implementation is considered as an undesirable result.*

(*Id.*, underlining added.)

This language does not define what constitutes "a "direct result" of GSP implementation or "direct GSA action." Elsewhere, Chapter 8 gives three examples of conditions that may lead to an undesirable result and that the GSA is presumably prepared to address:

> • 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 constituents of concern towards a supply well at concentrations that exceed relevant standards.
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> • Groundwater Recharge. *Active recharge of imported water or captured runoff* could modify groundwater gradients and move constituents of concern towards a supply well in concentrations that exceed relevant limits.
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> • Recharge of Poor-Quality Water. *Recharging the Subbasin* with water that exceeds an MCL, SMCL, or level that reduces crop production could lead to an undesirable result.

(Chap. 8, p. 8-57.) Significantly, none of these three conditions that might trigger GSA action include *excessive pumping* by other parties that may cause water quality degradation; each condition includes only the secondary effects of the GSA's own projects. The GSA's failure to take management action, e.g., its failure to restrict excessive extractions, may also cause water quality degradation. Chapter 8 should be revised to acknowledge that the GSA has both the authority and duty to address groundwater quality degradation caused by excessive pumping.

Chapter 8 contends that because other agencies have authority over groundwater quality, the GSA's role is somehow limited:

> The powers granted to GSAs to effect sustainable groundwater management under SGMA generally revolve around managing the quantity, location, and timing of groundwater pumping. SGMA does not empower GSAs to develop or enforce water quality standards; that authority rests with the SWRCB Division of Drinking Water and Monterey County. Because of the limited purview of GSAs with respect to water quality, and the rightful emphasis on those constituents that may be related to groundwater quantity management activities.
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> Therefore, this GSP is designed to avoid taking any action that may inadvertently move groundwater constituents already in the Subbasin in such a way that the constituents have a significant and unreasonable impact that would not otherwise occur.

(*Id*., pp. 8-59 to 8-60.) The fact that the County *and* the RWQCB also have authority and responsibility to address water quality degradation demonstrates that the statutory scheme does not rely on the regulatory actions of any single agency. Nothing in SGMA's mandate that the GSP address water quality degradation permits the GSA to consider only the direct effect of GSA projects and only those projects that *move* pollutants. The GSP must also address the effects of its *regulatory omissions*, including omissions that move or *concentrate* existing pollutants by permitting excessive extractions.

DWR has made it clear in its imposition of corrective actions on the 180/400-Foot Aquifer Subbasin GSP that "groundwater management *and extraction*" may result in degraded water quality:

> RECOMMENDED CORRECTIVE ACTION 5 Coordinate with the appropriate groundwater users, including drinking water, environmental, and irrigation users as identified in the Plan, and water quality regulatory agencies and programs in the Subbasin to understand and develop a process for determining if groundwater management *and extraction* is resulting in degraded water quality in the Subbasin.[4]

Accordingly, the GSP cannot limit its concern to the effects of its own projects without taking responsibility for the effects of unregulated extractions on water quality degradation.

For example, if, in the Corral de Tierra Subarea, there is evidence that arsenic concentrations are increased by excessive extractions, then the GSP must manage extractions to avoid undesirable results from increased concentrations. Chapter 8 cannot simply state that "no clear correlation that can be established between groundwater levels and groundwater quality at this time" as if that disposes of the matter. (Chap. 8, p. 8-57.) Indeed, at the July GSA Board meeting, staff acknowledged that lowering groundwater levels *could* cause water quality degradation, specifically referencing Corral de Tierra.

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[4] Department of Water Ressources, GSP Assessment Staff Report Salinas Valley – 180/400 Foot Aquifer (Basin No. 3-004.01), June 3, 2021, p. 37, emphasis added available at https://sgma.water.ca.gov/portal/gsp/assessments/29.

The GSA must investigate, apply the best available science, and manage the resource to prevent undesirable contaminant concentrations caused by excessive extractions.

M. R. WOLFE & ASSOCIATES, P.C.

John Farrow

MRW:hs

Cc: Sarah Hardgrave, Chair, Monterey Subbasin Committee
Michael DeLapa, Executive Director, LandWatch Monterey County

Draft Chapter 8 – Comments from Seaside Basin Watermaster 7-13-21

Page	Section	Comment
8-8	8.4	The 3rd para on this page talks about SMCs in this subarea and their potential to impact SMCs in adjacent subbasins (in this case the Seaside subbasin). It goes on the say that SMCs for the Monterey subbasin will be set so as to be consistent with SMCs in those adjacent subbasins, so that adjacent subbasins will be able to be sustainable. For this reason it would be appropriate (as mentioned in other comments below) for the monitoring network of the Monterey subbasin to include some monitoring and/or production wells in the Seaside subbasin that are near the border between the two subbasins. Data from those wells can be provided to the SVBGSA at no cost, so the SVBGSA can determine what impact the Monterey subbasin's SMCs are having on the Laguna Seca subarea of the Seaside subbasin, which is the portion of the Seaside subbasin that abuts the Corral de Tierra subarea. This para also mentions that modeling will be one of the means of determining the impacts of the Corral de Tierra SMCs on the adjacent subbasin. The Monterey subbasin model being developed for the MCWDGSA by its consultant EKI should incorporate modeling information from the Seaside Watermaster's Seaside Basin Model (prepared by HydroMetrics) to ensure that the two models are consistent at the boundary between the subbasins.
8-10	Table 8-1	The Corral de Tierra area MT and MO groundwater elevations (2015 and 2008) are believed, based on modeling performed for the Watermaster by HydroMetrics, to be so low that they are causing water to (1) be drained out of the Seaside subbasin's Laguna Seca Subarea by creating an eastward sloping hydraulic gradient and/or (2) preventing the natural westward flow of groundwater from replenishing the Laguna Seca Subarea, resulting in falling groundwater levels in that subarea. The GSP should mention this and ensure that its SMCs prevent this adverse condition from continuing.
8-16	8.7.1	Reword the first bullet on this page to read "Groundwater elevations at or below those observed in 2015. Lower groundwater elevations could lead to inadequate water production in a significant number of domestic and small water system wells, not only in the Corral de Tierra subarea but also in the Laguna Seca subarea of the adjacent Seaside subbasin.
	8.7.2.1	This Section discusses a minimum threshold of 20% exceedances of groundwater levels. As mentioned in the comment above on page 8-8, some monitoring wells in the Laguna Seca subarea, which is directly impacted by groundwater levels in the Corral de Tierra subarea, should be included in *Representative Monitoring Sites* for the Corral de Tierra subarea when making the 20% calculation.
8-18	8.7.2.3	The bottom para on this page mentions undesirable results caused by chronic lowering of groundwater levels within the Corral de Tierra subarea. The following language should be inserted at the appropriate place in this para "These same undesirable effects will occur in the adjacent Laguna Seca subarea from chronic lowering of groundwater levels in the Corral de Tierra subarea."

Page	Section	Comment
8-19	8.7.2.3	The top para on this page mentions the term "clustering". A better explanation of what would constitute "clustering" should be added to this para, since this is apparently going to be one of the criteria to determine if a significant and unreasonable effect is occurring.
8-21	Table 8-2	Many of the wells in this table also have common names which appear on maps in various reports that have been prepared for the Corral de Tierra and Laguna Seca subareas. A column should be added to this Table titled "Well Common Name" to include that information for the reader's ease of knowing which well in located at the Monitoring Site. Also, as mentioned in the comment above on page 8-8, some monitoring wells in the Seaside subbasin should be included in this Table. Suggested wells for inclusion are: MPWMD#FO-5S, MPWMD#FO-5D, MPWMD#FO-6S, MPWMD#FO-6D, Seca Place, MPWMD#FO-9S, MPWMD #FO-9D,
8-25 and 8-26	Figures 8-4 and 8-5	The wells suggested for inclusion in the comment on page 8-21 (MPWMD#FO-9S and MPWMD #FO-9D) should be added to these figures to monitor the effectiveness of the SMCs in the Marina-Ord subarea on preventing seawater intrusion from flowing into the Seaside Subbasin.
8-27	Figure 8-6	The wells suggested for inclusion in the comment on page 8-21 (MPWMD#FO-5S, MPWMD#FO-5D, MPWMD#FO-6S, MPWMD#FO-6D, and Seca Place) should be added to these figures to monitor the effectiveness of the SMCs in the Corral de Tierra subarea on preventing chronic lowering of groundwater levels in the Seaside Subbasin.
8-29	8.7.3.1	The next to the last para on this page states "The declining groundwater elevations in the Deep Aquifer may be causing groundwater elevations to fall within the 400-Foot Aquifer in the southwestern portion of the Marina-Ord Area (i.e., near wells MPMWD#FO-10S and MPMWD#FO-11S)." An explanation to support this hypothesis should be included as this is not intuitively apparent.
8-30	8.7.3.1	In the top two paras there are two small typos to correct: (1) in the first para the word "elevations" should be singular; (2) in the second para the last sentence should be reworded in part to read "…Deep Aquifer's wells as well as…"
8-31	8.7.3.1	The second bullet on this page mentions historical groundwater elevation data from wells monitored by MCWRA. This language should be expanded to include historical groundwater elevation data from wells monitored by the Seaside Basin Watermaster.
8-36	8.7.3.5	Add at the end of the first sentence at the top of this page the following wording "…including the occurrence of "Material Injury" (as defined in the Seaside Basin adjudication decision) in the Laguna Seca subarea due to lowered groundwater levels."
8-37	8.7.4.1	Correct "MPMWD" to read "MPWMD" for the wells mentioned in this Section and the footnote at the bottom of this page. Also, update the language in the footnote to read as follows: "Chloride concentration measured from MPMWD#FO-10S and MPMWD#FO-09S in September 2020 were 89.9 mg/L and 90.4 mg/L, respectively. An investigation performed by MPWMD into the cause of this in mid-2021 concluded that there was leakage in the upper portion of the casing that was allowing salty shallow dune sand water to flow downward in this well, thus causing these increases in chloride readings. As part of GSP implementation, the Subbasin

Page	Section	Comment
		GSAs intend to investigate possible seawater intrusion near the southwestern portion of the Marina-Ord Area in collaboration of the Seaside Watermaster."
8-40	8.7.4.2	In the 2nd para on this page there is discussion about groundwater elevation trends continuing to fall in the early part of the implementation period and then recovering in the latter part of that period. It would helpful to the reader to have an explanation included as to how the rate of recovery of the fallen groundwater levels was determined, and what the level of confidence is in these projections. In other words, is it certain that the projects that will be included in Chapter 9 of the GSP will be able to bring groundwater levels up as shown in the figures in Appendix 8B?
8-47	8.8.3.1	There is a table showing estimated groundwater storage in the Marina-Ord area, but I did not see a similar table for the El Toro area.
8-48	8.8.3.4	This para discusses the setting of minimum thresholds to avoid dropping below recent levels of storage. The existing groundwater levels in the Corral de Tierra subarea are already causing a loss of groundwater in the Laguna Seca subarea of the Seaside subbasin. Therefore, the Corral de Tierra groundwater levels need to be raised, not just kept from falling further.
8-56	8.10.1 and 8.10.2	Question: If a water quality problem already exists and therefore the affected part of the subbasin is not sustainable as a potable water supply due to that problem (example of arsenic) doesn't SGMA require GSPs to include projects and management actions to remedy the problem in order to achieve sustainability?
8=59	8.10.3.1	Small typo to correct in the first para of this Section: put a comma rather than a period after "Monterey County" and make the word "because" not be capitalized.
8-61	8.10.3.1	Under the "Public water system supply wells regulated by the SWRCB DDW" shouldn't the smaller private systems that are not regulated by DDW, of which there are many in the Corral de Tierra subarea, also be included in the development of the SMCs because of their cumulative impact on the subbasin?
None shown	Figure 8A-9 and 8A-10 in Appendix A	The wells suggested for inclusion in the comment on page 8-21 (MPWMD#FO-9S and MPWMD #FO-9D) should be added to these figures to monitor the effectiveness of the SMCs in the Marina-Ord subarea on preventing seawater intrusion from flowing into the Seaside Subbasin.
None shown	Figure 8A-11 and 8A-12 in Appendix A	The wells suggested for inclusion in the comment on page 8-21 (MPWMD#FO-5S, MPWMD#FO-5D, MPWMD#FO-6S, MPWMD#FO-6D, and Seca Place) should be added to this figure to monitor the effectiveness of the SMCs in the Corral de Tierra subarea on preventing chronic lowering of groundwater levels in the Seaside Subbasin.

Gmail

Emily Gardner <gardnere@svbgsa.org>

Problems with SVBGSA projects

Yahoo Mail <sangjames@yahoo.com> Tue, Jul 20, 2021 at 10:24 AM
Reply-To: Yahoo Mail <sangjames@yahoo.com>
To: [redacted]

Hello All,

Can you forward this email to all sub-basin commitee members and anyone interested in the groundwater sustainability problem? Can you also forward this letter to Landwatch and George Fontes of Salinas Valley Water Coalition?

The problem with the SVBGSA plans is that they are a solution for the sustainability of the entire basin and not for the individual wells. Sustainability means that the goal is make sure that the amount of water being pumped out of the ground is equal or less than the amount of water entering the groundwater in each individual sub basin. But the focus of the plans should be to increase the levels of each farmers well water level, because the minimum threshold and the measurable objective of each well is what will determine whether the SVBGSA or the County of Monterey will determine if they need to take action to close the wells that may be running dry. Even if the SVBGSA meets it's goals of sustainability for the sub-basin, individual wells may be running dry. So the goal should be to raise the well water levels for each well, not to just reach sustainability for each sub-basin.

For example in the Eastside sub-basin, a plan for managed aquifer recharge on individual land owners and a plan for flood plain soaking from the creeks are being planned, but even if this happens, this plan may not have an effect on wells that are a distance away. That means that the well water may not be replenished because the source of infiltrating water will not reach the well water source. Two other plans for groundwater recharge are a diversion at Chualar at a cost of $56,000,000.00 and a diversion at Soledad at a cost of $105,000,000.00. These will divert excess stream water . The problem with these two plans are that they do not have a way to connect this water with the individual wells. They will probably direct the water to a basin, which will connect to an aquifer and not to any particular well. This diversion of water will fill a large area of groundwater but not all wells. You have to realize that each well is at a different area and connected to different water sources. You can determine this because each well has a different minimum threshold and measurable objective. For example monitoring well (14S/03E-06R01) has a MT of -29.7 and a MO of -24.9, while monitoring well {14S/03E-25C02} has a MT of -65.4 and a MO of -42.2. This means that each well has a different water source and cannot probably be replenish by delivering water from a far away infiltrating water basin. The other problem with these diversion plans are that they are dependent on excess stream water before there is allowed any diversion. If there is no excess water, there is no water being redirected! There are two other plans Eastside irrigation Water Supply Project at a cost of ($140,000,000.00) and a Surface Water Diversion from Gabilan Creek at a cost of ($10,000,000.00). Both have the same problem of delivering to the individual well. In the foreseeable drought that we have, I do not see these as reliable sources of water!

The Eastside Sub-basin is the most overdrawn of all the sub-basins. I presented a plan which I believe will solve the delivery of water and the supply of water to the wells at a greatly reduced cost. My plan involves the harvesting of rainwater during the rainy season of Monterey County during the wettest months of December, January and February. The rainy season of Monterey County involves the 5 months of November to March. Our rainfall varies between 5 inches to 30 inches per year. On an average we should be able to get 12 inches per year. In the Eastside Sub-basin their are 34,000 irrigated acres. The sub-basin is short about 10,000 to 20,000 acre feet of water per year. During wet season, when the farmers are not planting crops, they can subsoil plow their land to a depth of 24 to 36 inches. This will have the effect of capturing all the rainfall and prevent the precipitation from evaporating. The deeper the depth of plowing, the less evaporation. It is also important to subsoil plow close to their well, so that there is a better chance of this plowing to refill their well water. So if the farmer will subsoil plow at least 60 percent of their land during the wet season of December to February. They will capture enough rainfall to fill that 20,000 acre feet deficit for the basin. After the wet season is over, the farmer can plow his land normally and use it as he wishes. This strategy should work for any farmland whether you are in the Salinas Valley or the Central Valley. You may want to incentivize this in order to encourage the grower to do this strategy. In the Pajaro Valley, the growers are paid for the collection of rainwater by infiltrating basins. This plan will prevent fallowing of farm land, prevent the buying of farmland, prevent the reduction of economic activity and the lay off of farm workers! I hope this plan is accepted! [ref. You Tube video "Deep Soil Ripping for Water Conservation" by Megan Clayton]

The advantages of subsoil plowing to a depth of at least 24 inches in order to capture rainwater will achieve these goals: It will deliver water close to the individual wells in order to raise well water levels. It will be a yearly constant supply of water. It is cheaper than spending over $500,000,000.00 for all the plans presented to all of the sub-basins. It will incentivize the farmer to subsoil, if Monterey County or SVBGSA will reimburse him for the subsoiling. It may substantially raise the water aquifer levels and groundwater levels. Even all unirrigated lands may also be subsoiled in order to raise aquifer levels.

I want to address another issue. Land Watch presented a plan to stop the drilling of new wells in the deep aquifers. The Advisory Committee voted no and decided to do some more studies. George Fontes who represents the Salinas Valley Water Coalition, a group of growers of 80,000 acres in the Salinas Valley does not want this. I want to present a compromise . I think that we can allow them to drill new wells, but they have to agree to harvesting the rainwater at the method , that I suggested for The Eastside sub-basin. This will help replenish any water that will be pumped out of the deep aquifers.

Thanks to all for reading this!

James Sang sangjames@yahoo.com

Draft Chapter 8 – Supplemental Comments from Seaside Basin Watermaster 7-30-21

These are comments provided by the Watermaster's hydrogeologic consultant, Montgomery & Associates. They supplement the Watermaster's comments dated 7-13-21.

Page	Section	Comment
None shown	Figure 8-6	The Robley wells are the ones to focus on to understand what would happen in the Seaside Basin than the wells on Figure 8-6 that are much farther away from the Seaside Basin. The minimum threshold for the Robley wells are just above record lows in 2020 on the hydrographs (levels this year are undoubtedly going to be even lower!). The GSA has 20 years to get levels at or above the minimum threshold, so levels can still fall lower than they are now between now and 2042.
8- 33 and 8-39	Figures 8-9 and 8-10	We don't find the contours on Figures 8-10 and 8-11 very useful because we don't have contours generated the same way for the Seaside Basin (i.e., based on an assumed future condition). The flow direction from the contours is similar to current conditions (see Chapter 5, Figures 5-9 and 5-10) so there is no expected change in flow directions to what has happened in the past. What I found more informative was Figure 8-6 which shows historical hydrographs for the Robley wells together with minimum threshold (elevation that they should not really be going below) and the measurable objective (elevation where they would like to be). Note that the measurable objective is not enforceable but the minimum threshold is.
8-41	Figure 8-12	The example well in Figure 8-12 shows a continuing drop in groundwater levels, with levels only increasing to measurable objectives after 2030 when project benefits are projected to kick in.
8-43 and 8-44	Table 8-3	Table 8-3 provides interim milestone every five years to show how they project levels will eventually meet measurable objectives. This all indicates that groundwater levels in the Laguna Seca subarea will continue to fall for at least the next 10 years.
8-35 and 8-36	8.7.3.5	Effect of Minimum Thresholds on Neighboring Basins and Subbasins is an important section to look at – I do not feel they have adequately addressed effects on the Seaside Basin from the minimum thresholds. They do not mention the ongoing declines in the Laguna Seca subarea and what the minimum thresholds will do for that nor the impacts that will occur when levels are allowed to fall lower than the minimum threshold over the next 10 years. There is only one sentence addressing Seaside Basin and it reads "The Seaside Subbasin is an adjudicated basin and not subject to SGMA. The subbasin GSAs have and will continue to coordinate closely with the Seaside Watermaster to ensure that the Monterey Subbasin minimum thresholds do not prevent the Seaside basin from meeting its adjudication requirements."
N/A	N/A	There is still the ongoing issue in the Coral de Tierra subarea of poor pumping records. This means they still don't understand exactly what is causing the ongoing declines. Derrik mentioned that they are talking about expanding the County groundwater extraction monitoring (GEMS) into the Corral de Tierra subarea, but that section of the GSP has not been posted yet (probably Chapter 10).

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Salinas Valley Water Coalition

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(831) 674-3783 • FAX (831) 674-3835

TRANSMITTED VIA EMAIL

Salinas Valley Groundwater Sustainability Agency
Board of Directors

12 August, 2021

Dear Board Members;

This letter is submitted on behalf of the Salinas Valley Water Coalition ("Coalition") and is in response to preliminary comments to the Groundwater Sustainability Plans ("GSPs") for the Eastside, Forebay, Langley, Monterey and Upper Valley Subbasins made by members of the public. Said public comments suggest an immediate implementation of the 180/400 Foot Aquifer GSP specific to the proposed Integrated Plan. Should the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") elect to begin implementation of the 180/400 Foot Aquifer GSP, shouldn't the SVBGSA implement *all* of the management actions proposed therein? This recommendation is particularly in light of the existing legal question on whether continuing to pump from sea-water intruded, overdrafted areas is considered reasonable and beneficial use of water.

As to the proposed Integrated Plan, the Coalition has previously stated, and is now again stating, that the SVBGSA does not have the proper tools to develop that plan. The Salinas Valley Integrated Hydrologic Model ("SVIHM") is not only provisional and not available for public vetting, but it has significant calibration issues causing it to be unreliable. Thus, the modeling performed using the SVIHM is not "sufficient to calibrate and reduce [its] uncertainty" (23 CCR §354.18) and is not likely to be properly calibrated for public vetting before these GSPs are due to the Department of Water Resources and thus, cannot be relied upon to make any decision, including taking any regulatory action or for developing the Integrated Plan.

That is, because the results from the SVIHM are provisional and uncertain and are subject to change in future GSP updates after the SVIHM is released by the USGS and unless and until (1) the SVIHM has been made publicly available and publicly vetted; (2) its inputs reflect the current operations of the reservoirs, including the operations of the Salinas Valley Water Project as reflected in its Engineer's Report and the MCWRA water right permits and other water rights; and (3) its calibration results meet industry standard of five percent (5%) to ten percent (10%), the model results cannot be used as basis to develop the Integrated Plan or to determine the flows between subbasins within the Salinas Valley Groundwater Basin because the results are only orders of magnitude approximates and not best available science.

Mission Statement: The water resources of the Salinas River Basin should be managed properly in a manner that promotes fairness and equity to all landowners within the basin. The management of these resources should have a scientific basis, comply with all laws and regulations, and promote the accountability of the governing agencies.

That said, these subbasins have been the subject of many decades of studies and these studies are considered the best available science for reliance by the SVBGSA for inclusion in the GSPs. These studies include the 1988 USGS Water-Resources Investigation Report 87-4066, Simulated Effects of Ground-Water Management Alternatives for the Salinas Valley, California; and the Brown-Caldwell's State of the Salinas River Groundwater Basin Report, dated January 16, 2015. The executive summary of the Brown Caldwell Report and a USGS abstract summary are included as Exhibits A, Exhibit B respectively and the entire reports are included herein by reference and can be found at the following links: **https://www.co.monterey.ca.us/home/showpublisheddocument/61920/636547362391570000** and **https://doi.org/10.3133/wri874066** . Both studies placed "a specific focus on the effect of pumping changes on seawater intrusion" and found that "seawater intrusion could be cut by more than half (from about 18,000 to 8,000 afy) over a 20 year period by decreasing pumping in the Pressure and East Side Subareas by 30%; whereas reducing pumping the Forebay and Upper Valley Subareas had *minimal to no effect on seawater intrusion."* (Emphasis added.) The best available science concludes minimal impacts by Forebay and Upper Valley subbasins on seawater intrusion in the northern subbasin, which must be relied upon by the SVBGSA.

Finally, the Coalition has supported, and continues to support, projects to address the sea water intrusion and overdraft facing the northern subbasins. The Coalition has offered several solutions including using the Monterey County Water Resources Agency ("MCWRA") 11043 permit to develop excess surface water for the Pressure and East Side Subareas. The Coalition also supports the consideration of an extraction barrier in the Pressure Area that could provide an alternate water supply not only to agriculture but also to the urban areas in that subarea. Developing and implementing management actions and a project or projects should be the primary focus rather than more modeling using a known erroneous model that does not fall within SGMA standards.

Thank you for your consideration of the foregoing comments.

Sincerely,

Nancy Isakson, President
Keith Roberts, Chair
Roger Moitoso, Vice- Chair
Rodney Braga, Director
Lawrence Hinkle, Director
Bill Lipe, Director
David Gill, Director
Steve McIntyre, Director
Brad Rice, Director
Jerry Rava, Director
Grant Cremers, Director
Allan Panziera, Director
Michael Griva, Past-Chair

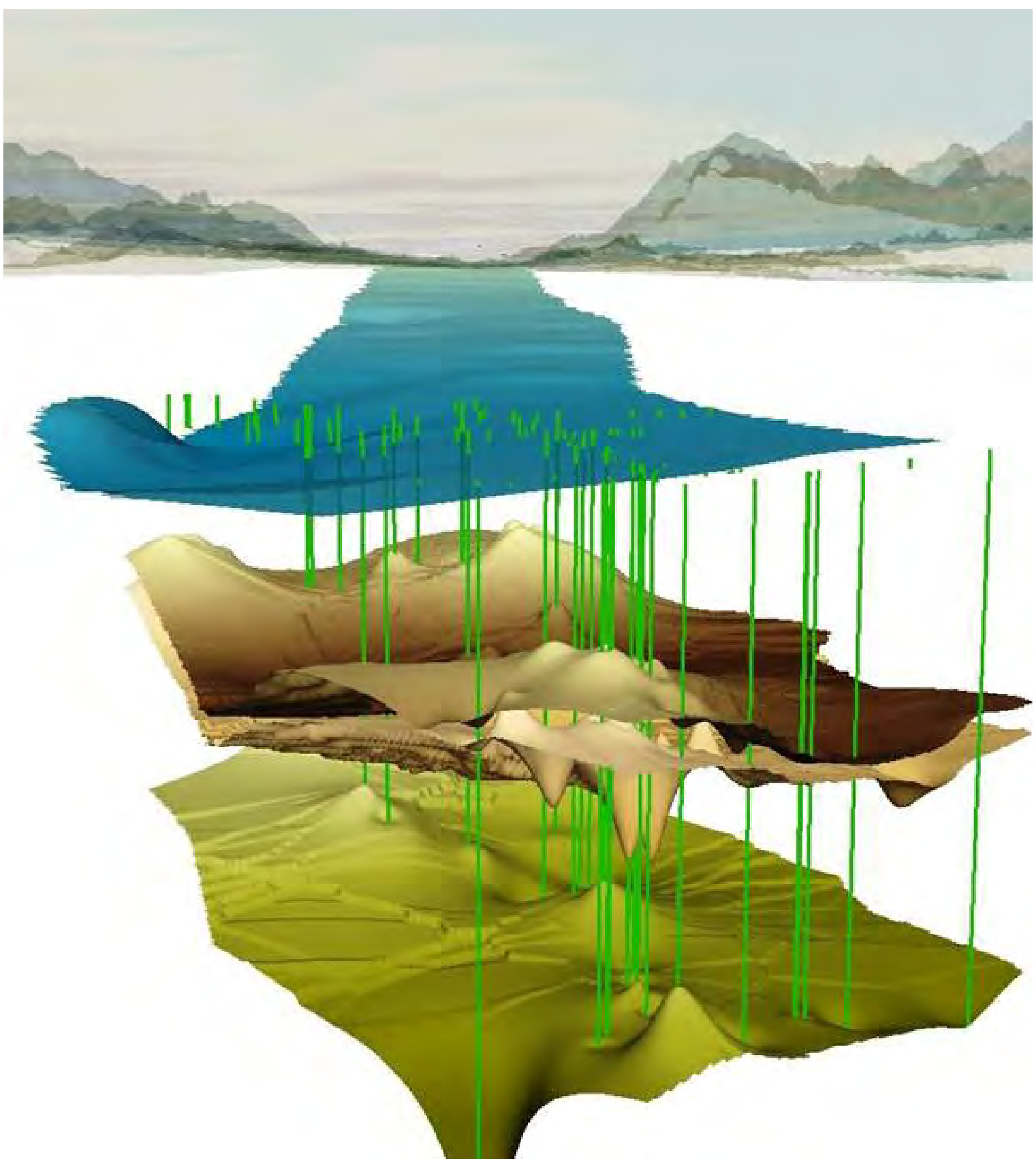
EXHIBIT ‘A’

Brown AND Caldwell

Prepared for Monterey County Resource Management Agency
Salinias, CA

State of the Salinas River Groundwater Basin

January 16, 2015



FINAL

State of the Salinas River Groundwater Basin

Prepared for

Monterey County Resource Management Agency

Salinas, CA

January 26, 2015

FINAL

State of the Salinas River Groundwater Basin

Prepared for

Monterey County Resource Management Agency
Carl P. Holm, AICP
Interim Director
168 W. Alisal, 2nd Floor
Salinas, CA 93901

January 26, 2015

Prepared by:

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Geologist of Record

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Acknowledgements

Brown and Caldwell acknowledges the valuable contributions made by the Monterey County Water Resources Agency (MCWRA) in conducting this near-term assessment of the health and status of Zone 2C of the Salinas River Groundwater Basin.

Specifically, the project team recognizes the following MCWRA technical staff for their efforts:

Howard Franklin	Senior Hydrologist
Peter Kwiek	Hydrologist
German Criollo	Associate Hydrologist
Tamara Voss	Hydrologist
Amy Woodrow	Hydrologist

The Brown and Caldwell project team members include:

Les Chau	Project Manager, Geologist
Joe Turner	Chief Hydrogeologist
Tim Godwin	Principal Hydrogeologist
Matt Baillie	Principal Hydrogeologist
Alex Johnson	Environmental Engineer
Kelsi Oshiro	Engineer-In-Training
Tina Crawford	Geographer
Kim Stubblefield	Project Analyst

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List of Technical Concepts Reviewed in Appendix A

List of Abbreviations

af	acre-feet
afy	acre-feet per year
BC	Brown and Caldwell
Cl	chloride
CSIP	Castroville Seawater Intrusion Project
DWR	California Department of Water Resources
ft/yr	feet per year
gpm	gallons per minute
MCWRA	Monterey County Water Resources Agency
mg/L	milligrams per liter
MSL	mean sea level
MTBE	Methyl Tertiary Butyl Ether
Na	sodium
P-180	Pressure 180-Foot
P-400	Pressure 400-Foot
PERC	perchlorate
SRDF	Salinas River Diversion Facility
SVA	Salinas Valley Aquitard
SVIGSM	Salinas Valley Integrated Groundwater Surface Water Model
SVWP	Salinas Valley Water Project
SWI	seawater intrusion
TCE	trichloroethylene
TDS	total dissolved solids
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	volatile organic compound

Executive Summary

An examination of the state of the Salinas River Groundwater Basin (Basin) was conducted by Brown and Caldwell in the last half of 2014 as part of the larger Basin Investigation requested by the County of Monterey. This State of the Basin Report addresses the ramifications of prolonged drought by considering likely changes in groundwater head elevations, groundwater storage, and seawater intrusion in the event that the current drought continues. In addition, some steps are presented that could be taken to help alleviate the consequences of further depleting groundwater storage.

This study was conducted for Monterey County under County Professional Agreement 14-714, dated 1 July 2014, in response to the Monterey County Board of Supervisors Referral No. 2014.01. The work was carried out with oversight provided by the Monterey County Water Resources Agency (MCWRA).

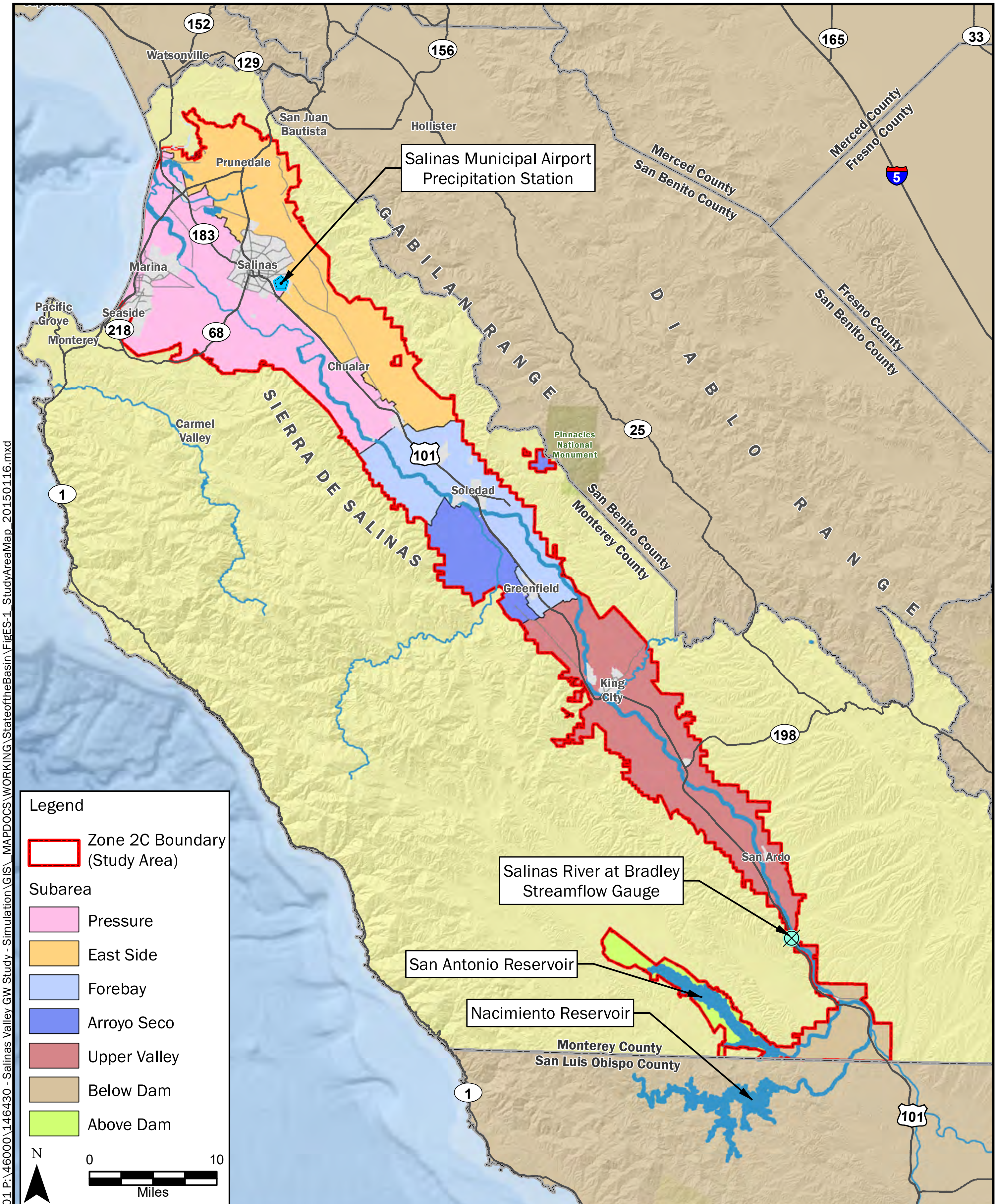
Study Area

The study area for this report is MCWRA Benefit Zone 2C (Zone 2C), which largely straddles the Salinas River within Monterey County (Figure ES-1). Zone 2C consists of 7 subareas named as follows: Above Dam, Below Dam, Upper Valley, Arroyo Seco, Forebay, East Side, and Pressure. The analyses detailed in this report cover the four primary water-producing subareas, the Pressure, East Side, Forebay (including the Arroyo Seco), and Upper Valley Subareas. These four subareas include most of the land area and account for nearly all of the reported groundwater usage within Zone 2C.

The Salinas River Groundwater Basin is the largest coastal groundwater basin in Central California. It lies within the southern Coast Ranges between the San Joaquin Valley and the Pacific Ocean, and is drained by the Salinas River. The valley extends approximately 150 miles from the La Panza Range north-northwest to its mouth at Monterey Bay, draining approximately 5,000 square miles in Monterey and San Luis Obispo Counties. The valley is bounded on the west by the Santa Lucia Range and Sierra de Salinas and on the east by the Gabilan and Diablo Ranges. The Monterey Bay acts as the northwestern boundary of the Basin.

The Salinas Valley has a Mediterranean climate. Summers are generally mild, and winters are cool. Precipitation is almost entirely rain, with approximately 90 percent falling during the six-month period from November to April. Rainfall is highest on the Santa Lucia Range (ranging from 30 to 60 inches per year) and lowest on the valley floor (about 14 inches per year). Very dry years are common and droughts can extend over several years, such as the eight-year drought of Water Years (WY) 1984 to 1991.

Major land uses in the Salinas Valley include agriculture, rangeland, forest, and urban development. Mixed forest and chaparral shrub cover the mountain upland areas surrounding the valley, while the rolling hills are covered with coastal scrub and rangeland. Agricultural and urban land uses are predominant on the valley floor.



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DATE	PROJECT	SITE	
01/16/15	146430	**Salinas River Groundwater Basin Investigation**	**Figure ES-1**
Brown AND Caldwell		TITLE: **Study Area Map**	

Historically, irrigated agriculture began with surface water diversions in 1773 on Mission Creek, and diversions from the Salinas River were first recorded in 1797. Groundwater pumping began as early as 1890, and expanded greatly through about 1920 as enabled by several developments such as widespread electrical lines, the development of better well pumps, and the replacement of grain crops with vegetable crops. Groundwater is currently the source of nearly all agricultural and municipal water demands in the Salinas Valley, and agricultural use represents approximately 90 percent of all water used in the Basin. In addition to groundwater, other sources of water for agricultural production include surface water diverted from the Arroyo Seco, recycled municipal waste water supplied by the Monterey County Water Recycling Projects, and surface water diverted from the Salinas River north of Marina as part of the Salinas Valley Water Project.

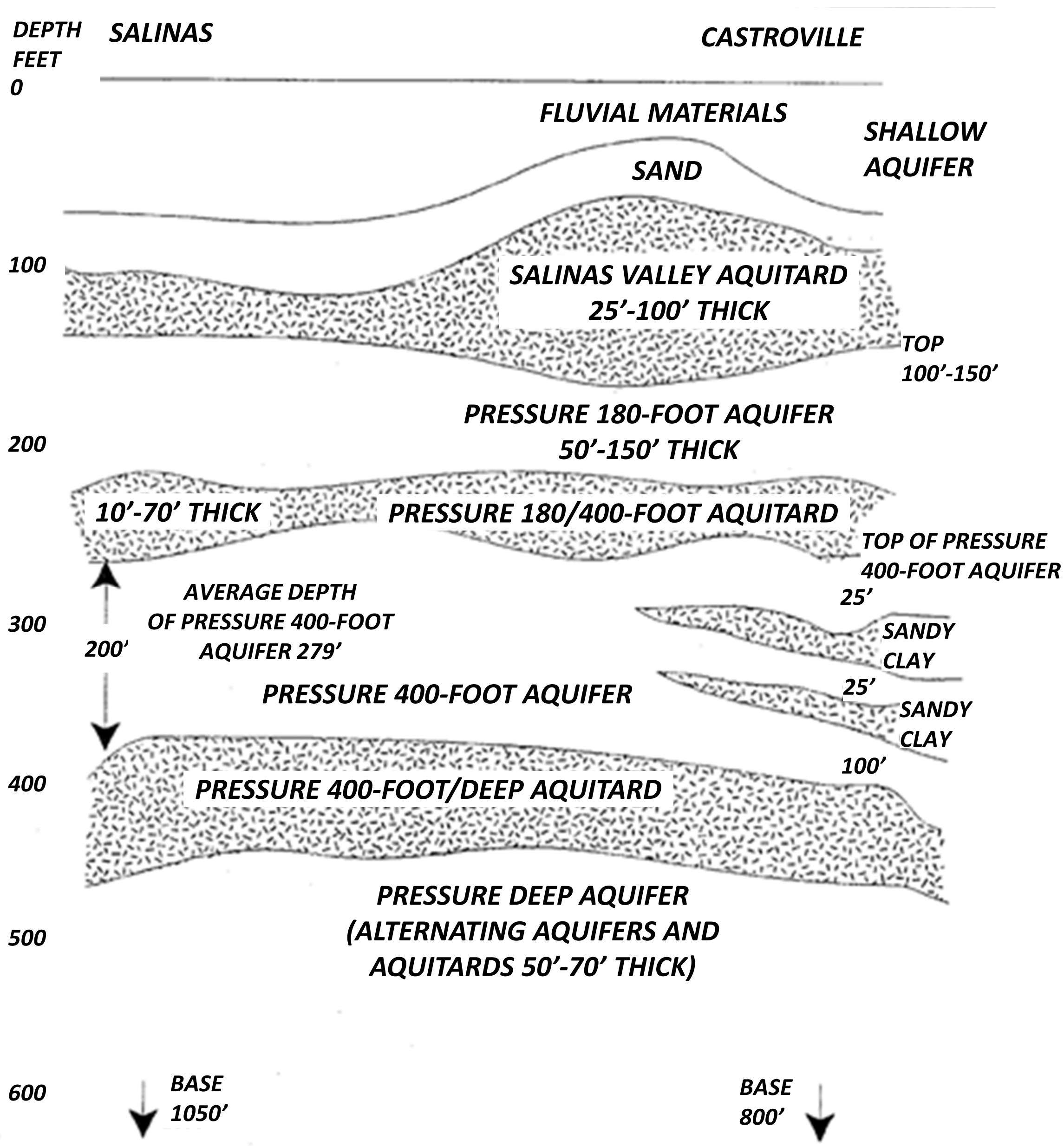
By 1944, groundwater pumping in the entire valley was estimated at about 350,000 acre-feet per year (afy), with about 30 percent of the pumping occurring within the Pressure Subarea, 10 percent in the East Side Subarea, 35 percent in the Forebay Subarea, and 25 percent in the Upper Valley Subarea. Groundwater use in the Salinas Valley peaked in the early 1970's and then started declining, due primarily to changes in crop patterns, continued improvements in irrigation efficiency, and some conversion of agricultural lands to urban land uses.

Seawater intrusion was detected in coastal wells as early as the 1930's, resulting from declining groundwater head elevations in the Pressure and East Side Subareas. Seawater intrusion has continued so that it now reaches as far as 8 miles inland within the Pressure Subarea. The declining head and intruding seawater helped lead to the construction of the Nacimiento and San Antonio Dams (releases beginning in 1957 and 1965, respectively), which are used for flood control, maintenance of groundwater head elevations, multi-year storage, and recreation. Today, as urbanization increases in the valley, alternative sources of urban water supplies and relocation of groundwater pumping are being evaluated and implemented by the Marina Coast Water District and various communities in the northern Salinas Valley.

Hydrogeology

The Salinas Valley Groundwater Basin is a structural basin (i.e., formed by tectonic processes) consisting of up to 10,000 to 15,000 feet of terrigenous and marine sediments overlying a basement of crystalline bedrock. The sediments are a combination of gravels, sands, silts, and clays that are organized into sequences of relatively coarse-grained and fine-grained materials. When layers within these sequences are spatially extensive and continuous, they form aquifers, which are relatively coarse-grained and are able to transmit significant quantities of groundwater to wells, and aquitards, which are relatively fine-grained and act to slow the movement of groundwater. Figure ES-2 is a generalized schematic cross-section across the Pressure Subarea illustrating its general hydrostratigraphy.

Groundwater flow in the Basin is generally down the valley, from the southern end of the Upper Valley Subarea toward Monterey Bay, up to about Chualar (Figure ES-3). North of Chualar, groundwater flows in a north to east direction toward a trough of depressed groundwater head on the northeastern side of Salinas. This trough is especially pronounced in August, the approximate time of the seasonal peak groundwater pumping.



Modified from Hall and Earthware of California, 1992.

Brown AND Caldwell	DATE 01/16/15	SITE Salinas River Groundwater Basin Investigation	Figure ES-2
	PROJECT 146430	TITLE Conceptual Hydrostratigraphic Section in the Pressure Subarea	

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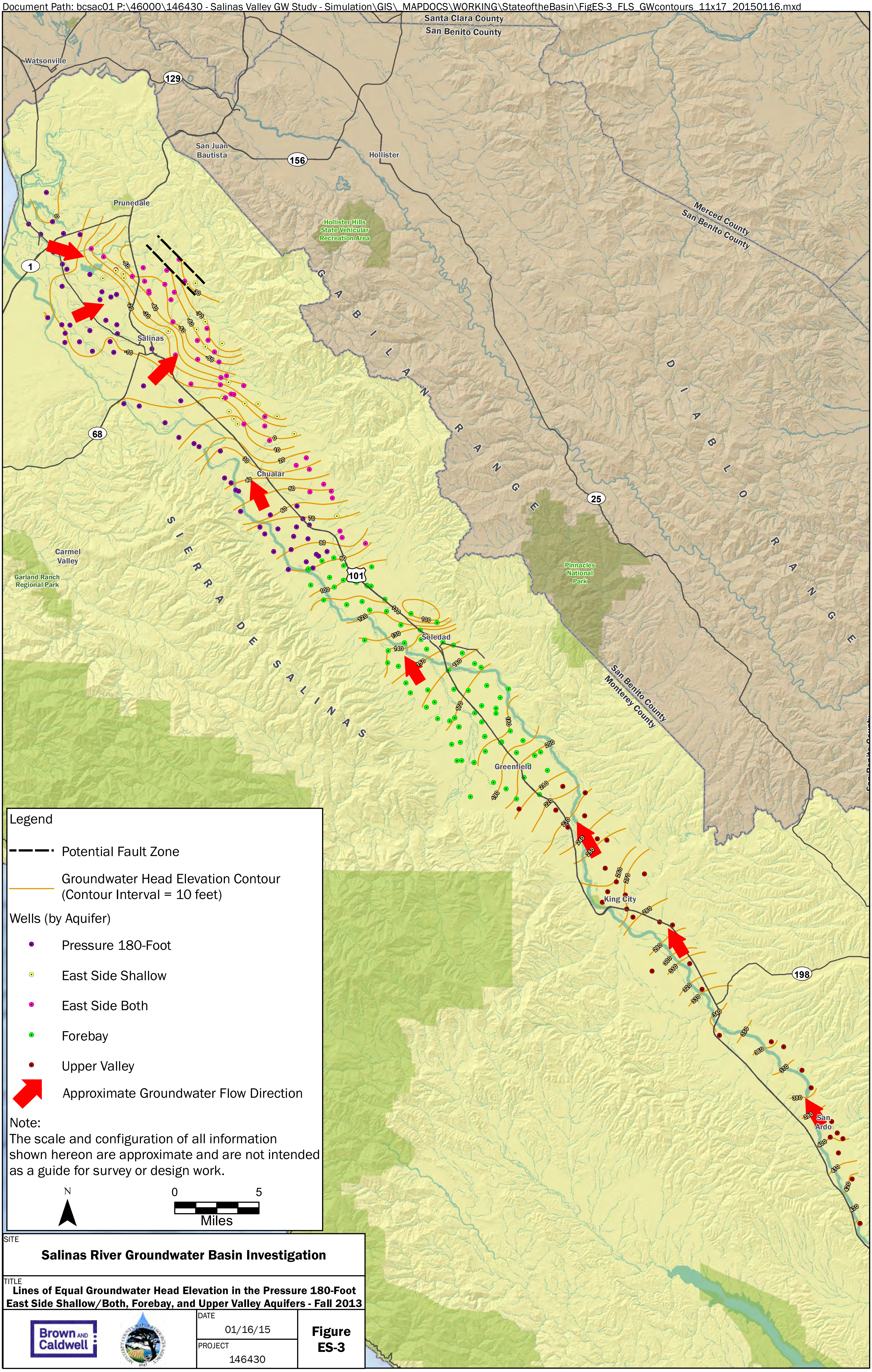


SITE

Salinas River Groundwater Basin Investigation

TITLE

Lines of Equal Groundwater Head Elevation in the Pressure 180-Foot East Side Shallow/Both, Forebay, and Upper Valley Aquifers - Fall 2013

Brown AND Caldwell

DATE 01/16/15

PROJECT 146430

Figure ES-3

Water Balance

A water balance is a quantitative accounting of the various components of flow entering and leaving a groundwater system. Typical outflows include evapotranspiration, surface runoff that leaves the system, groundwater pumping, and groundwater outflow to a neighboring groundwater system. Typical inflows include recharge from infiltration of precipitation, releases from reservoirs (which receive runoff from precipitation), recharge from leaky aquitards, and groundwater inflow. The difference between inflows and outflows represents the change in groundwater storage. Because precipitation constitutes the major input of water to the Basin, rainfall records from the Salinas Municipal Airport gauge from 1873 to the present were analyzed. Based on the mean precipitation of 13.4 inches and standard deviation of 4.8 inches, each year's precipitation total was assigned to one of seven, "wetness levels," as follows: Extremely Dry, Very Dry, Dry, Normal, Wet, Very Wet, or Extremely Wet. In general, dry years are more common than wet years, but Extremely Dry years are less common than Extremely Wet years. The drought period from WY 1984 to 1991 included three Very Dry years, four Dry years, and one Normal year; this period was used in this study as a comparative period for predicting future changes in groundwater head and storage. Based on provisional data, the WY 2014 precipitation of about 5.9 inches represents a Very Dry year and the third-driest water year on record. The current drought of WY 2012 to 2014 includes two Dry years and one Very Dry year; over this three-year period, the total rainfall was about 15 inches below the period of record average.

This study emphasizes the importance of cumulative precipitation surplus, which quantifies precipitation on timescales longer than a year to examine the impacts of multi-year dry and wet periods. The cumulative precipitation surplus reached a high of about 41 inches at the end of WY 1958, and declined to zero by the end of WY 2013. During the extended drought from WY 1984 to 1991, the cumulative precipitation surplus declined by about 36 inches, an average of about 4.5 inches per year. The major declines in cumulative precipitation surplus had and continue to have negative effects on groundwater storage in Basin aquifers (see Storage Change discussion below). Figure ES-4 shows a time series of annual and cumulative precipitation surplus.

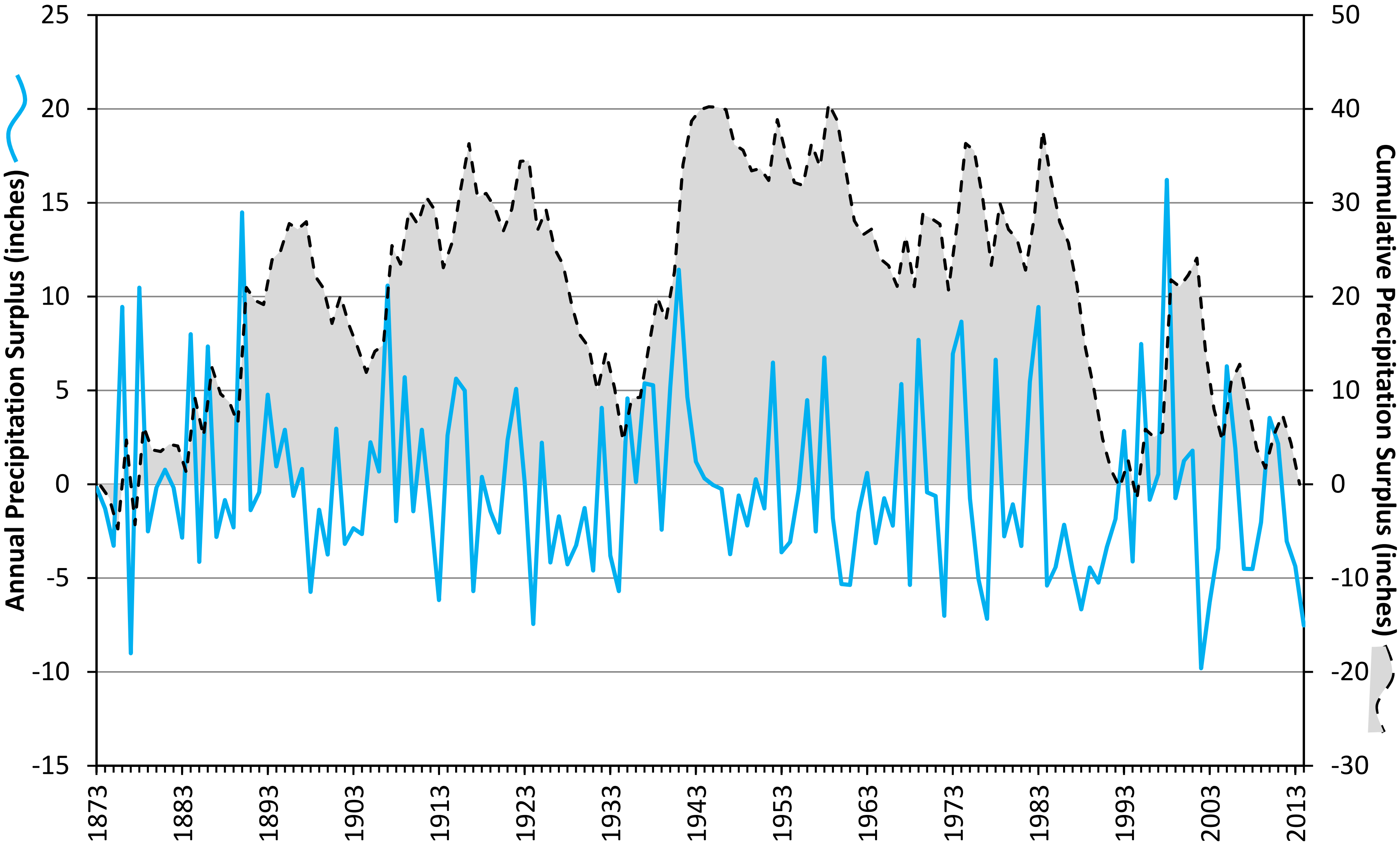
Inflows

Out of an estimated total of about 504,000 afy of inflow to the Basin, about 50 percent occurs as stream recharge, 44 percent occurs as deep percolation from agricultural return flows and precipitation, and 6 percent occurs as subsurface inflow from adjacent groundwater basins (MW, 1998). Table ES-1 summarizes the inflow components of the water budget, as reported by MW (1998).

Table ES-1. Water Budget Components by Subarea

Subarea	Average of WY 1958-1994 (from MW, 1998)				2013 Groundwater Pumping (reported by MCWRA)[c]
	Inflow		Outflow		
	Natural Recharge[a]	Subsurface Inflow	Groundwater Pumping[b]	Subsurface Outflow	
Pressure	117,000	17,000	130,000	8,000	118,000
East Side	41,000	17,000	86,000	0	98,000
Forebay	154,000	31,000	160,000	20,000	148,000
Upper Valley	165,000	7,000	153,000	17,000	145,000

Note: All estimates in acre-feet per year (afy).
[a] Includes agricultural return flow, stream recharge, and precipitation.
[b] Groundwater pumping as reported by MW (1998) is presented to provide a complete water budget.
[c] The 2013 groundwater pumping totals are provided for comparison.



Note: The annual precipitation surplus represents the difference between the annual precipitation and the long-term mean.

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Brown AND Caldwell	DATE 01/16/15	SITE Salinas River Groundwater Basin Investigation	Figure ES-4
	PROJECT 146430	TITLE Annual and Cumulative Precipitation Surplus at Salinas Municipal Airport	

Within the Pressure Subarea, inflow is largely made up of subsurface inflow from the Forebay Subarea; prior to development, additional subsurface inflow occurred from the East Side Subarea, but this flow had been reversed by declining groundwater head elevations in the East Side Subarea. An additional inflow to the Pressure Subarea is seawater intrusion, which could account for between about 11,000 and 18,000 afy.

Inflow to the East Side Subarea is made up of a combination of infiltration along the small streams on the west side of the Gabilan Range, direct recharge of precipitation on the valley floor, and subsurface inflow from the Pressure and Forebay Subareas.

Inflow to the Forebay Subarea is made up of infiltration along Arroyo Seco, Reliz Creek, and the Salinas River as well as agricultural return flow, direct recharge of precipitation on the valley floor, subsurface inflow from the Upper Valley Subarea, and mountain front recharge along the eastern and western Subarea boundaries.

Inflow to the Upper Valley Subarea is made up of infiltration along the Salinas River and its tributaries, with lesser amounts entering the subarea via direct recharge of precipitation on the valley floor and agricultural return flow, plus minor quantities entering via subsurface inflow from the Panch Rico Formation to the east and along drainages tributary to the Salinas River.

Outflows

Groundwater pumping is, by far, the largest component of outflow from the Basin. Of an estimated total of 555,000 afy of outflow, about 90 percent is groundwater pumping, with the remainder occurring as evapotranspiration along riparian corridors (Ferriz, 2001). Table ES-1 summarizes the outflow components of the water budget, as reported by MW (1998).

In general, groundwater pumping in the study area increased over the first 14 years of the available period of record (1949 to 2013), from about 380,000 afy in 1949 to about 620,000 afy in 1962, the highest pumping year on record. Pumping began to decline after about 1972, when pumping was about 530,000 afy, and fell to about 430,000 afy by 1982 before averaging about 500,000 afy over the rest of the period of record. Reported pumping for 2013 totaled about 509,000, acre-feet (af).

While annual pumping totals were relatively steady in the Pressure and East Side Subareas after about 1962, pumping in the Forebay and Upper Valley Subareas continued to increase until the early 1970's, then decreased slightly through the mid-1980's. On average, from 1949 to 2013, about 25 percent of basinwide pumping occurred in the Pressure Subarea, 17 percent in the East Side Subarea, 30 percent in the Forebay Subarea, and 28 percent in the Upper Valley Subarea.

Within the Pressure Subarea, outflow occurs as a combination of groundwater pumping and subsurface outflow to the East Side Subarea. In the East Side Subarea, outflow is made up entirely of groundwater pumping, since the reversal of the groundwater head gradient curtailed the natural subsurface outflow to the Pressure Subarea. In the Forebay Subarea, outflow is dominated by groundwater pumping, with a small amount of subsurface outflow to the Pressure and East Side Subareas. Outflow from the Upper Valley Subarea is largely made up of groundwater pumping, with a small amount of subsurface outflow to the Forebay Subarea.

Groundwater Storage

Estimated Basin groundwater storage is summarized in Table ES-2. The reported total stored volume of groundwater in the Basin is about 16.4 million af, and the reported aquifer storage capacity is approximately 19.8 million af (DWR, 2003). These values suggest that there is an unfilled storage capacity of about 3.3 million af.

Storage Change

The estimation of groundwater storage changes in the Basin calculated for this project is a measure of aquifer response to the natural hydrologic cycle (e.g. precipitation) and human-induced effects (e.g. pumping). The analysis of storage change was accomplished by considering subarea-averaged annual groundwater head elevation changes reported by MCWRA from 1944 to 2013. The accuracy of this analysis relies directly on the accuracy of the estimates of head change and of the values of storage coefficient and land area used. For this analysis, the storage coefficients reported by DWR (2003) were used[1]. Figure ES-5 shows a time series of calculated storage change for the Basin, color-coded by subarea. When compared with Figure ES-4, it is clear that there is a strong correlation between the pattern of the cumulative precipitation surplus and that of storage change. The storage change analysis included a statistical comparison between subarea storage change and annual precipitation surplus, reservoir releases, streamflow (at the Salinas River gauge near Bradley), and groundwater pumping. In all four subareas, annual storage change was correlated most strongly to annual precipitation surplus. The results of the storage change analysis are summarized in Table ES-3.

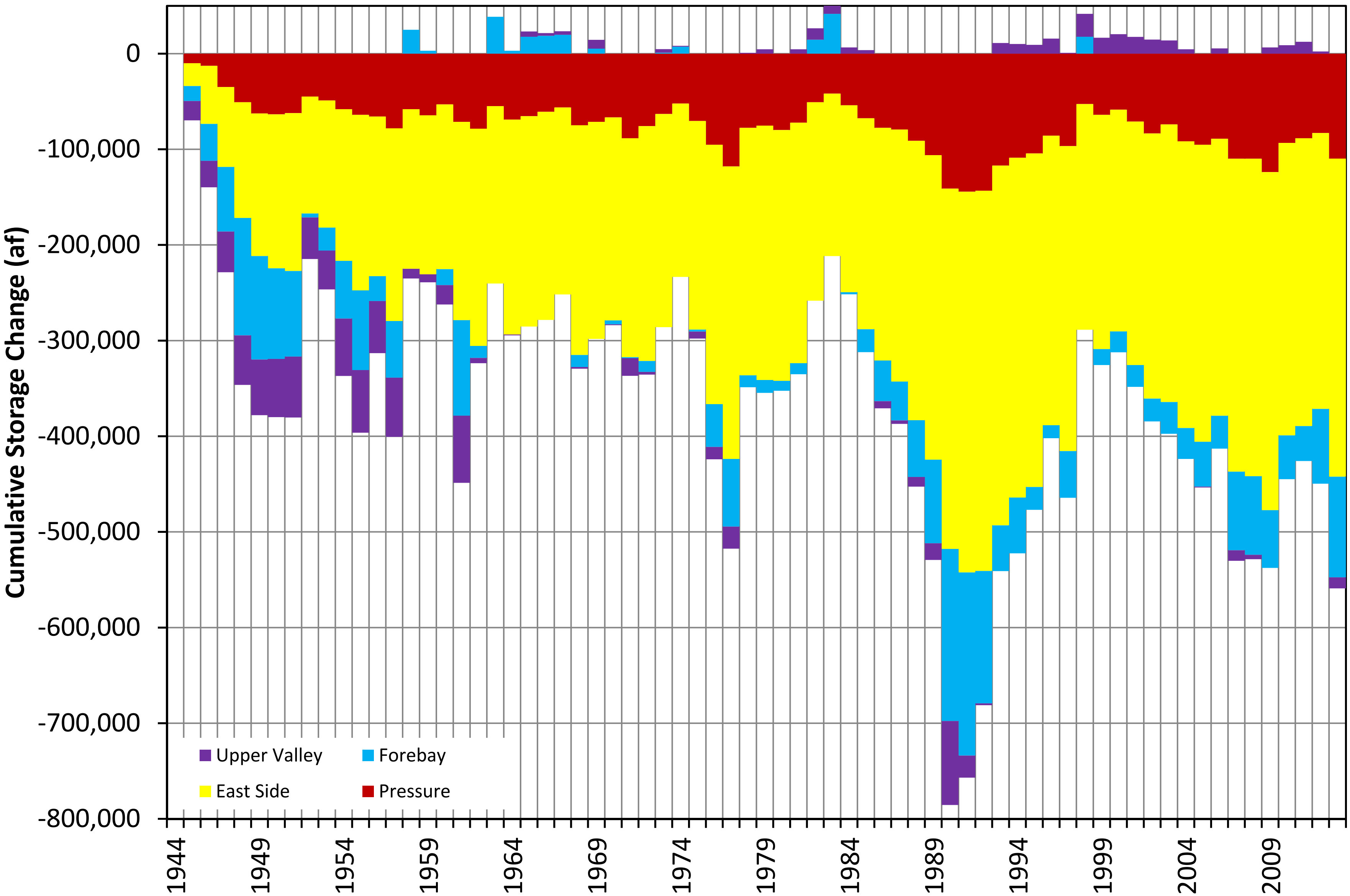
Table ES-2. Groundwater Storage

Subarea	Storage Coefficient (ft^3/ft^3)[a]	Land Area (acres)[b]	Storage Capacity (acre-feet)[a]	Groundwater in Storage (acre-feet)[a]	Available Storage (acre-feet)
Pressure	0.036	126,000	7,240,000	6,860,000	380,000
East Side	0.08	75,000	3,690,000	2,560,000	1,130,000
Forebay	0.12	87,000	5,720,000	4,530,000	1,190,000
Upper Valley	0.10	92,000	3,100,000	2,460,000	640,000
Total	--	380,000	19,750,000	16,410,000	3,340,000

[a] *From DWR (2003).*

[b] *From the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM).*

1 The storage calculation presented in this Executive Summary is based on the storage coefficients published in DWR (2003). In the main body of the Report, the storage calculation is based on the DWR (2003) data and an additional and smaller storage coefficient that could be representative of the confined portions of the Pressure Subarea aquifer system.



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Brown AND Caldwell	DATE 01/16/15	SITE Salinas River Groundwater Basin Investigation	Figure ES-5
	PROJECT 146430	TITLE Cumulative Storage Change by Subarea	

Table ES-3. Calculated Storage1 Change by Subarea, 1944 to 2013						
Subarea	Minimum Annual (af)	Maximum Annual (af)	Annual Average (afy)	Minimum Cumulative (af)	2013 Cumulative (af)	Predicted Change If Drought Continues (afy)
Pressure	-35,000	+44,000	-2,000	-144,000 (1991)	-110,000	-10,000 to -20,000
East Side	-58,000	+83,000	-5,000	-398,000 (1991)	-333,000	-25,000 to -35,000
Forebay[a]	-93,000	+98,000	-2,000	-192,000 (1991)	-105,000	-10,000 to -15,000
Forebay[a]	-93,000	+98,000	-2,000	-192,000 (1991)	-105,000	-80,000 to -90,000
Upper Valley[a]	-70,000	+65,000	-200	-88,000 (1990)	-12,000	-5,000 to -15,000
Upper Valley[b]	-70,000	+65,000	-200	-88,000 (1990)	-12,000	-50,000 to -70,000
Zone 2C[a]	-256,000	+217,000	-8,000	-786,000 (1990)	-559,000	-50,000 to -85,000
Zone 2C[b]	-256,000	+217,000	-8,000	-786,000 (1990)	-559,000	-165,000 to -215,000

Note: af = acre-feet; afy = acre-feet per year

[a] Based on calculated storage changes over the extended drought of WY 1984 to 1991

[b] Based on calculated storage changes for years with very low reservoir release (WYs 1961 and 1990)

Pressure Subarea

Using the storage coefficient value of 0.036, as reported by DWR (2003), calculated storage change in the Pressure Subarea from 1944 to 2013 was about -110,000 af, averaging about -2,000 afy. Based on storage changes during the extended drought of WY 1984 to 1991, storage in the Pressure Subarea could be expected to decline by about 10,000 to 20,000 afy under continued dry conditions.

East Side Subarea

Calculated storage change in the East Side Subarea from 1944 to 2013 was about -333,000 af, averaging about -5,000 afy. Based on storage changes during the extended drought of WY 1984 to 1991, storage in the East Side Subarea could be expected to decline by about 25,000 to 35,000 afy under continued dry conditions.

Forebay Subarea

Calculated storage change in the Forebay Subarea from 1944 to 2013 was about -105,000 af, averaging about -2,000 afy. The pattern of storage change in the Forebay Subarea is quite dissimilar to that in the Pressure and East Side Subareas, being much closer to zero storage change over much of the period of record and appearing to be strongly affected by years of very low reservoir releases, which lead to very large storage declines in this Subarea. Based on storage changes during the extended drought of WY 1984 to 1991, storage in the Forebay Subarea could be expected to decline by about 10,000 to 15,000 afy under continued drought conditions. However, if reservoir releases are severely curtailed (as occurred in WYs 1961 and 1990), storage changes may be much greater in magnitude, on the order of 80,000 to 90,000 afy, or about 50 to 60 percent of annual pumping in the Forebay Subarea.

Upper Valley Subarea

Calculated storage change in the Upper Valley Subarea from 1944 to 2013 was about -12,000 af, averaging about -200 afy. The pattern of storage change is similar to that of the Forebay Subarea, with a similar apparent reliance on reservoir releases. Based on storage changes during the extended drought of WY 1984 to 1991, storage in the Upper Valley Subarea could be expected to decline by about 5,000 to 15,000 afy under continued drought conditions. However, if reservoir releases are severely curtailed, storage losses may be much larger, on the order of about 50,000 to 70,000 afy, or about 30 to 50 percent of annual pumping in the Upper Valley Subarea.

Zone 2C

Based on the numbers presented above, calculated storage change from 1944 to 2013 in all of Zone 2C was about -559,000 af, averaging about -8,000 afy. The pattern of storage change follows the pattern of the precipitation surplus, but is also affected by reservoir releases, which typically replenish approximately 35 percent of annual pumping as aquifer recharge. During years of exceptionally low reservoir releases, such as 1991, drought-related aquifer storage depletion is amplified.

Storage under continued dry conditions can be expected to decline by about 50,000 to 85,000 afy, comparable to past dry years. However, if reservoir releases are severely curtailed, as occurred in WYs 1961 and 1990, storage losses could be expected to be much larger, on the order of about 165,000 to 215,000 afy.

Over the period from 1959 to 2013 (the period for which groundwater pumping data are available and the reservoirs have been operating), the average reported annual pumping in Zone 2C was about 523,000 afy. During this same time period, the average annual storage change (calculated using groundwater head changes) was about -6,000 afy. An additional loss of storage due to seawater intrusion has occurred, and has been estimated at between 11,000 and 18,000 afy. This suggests that, overall, Zone 2C is out of groundwater balance by about 17,000 to 24,000 afy. The total calculated storage change over this period (not including seawater intrusion) was about -349,000 af, about 50 percent more than the storage change experienced prior to the beginning of operations of the reservoirs (about -210,000 af from 1944 to 1958), indicating that the reservoirs have greatly slowed storage losses in the Basin. However, the existing storage deficit has continued to grow over the period of record, and must be remedied before the deleterious effects of storage declines, such as seawater intrusion and the drying of wells, can be reversed. In addition, the volume of storage lost due to seawater intrusion must be better quantified.

State of the Basin – Water Supply in Zone 2C

Based on the calculations conducted for this project as discussed above, the Basin is currently out of hydrologic balance by approximately 17,000 to 24,000 afy. However, the estimated volume of groundwater in reserve (i.e. storage) is about 6.8 million acre-feet in the aquifers of the Pressure Subarea (Table ES-2), and the total volume of groundwater stored in Zone 2C is about 16.4 million acre-feet.

The goal of the water supply analyses presented in this report was to provide a postulation of how groundwater supply may change in the future should the current drought conditions continue. This was accomplished by assessing how and why groundwater head elevations and groundwater storage have changed in the past. Independent hydrologic variables (precipitation, groundwater pumping, reservoir releases, and streamflow) were compared with the groundwater head and storage changes to provide insight (or correlations) into which of these factors is driving these changes. Lastly, this study then provides professional opinions on the consequences of using more groundwater than the estimated yield on both the short-term Basin conditions and long-term sustainability.

An analysis of historical groundwater head elevation at a selected set of 25 locations indicated that, overall, groundwater head changes are correlated most strongly to the annual precipitation surplus in the Pressure, East Side, and Forebay Subareas. Head changes in the Upper Valley Subarea are not well-correlated to any independent variable, whereas the storage changes discussed above are statistically correlated to annual precipitation surplus.

Based on statistical correlations and comparison with the extended drought from WY 1984 to WY 1991, representative head changes at the Subarea scale could range from:

- -5.3 to -1.1 feet per year in the Pressure Subarea (for all three aquifers),
- -9.6 to -3.0 feet per year in the East Side Subarea,
- -5.6 to -1.8 feet per year in the Forebay Subarea, and
- -2.0 to +0.2 feet per year[2] in the Upper Valley Subarea.

Storage changes are also strongly affected by the occurrence of very low reservoir releases, which have historically resulted in storage declines. The cumulative storage loss over the period from 1944 to 2013, not including storage volume lost to seawater intrusion, was about 559,000 af for all of Zone 2C. About 40 percent of the storage loss occurred in the 14 years before Nacimiento Reservoir began releasing water, while about 60 percent occurred over the 55 years from 1959 to 2013. Estimates of storage decline in future dry years range from about 50,000 to 215,000 afy (Table ES-3), depending on the level of reservoir releases that occur. This storage loss, added to the existing storage deficit built up over the history of groundwater development in the study area, will exacerbate the problem of seawater intrusion in the Pressure Subarea.

State of the Basin – Seawater Intrusion

The water quality analysis in this study was undertaken to determine the extent of seawater intrusion into the coastal aquifers in 2013 and to analyze how it is likely to evolve in the future, should the current dry conditions continue into the coming years. The extent of seawater intrusion into the Pressure 180-Foot and Pressure 400-Foot Aquifers (Figures ES-6 and ES-7, respectively) in 2013 was not different from the extents mapped in 2011, indicating that the first two years of current drought did not have an apparent effect on the movement of the seawater intrusion front.

In assessing other markers of seawater intrusion, the sodium to chloride (Na/Cl) ratios[3] indicate that numerous wells on the landward side of the seawater intrusion front have likely been affected by seawater intrusion, even though the chloride concentration has not increased to the 500 mg/L level used by MCWRA to delineate seawater intrusion. Wells screened in the Pressure 400-Foot Aquifer that are several miles landward of the mapped seawater intrusion extent may have been impacted by seawater intrusion in the past. The landward seawater mixing with deeper groundwater can possibly be attributed to the vertical movement of groundwater from the Pressure 180-Foot Aquifer into the lower Pressure 400-Foot zone. Possible mechanisms include: a) natural leakage through areas of thin or absent aquitard between the two aquifers, b) via wells screened across both aquifers, and c) along faulty or compromised well casings acting as conduits.

The accelerated rate of seawater intrusion in 1984 can be attributed to the seven-year drought that started in 1984, the extent of which is depicted in Figures ES-6 and ES-7. The apparent rate of seawater intrusion in the period peaked from 1997 to 1999, despite the fact that the groundwater head elevations began to recover before this time from the declines experienced during the WY 1984 to 1991 drought. If this latent response to an extended drought is repeated in the Basin, water quality impacts stemming from the current drought may not manifest for several years. Chloride concentrations in affected wells increased by up to 100 mg/L from the beginning of the extended drought to 1999, and similar concentration changes may be expected in wells near the seawater intrusion front over the coming years.

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2 Positive head changes in individual wells are reflective of increases in head that occurred in select wells during the WY 1984 to 1991 drought, and are not reflective of the average head change in the Upper Valley Subarea during the same period. It is considered unlikely that continued drought conditions will result in an overall increase in head in the Upper Valley Subarea, although individual wells may see head increases, depending on local conditions.

3 Calculated from historical water quality data at selected monitoring wells

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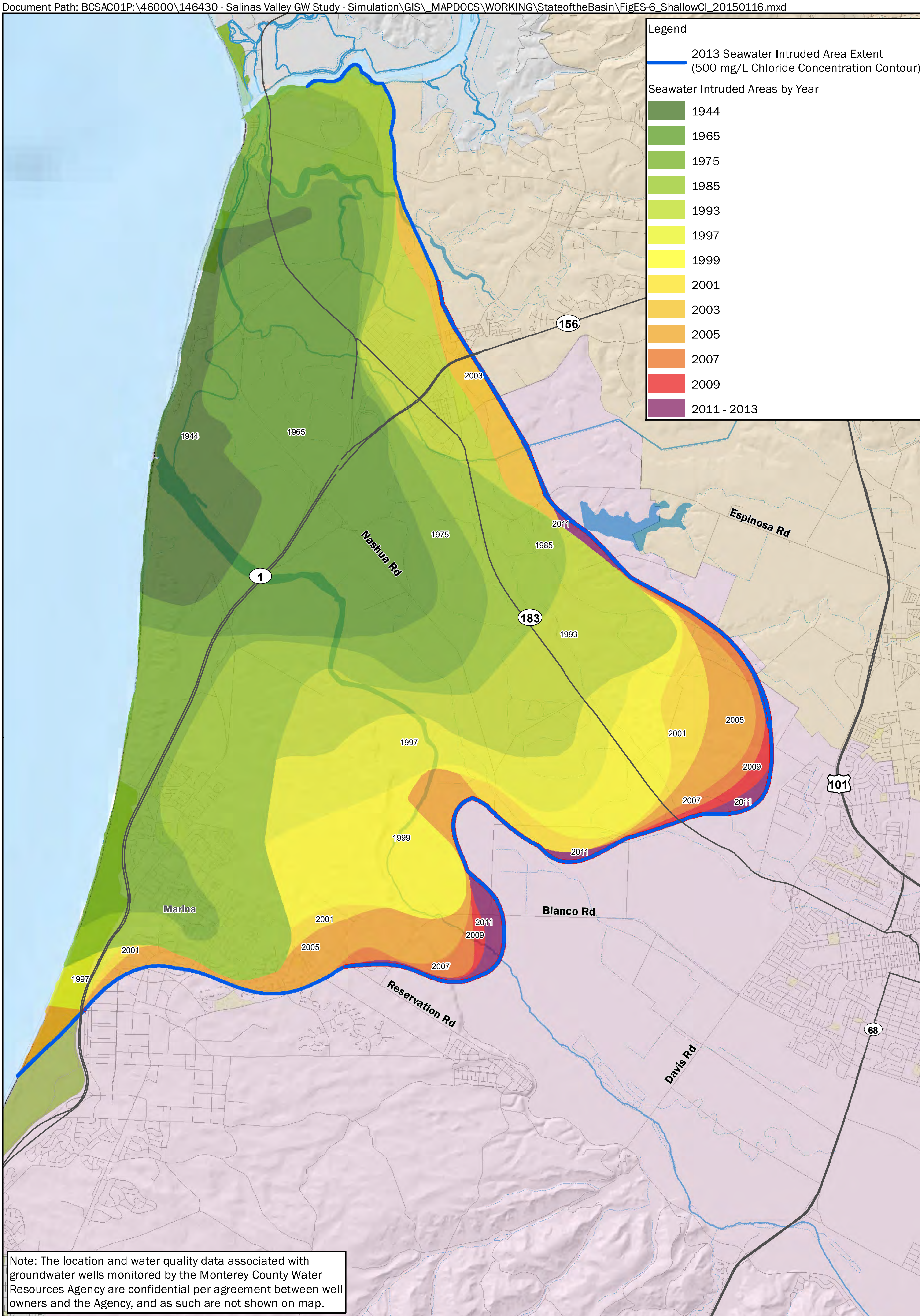

Note: The location and water quality data associated with groundwater wells monitored by the Monterey County Water Resources Agency are confidential per agreement between well owners and the Agency, and as such are not shown on map.

SITE

Salinas River Groundwater Basin Investigation

TITLE

Pressure 180-Foot and East Side Shallow/Both Aquifer 500 mg/L Chloride Contours - 2013

Brown AND Caldwell

DATE 01/16/15

PROJECT 146430

Figure ES-6

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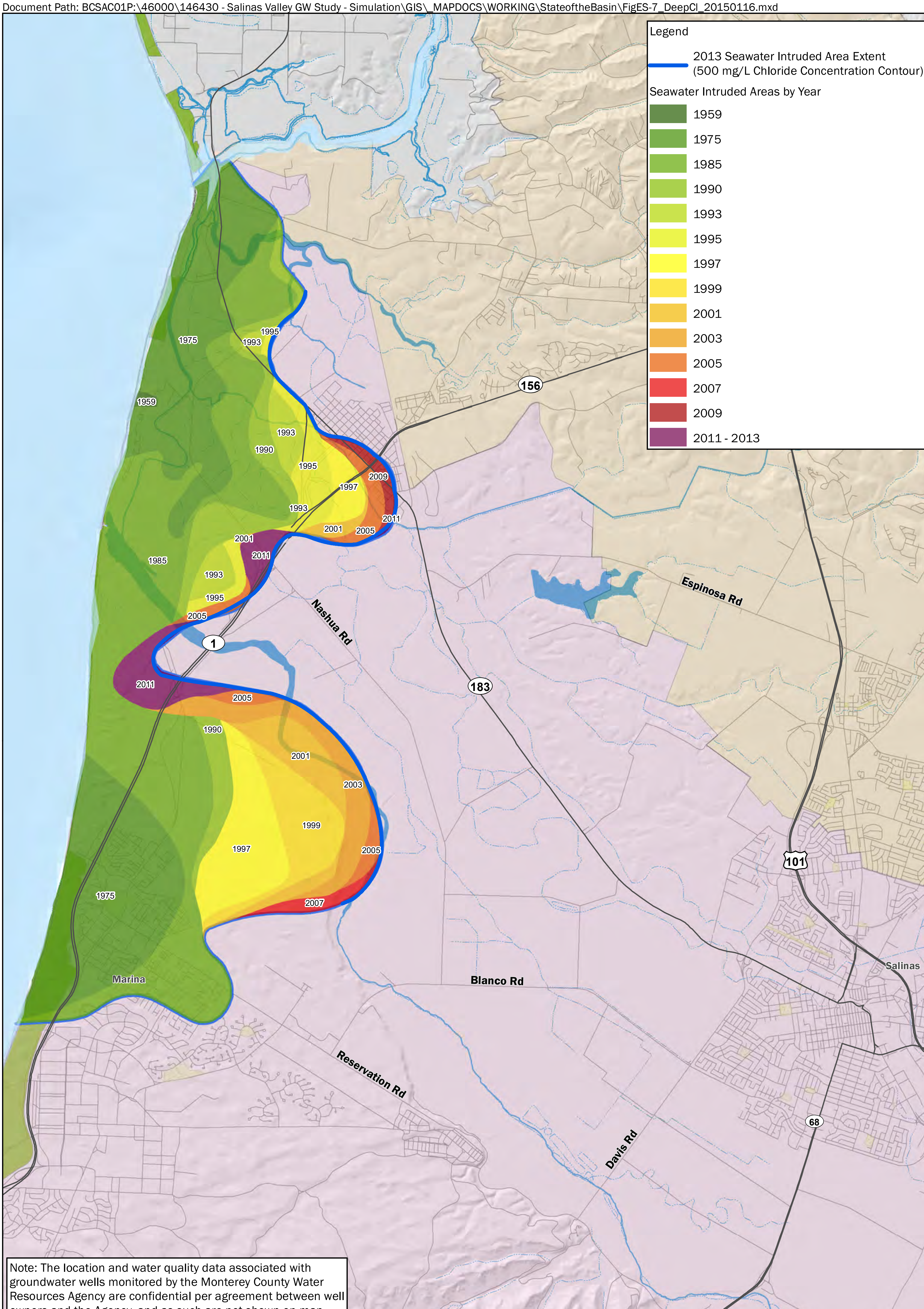

Note: The location and water quality data associated with groundwater wells monitored by the Monterey County Water Resources Agency are confidential per agreement between well owners and the Agency, and as such are not shown on map.

SITE

Salinas River Groundwater Basin Investigation

TITLE

Pressure 400-Foot and East Side Deep Aquifer 500 mg/L Chloride Contours - 2013

Brown AND Caldwell

DATE 01/16/15

PROJECT 146430

Figure ES-7

Options to Address Water Supply under Continued Drought Conditions

Based on the analyses discussed above, the Basin appears to be out of hydrologic balance. The average annual groundwater extraction for the four primary water-producing subareas that compose Zone 2C was about 523,000 afy from 1959 to 2013. The average annual change in storage was about -17,000 to -24,000 afy, including seawater intrusion. This implies that the yield for Zone 2C is on the order of about 501,000 to 508,000 afy; the deficit is essentially the storage change (loss) stated above. It is important to note that the Basin does have an estimated volume of groundwater in storage of about 16 million af (Table ES-2), which could represent a significant groundwater reserve – as compared to the current estimated storage loss of 17,000 to 24,000 afy – and could be used to offset temporary overdraft conditions in the future.

Based on the continued large storage declines in the East Side and Pressure Subareas (and resulting groundwater head declines and seawater intrusion), the current distribution of groundwater extractions is not sustainable. Seawater intrusion can account for up to 18,000 afy of the total storage loss of 24,000 afy. Sustainable use of groundwater can only be achieved by aggressive and cooperative water resources planning to mitigate seawater intrusion and groundwater head declines.

The consequences of no-action under continued drought conditions will be the imminent advancement of seawater intrusion within the next few years and the continued decline of groundwater head. Both of these conditions would necessitate the drilling of deeper groundwater wells to produce the quantity and quality of water needed for consumptive use and irrigation. The installation of deeper wells may not be feasible in some areas because of lower groundwater yield and water quality in the Pressure Deep Aquifer. A more sustainable and long term management practice would encourage a Basin-wide redistribution and reduction of groundwater pumping, which would require cooperative and aggressive resource management. The unsustainability of the current distribution of groundwater extractions has long been recognized by various investigators, and Basin-wide redistribution and reduction of pumping have been recommended previously (e.g. DWR, 1946).

Technical Option 1

The large storage declines that have occurred in the Basin in the past, especially in the East Side Subarea, have created a significant landward groundwater head gradient that must be reversed before seawater intrusion can be halted. Reduction of pumping in the Pressure and East Side Subareas could help mitigate some of the anticipated effects of extended drought on groundwater storage and water quality in the study area. Shifting of pumping to areas farther away from the coast would also be helpful, as long as it is shifted south of the current head trough (Figure ES-3) that exists in the East Side Subarea. While not currently consistent with County Policy, shifting pumping to areas that are both south of the seawater intrusion zone and hydraulically connected to the Salinas River does represent a physical option for addressing seawater intrusion.

DWR (1946) recommended that pumping be curtailed in the Pressure and East Side Subareas and substituted with extraction in the Forebay and Upper Valley Subareas, which are strongly connected to (and interact with) the Salinas River. Yates (1988) performed a numerical modeling analysis of the Basin, with a specific focus on the effect of pumping changes on seawater intrusion, and calculated that seawater intrusion could be cut by more than half (from about 18,000 to 8,000 afy) over a 20-year period by decreasing pumping in the Pressure and East Side Subareas by 30 percent[4]; whereas, reducing pumping in the Forebay and Upper Valley Subareas had minimal to no effect on seawater intrusion.

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4 Note that Yates (1988) assumed an agricultural pumping rate of 512,200 afy, based on the results of a land use survey performed in the Salinas Valley in 1976. Recent pumping rates are slightly lower (around 500,000 afy), in part due to the operation of the Monterey County Water Recycling Projects.

Technical Option 2

The shifting of some pumping from the Pressure 180-Foot and Pressure 400-Foot Aquifers to the Pressure Deep Aquifer would reduce the storage deficit in the shallower aquifers; however, this would necessarily lead to head declines in the Pressure Deep Aquifer. Unlike the Pressure 180-Foot and Pressure 400-Foot Aquifers, it is uncertain if the Pressure Deep Aquifer is hydraulically connected to the ocean in Monterey Bay, so it is not known whether this pumping shift would lead to the onset of seawater intrusion into the Pressure Deep Aquifer. Also unknown is the likelihood of localized interaquifer seawater mixing between the Pressure 400-Foot Aquifer and the Pressure Deep Aquifer. Hence, this Management Option requires more investigation to determine its feasibility.

Evaluation of Potential Solutions

The numerical modeling analysis to be performed as the second part of this Basin Investigation will consider the effects of various management decisions on the water supply and water quality in the study area. The primary questions to be assessed for each scenario are: 1) what will be the rate of groundwater head decline; and, 2) what will be the rate of increase in acreage with impaired water quality due to the advancement of the seawater intrusion front. Based on this analysis, an assessment of the economic effects of 1) and 2) due to water supply wells becoming inoperable (i.e. dry), and the further loss of aquifer storage capacity due to the advancement of seawater intrusion can be conducted.

The numerical model should be used to predict groundwater head declines under different management scenarios, including implementing targeted pumping rates and optimizing the distribution of pumping. Future declines in groundwater head must be evaluated by simulated groundwater conditions so that “trigger (groundwater) head levels” can be used as a measure of safe yield and an early alert system as part of Basin Management Objectives. That analysis will extend the discussions and conclusions presented in this report.

EXHIBIT 'B'

Simulated effects of ground-water management alternatives for the Salinas Valley, California

Water-Resources Investigations Report 87-4066

By: E.B. Yates

https://doi.org/10.3133/wri874066

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Abstract

A two-dimensional digital groundwater flow model was developed to analyze the geohydrology of the groundwater basin in the Salinas Valley. The model was calibrated for steady-state and transient simulations by comparing simulated with measured or estimated inflows, outflows, and water levels for 1970-81. Preliminary estimates of hydraulic properties and some inflows and outflows were adjusted during model calibration. The simulated mean annual water budget for the basin was 559,500 acre-ft/yr each of outflow and inflow. Inflow components consisted of Salinas River recharge (38.3%), percolation of irrigation water (34.0%), small stream and Arroyo Seco recharge (20.9%), seawater intrusion (3.4%), and other sources (3.4%). Outflow components consisted of agricultural pumpage (91.5%), municipal pumpage (4.0%), and riparian phreatophyte evapotranspiration (4.5%). For the steady-state calibration, 70% of the simulated water levels were within 9 ft of measured water levels for 1970-81. A sensitivity analysis determined the overall stability of the model results. The model input variable that probably contributes most to the uncertainty of the results is the quantity of groundwater recharge contributed by irrigation-return flow to the unconfined aquifer. A 15% change in the estimate of this variable causes an 11% change in the simulated river-seepage rate and a 6% change in the simulated seawater intrusion rate. The calibrated model was used to investigate several water resources management alternatives. Projected pumpage increase at a rate of 1%/yr for 20 yr caused declines in mean annual water levels of 10 to 20 ft in some areas and an increase in seawater intrusion from 18,900 to 23 ,600 acre-ft/yr. Pumpage decreases in the coastal area decreased seawater intrusion more effectively than pumpage decreases farther inland. When pumpage was decreased uniformly throughout the valley, the decrease in seawater intrusion was only one-fourteenth the decrease in pumpage. Simulations indicated that replacement of groundwater pumpage with imported surface water in a 9,000 acre service area near the coast would result in a decrease in seawater intrusion equaling nearly one-half the quantity of imported water. (Author 's abstract)

Additional publication details

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August 12, 2021

VIA E-MAIL – BOARD@SVBGSA.ORG

Board of Directors
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924

RE: Preliminary Comment on Draft GSPs for the Eastside, Forebay, Langley, Monterey and Upper Valley Subbasins of the Salinas Valley Basin

Dear Chair Pereira and Members of the Board of Directors:

This office represents the Salinas Basin Water Alliance ("Alliance"), a California nonprofit mutual benefit corporation formed to preserve the viability of agriculture and the agricultural community in the greater Salinas Valley. Alliance members include agricultural businesses and families that own and farm more than 80,000 acres within the Salinas Valley. Many Alliance members have been farming in the Salinas Valley for generations. As such, the Alliance has a significant interest in the long-term sustainability of the Salinas Valley Basin.

The Alliance greatly appreciates the difficult work this Board, together with the Salinas Valley Basin Groundwater Sustainability Agency (GSA) staff and consultant team, has undertaken to implement the Sustainable Groundwater Management Act (SGMA) in Monterey County, including the time-consuming but extremely beneficial engagement with all stakeholders. The Alliance applauds the Salinas Valley Basin GSA's recent success in obtaining approval of the Department of Water Resources (DWR) for the first groundwater sustainability plan (GSP) required to be prepared for the six Salinas Valley Subbasins within the jurisdiction of the Salinas Valley Basin GSA. Further, the Alliance acknowledges and wholeheartedly supports the Board's commitment to coordinate and implement all of the GSPs for the Salinas Valley Basin within its jurisdiction in an integrated manner pursuant to the proposed Integrated Sustainability Plan, or as it may otherwise be titled.[1] It is with this objective—integrated groundwater management—in mind that the

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[1] See Joint Exercise of Powers Agreement Establishing the Salinas Valley Basin GSA § 2.2 ("The purpose of Agency is to . . . develop[], adopt[], and implement[] a GSP that achieves groundwater sustainability in the Basin."); § 4.1(c) (The JPA has the power to "develop, adopt and implement a GSP for the Basin.); § 4.1(l) (The JPA has the power to "establish and administer projects and programs for the benefit of the Basin."); Salinas Valley Groundwater Basin 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan [180/400 GSP] at 9-10 ("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."); 180/400 GSP at 10-14 ("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 . . . The implementation

Alliance offers these preliminary comments on the draft GSPs for the Eastside, Forebay, Langley, Monterey and Upper Valley Subbasins.[2]

As this Board well knows, SGMA not only requires the Salinas Valley Basin GSA to develop a GSP for each priority subbasin within its jurisdiction to ensure the long-term sustainability of those subbasins, but it also mandates that the GSA consider the impacts each GSP may have on the ability of adjacent subbasins to achieve their sustainability goal.[3] In enacting SGMA, the legislature intended to provide for the sustainable management of all groundwater basins and expressly provided for the coordination of management between and among basins.[4] Any GSP that interferes with an adjacent basin's sustainability goal cannot satisfy SGMA.[5] Moreover, in the event the GSPs for the subbasins disproportionately allocate the burden of sustainability across the Salinas Valley Basin, they could impair groundwater users' rights in and to the Salinas Valley Basin in violation of SGMA and common law water rights.[6]

The Alliance's preliminary review of the draft GSPs suggests that there are significant data gaps and uncertainty with respect to the quantification of flows between subbasins within the Salinas Valley Basin that should be addressed.[7] Specifically, the Alliance is concerned that the existing water budget analyses in the draft GSPs may not provide a complete picture of the downgradient impacts caused by groundwater pumping. Accordingly, the Alliance requests that the Salinas Valley Basin GSA conduct additional simulations with the Salinas Valley Integrated Hydrologic Model (SVIHM) that are specifically focused on the issue of inter-subbasin groundwater flows, as more specifically described in aquilogic's August 11, 2021 memorandum attached to this letter. In light of the fact that the Integrated Sustainability Plan appears to have been delayed until after completion of the subbasin GSPs, the requested additional simulations should be conducted prior to the Salinas Valley Basin GSA's adoption of the subbasin GSPs.

The requested additional model simulations are consistent with and support SGMA's and DWR's requirements that all GSPs be based on the best available science.[8] They will enable an understanding of

schedule reflects the significant integration and coordination needed to implement all six GSPs in a unified manner."); see also Salinas Valley Groundwater Basin Draft Upper Valley Aquifer Subbasin Groundwater Sustainability Plan at 10-16; Salinas Valley Groundwater Basin Draft Eastside Aquifer Subbasin Groundwater Sustainability Plan at 9-1, 10-7, 10-8, 10-16; Salinas Valley Groundwater Basin Draft Forebay Aquifer Subbasin Groundwater Sustainability Plan at 2-4, 9-2, 9-4, 10-7, 10-9, 10-17; Salinas Valley Groundwater Basin Draft Langley Aquifer Subbasin Groundwater Sustainability Plan at 2-4, 9-1, 9-4, 10-8, 10-9, 10-16.

[2] Following publication of the final draft GSPs for these subbasins, the Alliance may have additional comments.

[3] Wat. Code § 10733(c).

[4] Wat. Code §§ 10720.1(a); 10727; 10727.6

[5] See Wat. Code § 10733(c); 23 Cal. Code Regs. §§ 350.4, 351(h), 354.8(d), 354.18(b)(3), (c)(2)(B), (e), 354.28(b)(3), 354.44(a)(6), (c), 355.4(b)(7), 356.4(j), 357.2(b)(3); DWR, Monitoring Networks and Identification of Data Gaps BMP at pp. 6, 8, 27; DWR, Water Budget BMP at pp. 7, 12, 16, 17, 36; DWR, Modeling BMP at pp. 21-22; DWR, Sustainable Management Criteria BMP at pp. 9, 31.

[6] Wat. Code 10720.1(b) (declaring legislature's intention to preserve the security of water rights in the state to the greatest extent possible consistent with the sustainable management of groundwater); see also Water Code §§ 10720.5(b).

[7] 23 Cal. Code Regs. § 351.

[8] See 23 CCR § 354.18 ("A quantitative assessment of the historical water budget, starting with the most recently available information and extending back a minimum of 10 years, ***or as 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." (emphasis added).)

the amount of Basin-wide groundwater discharge that is and has been captured by pumping, which, depending on the results, may require modification of each subbasin's proposed water budget. In the absence of this analysis, there is a significant level of uncertainty in the water budgets that has the potential to undermine the adequacy of the GSPs and also to impair the Salinas Valley Basin GSA's ability to achieve its sustainability goal in each subbasin and throughout the Salinas Valley Basin within its jurisdiction.[9]

The Alliance has endeavored to make this comment and request at the earliest opportunity to allow the Salinas Valley Basin GSA sufficient time to conduct the additional SVIHM simulations. The Alliance does not wish to delay the successful completion and adoption of the subbasin GSPs. Rather, the Alliance anticipates that the additional simulations can feasibly be accomplished and incorporated into the draft GSPs consistent with the Salinas Valley Basin GSA's goal of adopting the subbasin GSPs in accordance with SGMA's deadlines.

The Alliance appreciates the Board's careful consideration of this issue and urges the Board to direct the Salinas Valley Basin GSA staff and consultant team to undertake the requested further analyses and incorporate the results into the draft GSP for each of the subbasins. The Alliance strongly believes that removing existing uncertainties with respect to inter-subbasin flows is a critical component to ensuring both transparency in the GSP development process and equity in the resulting plans, both of which are essential to promoting healthy Basin-wide dialogue and collaboration in obtaining sustainable groundwater management of the Salinas Valley Basin within the Salinas Valley Basin GSA's jurisdiction.

As the Board may direct, the Alliance would welcome the opportunity to discuss the requested additional consideration of inter-subbasin flows in more detail with the Salinas Valley Basin GSA's staff and consultant team.

Respectfully submitted,

Stephanie Osler Hastings

Attachment: August 11, 2021 aquilogic, inc. memorandum

cc: Donna Meyers, Senior Consultant / General Manager (meyersd@svbgsa.org)
Emily Gardner, Senior Advisor / Deputy General Manager (gardnere@svbgsa.org)
Derrik Williams, Montgomery & Assoc. (dwilliams@elmontgomery.com)
Leslie Girard, Monterey County Counsel (GirardLJ@co.monterey.ca.us)

[9] DWR's June 3, 2021 determination that it does not appear that the GSP for the 180-400 Aquifer Subbasin will adversely affect the ability of an adjacent basin to implement its GSP or impede achievement of sustainability goals in an adjacent basin does not mean that the Salinas Valley GSA should assume that DWR will reach the same conclusion with respect to the remaining subbasin GSPs.

aquilogic, Inc.
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August 11, 2021

MEMORANDUM

To: Stephanie Hastings, Brownstein Hyatt Farber Schreck (BHFS)
Sent via email: SHastings@bhfs.com
From: Robert H. Abrams, PhD, PG, CHg, Principal Hydrogeologist, aquilogic, Inc.
Anthony Brown, CEO & Principal Hydrologist, aquilogic, Inc.

Subject: Assessment of Groundwater Flows between Subbasins of the Salinas Valley Groundwater Basin (SVGB)
Project No.: 018-09

Aquilogic, Inc. (**aquilogic**) is pleased to provide this memorandum on behalf of our mutual client, the Salinas Basin Water Alliance (SBWA), outlining the justification and necessity for conducting additional simulations with the Salinas Valley Integrated Hydrologic Model (SVIHM),[1] which is being used by the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) for groundwater sustainability plan (GSP) development.

Aquilogic hypothesizes that pumping has captured significant portions of groundwater discharge that would otherwise migrate as underflow from the Upper Valley Subbasin to the Forebay Subbasin, from the Forebay Subbasin to the 180/400-Ft Aquifer Subbasin and East Side Subbasin, and potentially from the 180/400-Ft Aquifer Subbasin to the Monterey Subbasin and the Salinas River. Our primary concern is that the existing water budget analyses in at least three of the SVBGSA's draft GSPs may not provide a complete picture of the downgradient impacts caused by groundwater pumping.[2]

It should be noted that groundwater sustainability was a pertinent issue for water managers long before the advent of California's Sustainable Groundwater Management Act. There is

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[1] The SVIHM is a provisional, unpublished model not currently available to the general public.

[2] Bredehoeft, J.D., Papadopulos, S.S., and Cooper, H.H. Jr. (1982). The water budget myth. *In* Scientific Basis of Water Resource Management, Studies in Geophysics, 51-57. Washington, D.C. National Academy Press;
Bredehoeft, J.D. (1997). Safe yield and the water budget myth. Ground Water, Vol. 35, No. 6, p. 929;
Bredehoeft, J.D. (2002). The water budget myth revisited: why hydrogeologists model. Ground Water, Vol. 40, No. 4, p. 340-345;
Bredehoeft, J.D. and Durbin, T. (2009). Groundwater development: the time to full capture problem. Ground Water, Vol. 47, No. 4, p. 506-514;
Bredehoeft, J.D. (2011). Monitoring regional groundwater extraction: the problem. Ground Water, Vol. 49, No. 6, p. 808-814.

ample support in the groundwater literature for considering multiple aspects of sustainability and undesirable results, including economic and social impacts and the contravention of water rights.[3]

ADDITIONAL SIMULATIONS

As stated in "SVIHM Frequently Asked Questions,"[4] one of the many questions that can be addressed by a model is: How much groundwater flows between subareas? Clearly, the SVIHM developers recognized the importance of this question and anticipated that it would be asked. On behalf of the SBWA, **aquilogic** requests that the SVBGSA utilize the SVIHM to conduct additional simulations that are specifically focused on the issue of inter-subbasin groundwater flows. The requested simulations will enable an improved understanding of the amount of Valley-wide groundwater discharge that is and has been captured by pumping, which may be needed to ensure the adequacy of the GSPs for each of the subbasins and important to their implementation.

Aquilogic recommends a type of "superposition" analysis, in which the results of two simulations are compared. In such an analysis, the two simulations are identical except for the process under examination, in this case groundwater pumping. Pumping would be selectively turned off in one simulation and left as currently configured in the SVIHM in the other simulation. A similar superposition analysis was done to assess pumping-induced streamflow depletion, as described in Chapter 5 of the GSPs for the Forebay Subbasin and the East Side Subbasin.

The inter-subbasin flows would then be compared, which would semi-quantitatively estimate the impact of pumping, within the limiting assumptions and uncertainties associated with the SVIHM. Ideally, the analysis should be conducted with the initial conditions of the no-pumping scenario representing a "full" SVGB. The analysis would provide an estimate of the impact of pumping on inter-subbasin groundwater flows.

Specifically, using the calibrated SVIHM historical model, **aquilogic** recommends the following outline for conducting simulations, the details of which would be worked out in consultation with the SVBGSA:

1. Develop reasonable initial conditions for the hydraulic head distribution for the no-pumping simulation. This entails turning off all pumping in the model domain while

[3] Todd, D.K. (1959). Groundwater Hydrology. Wiley, New York, 336 p.;
Domenico, P. (1972). Concepts and Models in Groundwater Hydrology. McGraw-Hill, New York, 405 p.;
Freeze, R.A. and Cherry, J.A. (1979). Groundwater. Prentice-Hall, 604 p.;
Alley, W.M., Reilly, T.E., and Franke, O.L. (1999). Sustainability of ground-water resources. U.S. Geological Survey Circular 1186, 79 p.

[4] https://www.co.monterey.ca.us/home/showdocument?id=31292

leaving all other inflows and outflows unchanged. Because the time for simulated water levels to recover may be longer than the SVIHM simulation period of 51 years (1967-2018), the simulation may have to be run multiple times before an average steady-state condition can be achieved. In this case, the hydraulic head distribution at the last time step of the previous simulation would be used as the initial condition of the subsequent simulation. This process would be repeated until the hydraulic head distribution at the last time step of a subsequent simulation is substantially identical to the last time step of the previous simulation. This would indicate that an average steady-state condition is being simulated. We assume here that the surface water inflows and reservoir releases for the 1967-2018 period would be sufficient to eventually "refill" the SVGB after several model runs.

2. When the average, no-pumping steady-state condition has been achieved with the modified SVIHM, simulated groundwater flow should occur from the East Side Subbasin to the 180/400-Ft Subbasin, and from the 180/400-Ft Subbasin to Monterey Bay, conditions that are now reversed.

3. From the final results of the no-pumping simulation, in which average steady-state conditions have been achieved, compute the inter-subbasin groundwater flows between each adjoining subbasin. Compare these flows with the inter-subbasin flows from the historical, unmodified SVIHM. The differences in inter-subbasin flows and induced recharge from the surface water system represent a semi-quantitative estimate of the impact of Valley-wide pumping.

4. Additional superposition analyses can be conducted to assess the impact of one subbasin's pumping on basin-wide groundwater levels and inter-subbasin groundwater flows, by turning on pumping in one subbasin at a time in the modified SVIHM (and leaving pumping turned off in all other subbasins) and comparing the results to the scenario with no pumping throughout the SVGB. The differences in inter-subbasin flows and groundwater levels represent a semi-quantitative estimate of the impact of one subbasin's pumping on the other subbasins.

Tuesday, August 24, 2021

Salinas Valley Basin Groundwater Sustainability Agency

SVBGSA Public Comments Form

Name	Robert Jaques
Organization	Seaside Groundwater Basin Watermaster
Email Address	bobj83@comcast.net
Subbasin	Monterey
Chapter	9
Section	Various
Page Number	Various
Comments	See attached table of comments
File Upload	docx Comments on Draft Chapter 9 8-23-21.docx

Draft Chapter 9 – Comments from Seaside Basin Watermaster 8-23-21

Page	Section	Comment
9-5	9.1	In the next to last sentence in the first para of this Section please insert after the words “Corral de Tierra Management Areas” the words “and the adjacent Seaside Subbasin”.
9-9	Table 9-1	Multi-basin project R3 states that multi-basin benefits have not been quantified. Without some indication of the level of benefit a Project may be able to provide, decision-makers will not know which ones are the most desirable projects to pursue.
9-9 thru 9-15	Table 9-1	General comment and recommendation: Many of the Projects and Management Actions do not have estimated Costs or estimated Unit Costs provided for them. Recognizing that some projects are essentially only conceptual at this point, nevertheless, an effort should be made, even if it is as simple as “rule of thumb,” to estimate what the range of unit costs might be for each project. Without estimated costs it will be impossible for an operating budget for the GSP to be developed, or for fees or water-use related charges to be developed. As was commented on, and I believe correctly so, by some in the SWIG when Derrik presented a summary of the comments received from the TAC for the SWIG when they discussed various projects that would help mitigate seawater intrusion, it is appropriate to do a “reality check” on projects in terms of getting a sense of how financially feasible they may be. Something like a cost-benefit ratio for example. Without sufficient estimated costs and benefits for each project, time and effort will be wasted evaluating projects that have such high cost-to-benefit ratios that they should be dropped out of the Project list early-on. As a corollary, years ago when projects that could help to solve the water-shortage problem of the Monterey Peninsula were being discussed, and no project was supposed to be rejected out-of-hand even if it seemed extremely unlikely, a project to tow icebergs from the Arctic to Monterey Bay so the water could be melted and used as a water supply for the Peninsula was proposed. Time and effort was spent coming to the conclusion that it was simply economically and/or logistically infeasible. The same can be said about a number of the proposed projects which have very high implementation costs and very little water-savings benefit, resulting in very high unit costs. I recommend that a separate table showing just: • P/MA # • Project Name • Quantity of water that will be saved from being pumped • Implementation and O&M costs • Unit Cost

Page	Section	Comment
		• A priority ranking column (which would be filled in by the GSP Committee based on the data in the other columns of this table)
9-12	Table 9-1	The Pumping Allocation and Control Management Action will almost certainly be an action/project that will have to be implemented to achieve Corral de Tierra subbasin sustainability. This Management Action will have to achieve the greatest amount of pumping reduction, since all of the other Projects and Management Actions combined, especially after those that are financially infeasible are eliminated, will fall far short of achieving the necessary pumping reduction. Therefore, instead of saying "Decreased extraction; range of potential benefits" in the "Project Benefits/ Quantification of Benefits" column, an amount of pumping reduction should be shown for this Management Action, so the reader can see clearly the magnitude of pumping allocation and control that will be needed.
9-18	9.3.4	In the last para of this Section it mentions that capital costs were annualized over 25 years. The interest rate for this calculation should be stated, and for what revenue source(s) that rate pertains.
9-27	9.4.2.2	The first sentence of this Section states that 15,000 AFY of desalinated water could be produced for the "Salinas Valley," and the Section goes on to say that a portion of this would go to the Monterey Subbasin. Since the Seaside Subbasin is also part of the Salinas Valley Groundwater Basin, and since this Section is discussing a "Regional Municipal Supply Project," language should be added saying that a portion of the water supply might also go to the Seaside Subbasin which is also in need of a supplemental water source to achieve sustainability.
9-51 through 9-54	9.4.6	This Section discusses the use of recycled water. Thought needs to be given to the limitation on the volume of recycled water that M1W's Salinas Valley Reclamation Plant or its Pure Water Monterey AWT Plant can produce. The feedwater source for both of those plants is M1W's Regional Treatment Plant, and its flow is currently only about 19 MGD. Water conservation and other factors have nearly eliminated increases in wastewater flows to that plant in recent years. With the CSIP being proposed for expansion in the 180/400-foot Aquifer Subbasin's GSP, with a Pure Water Monterey Expansion Project being proposed for the Seaside Subbasin, and now with the Monterey Subbasin GSP proposing obtaining recycled water from M1W, there appears to be a real risk that the amount of recycled water that can be produced may be over-subscribed.
9-52	9.4.6	The PWM Project currently is only sized to deliver 3,500 AFY to the Seaside Subbasin, not 3,700 AFY as stated in the 4th para on this page. Also on this page it states that the AWPF <u>will</u> be expanded. The word "may" should be used in lieu of the word "will" as there are still obstacles to the proposed expansion project.
9-53, 9-54	9.4.6	On these pages it mentions "a MCWD expansion of the AWPF." That should read "a M1W expansion of the AWPF."
9-54	9.4.6	The last para in this Section on this page starts out with "The current operation frequency of MCWD's productions generally ranges from 10% to 40%." Please clarify what this statement means.

Page	**Section**	**Comment**
9-60	Figure 9-7	The RUWAP pipeline is shown extending down General Jim Moore Boulevard clear through Del Rey Oaks and then easterly into Ryan Ranch. Please verify that this pipeline has already been constructed that far. I was of the understanding that it only went part of the way down General Jim Moore and not even as far as South Boundary Road.
9-65	9.4.8	The para in the middle of this page states in part "…if pumping needs to be reduced to meet sustainable yield…". It is not "if" but simply "will" need to be reduced. Calculations in earlier GSP chapters identify the estimated sustainable yield, and the amount of overpumping that will have to be eliminated to achieve sustainable yield. In addition, sustainability will also necessitate raising groundwater levels in this Subbasin, not just having extractions equal natural replenishment. The reader should clearly be informed that pumping reductions will be necessary, and not misled into thinking that somehow the other Management Actions and Projects will achieve sustainability. In this Section (or elsewhere in this Chapter) there should be a discussion of how users will be able to achieve the necessary level of pumping reduction and still meet the water demands of their customers. This is a problem already being faced in the Seaside Subbasin, specifically with the City of Seaside's Municipal Water System. That System's only source of water is groundwater from the Seaside Subbasin. If further pumping reductions affecting that Water System were to be imposed, it would be unable to supply its customers water needs.
9-65	9.4.8	In the bottom para on this page it states in part "If the sustainable yield is lower than current extraction…". Earlier chapters in this GSP have clearly shown that current extractions exceed the estimated sustainable yield. So it is not "if" the sustainable yield is lower than current extraction. This sentence should be rewritten to correct this misstatement, and to not leave the reader with the impression that pumping reductions may not be necessary.
9-66	9.4.8.2	The second para in this Section states that the network of monitoring wells is monitored by MCWRA. The Seaside Basin also monitors wells which my earlier comments (on Chapter 8) recommended be included in the monitoring well network for the Corral de Tierra Subbasin. Language should be added here to point this out.
9-67	9.4.8.8	The word "Subbasin" is missing after the word "Monterey" in the first sentence of the para at the bottom of this page.
9-68	9.4.9	I commented at one of the earlier GSP Committee meetings that any reduction in flows in any of the creeks in the Corral de Tierra Subbasin that flow westward toward the Seaside Subbasin might reduce the natural replenishment of the Seaside Subbasin. This needs to be pointed out in this Section, and that a hydrogeological evaluation of the impacts of any such projects be prepared to determine if such reductions would adversely impact the Seaside Subbasin.
9-78	9.4.11	The second sentence in this Section on this page states in part "This water will be disinfected tertiary levels…". It would be clearer and more correctly stated that "This water will be treated to a tertiary level…".

Page	Section	Comment
9-102	9.5.6	The last sentence in the first para on this page mentions effects on groundwater levels in the Monterey Subbasin. Wording should be added to this sentence that effects on groundwater levels in the adjacent Seaside Subbasin should also be evaluated using this model.
9-103	9.5.7	This Section includes a statement that "SGMA does not allow metering of de minimis well users…". SGMA Section 5202 states that the requirement to file an annual report of groundwater extraction does not apply to de minimis extractors. It says nothing about "not allowing metering", nor does it say anything that would prevent a jurisdiction, such as Monterey County or the Monterey County Water Resources Agency, from imposing such a reporting requirement separate from the requirements of SGMA. This language should be corrected to more accurately state what SGMA says. Section 10730(a) of SGMA states in part "A groundwater sustainability agency shall not impose a fee…on a de minimis extractor unless the agency has regulated the users pursuant to this part." It is not clear to me what "regulated the users pursuant to this part" means. It would be good to have a legal review made of the issue of imposing a requirement for de minimis extractors to file annual extraction reports to see if such reporting could be required and not be in conflict with SGMA. This could be very helpful in managing the Subbasin, since there are so many de minimis extractors.

Draft Chapter 6 – Comments from Seaside Basin Watermaster 9-6-21

Page	Section	Comment
6-5	6	Just above the bullet list on this page it states there are Three budget time periods, however the chart below the bullet list shows Four time periods. I did not see the value of showing the "Historical Model" bar in the chart since it seemed like only the 15-Year Historical bar was used. Also, I did not understand footnote number 2 on this page – please clarify what is meant by a "five-year equilibration period".
6-10	6.1	The last bullet on this page discusses pumping from various wells. Wouldn't pumping from wells in the Seaside Basin affect ground water levels, and therefore need to be included in the MBGWFM due to the hydrogeologic interconnection between the Seaside Basin and both subareas of the Monterey Subbasin?
6-11	6.1.1	Same comment as on page 6-10 pertaining to Pumping Records.
6-14	6.2.2	Same comment as on page 6-10 pertaining to Groundwater Pumping.
6-18	6.3.3	Don't understand why there are three bullets shown on this page with each bullet saying the same thing..
6-20	Table 6-1	Footnote (a) would be good to add to each of the tables in the Appendix in which water budgets are shown, to clarify what a positive or negative value means.
6-21 6-32 6-33 6-44 6-46 6-47	Figure 6-4 Figure 6-6 Section 6.4.3.1.3 Table 6-4 Table 6-6 Table 6-7	Under future anticipated pumping conditions, the outflow from the Corral de Tierra subarea into the Laguna Seca Subarea of the Seaside Subbasin shown in these Figures and discussed in these Sections is projected to start reversing in the future as groundwater levels in the Corral de Tierra continue to fall. The reversal would result in water starting to flow out of the Laguna Seca Subarea and into the Corral de Tierra subarea. This was the finding of Watermaster modeling performed by HydroMetrics in 2016 in their Technical Memorandum dated January 27, 2016 titled "Groundwater Flow Divides within and East of the Laguna Seca Subarea." That report is contained in Attachment 12 of the Watermaster's 2016 Annual Report which can be viewed and downloaded at this URL: http://www.seasidebasinwatermaster.org/Other/2016%20Final%20Annual%20Report%2012-8-16a.pdf. This should be discussed and addressed in Chapter 6 of the GSP.
6-22	6.4.1.1.2	In the 2nd para of this Section the typo "and" should be corrected to read "an."
6-23	6.4.1.1.3	In the upper bullet of the group of bullets in the center of this page it mentions an inflow from the Seaside Subbasin into the Monterey Subbasin, the majority of which is between the Seaside Subbasin and the Marina-Ord subarea of the Monterey Subbasin. There is a flow divide between that subarea and the Seaside Subbasin which I understood would prevent this. That should be discussed in this Section. This comment also pertains to Table 6-2, Also in this same para the typo "and" should be corrected to read "an."

Page	Section	Comment
6-33	6.4.3.1.2	In this Section there are typos in the 3rd sentence which does not make sense. The statement in this Section regarding a significant amount of pumping data being missing because de minimis pumpers do not have to report pumping data provides support to my comment made on the Comment website and at the August 25th GSP Committee meeting that a legal look should be made into whether/how de minis pumping reporting could be required.
6-41	6.5.2.2	An explanation is warranted regarding the statement in this Section that "No project scenarios were run for the Corral de Tierra area at this time."
6-42	6.5.3	The top para on this page discusses the potential for expansion of the seawater intrusion front in the Monterey Subbasin. This should be considered a significant concern and should be discussed in the Plan Implementation Chapter 10.
6-55	6.5.5	In the 1st sentence of the 2nd para of this Section the word "scenario" should be inserted after the word "project."
6-60	6.6.1	I concur with the discussion on this page that "…simply reducing pumping to within sustainable yield is not proof of sustainability under SGMA, which must be demonstrated by avoiding undesirable results for all 6 sustainability indicators." I also agree with the statement at the bottom of this page that "…confirmation that these quantities could be extracted without inducing seawater intrusion has to be verified." To augment this discussion it would be good to add some language explaining that in order to prevent inducing seawater intrusion, ground water levels near the coast need to be at or above protective elevations. This may necessitate replenishing a basin in order to raise its groundwater levels, not just pumping at the estimated sustainable yield level to stabilize groundwater levels if they would still be below sea level.
6-61	6.6.2	I concur with the discussion on this page that "…simply reducing pumping to within sustainable yield is not proof of sustainability under SGMA, which must be demonstrated by avoiding undesirable results for all 6 sustainability indicators." I also agree with the statement at the bottom of this page that "Further analysis is necessary to refine estimates of where pumping should be reduced to address all sustainability indicators." To augment this discussion it would be good to add some language explaining that in order to enable the adjacent Seaside Subbasin (specifically the Laguna Seca subarea thereof) to achieve sustainability it will be necessary for ground water levels in the Corral de Tierra subarea to be raised, not just stabilized at 2008 levels. This would necessitate replenishing that subarea of the Monterey Subbasin in order to raise its groundwater levels, not just pumping at the estimated sustainable yield level to stabilize groundwater levels.
6-64	6.7	My comment on page 6-33 also pertains to the discussion in the top bulleted para on this page.
6-64	6.7	With regard to the language in the 2nd bulleted para on this page, my understanding is that the Deep Aquifer is not present in the Seaside Subbasin.
6-65	6.7	In the next-to-last bulleted para on this page there is mention of monitoring network expansion in the Corral de Tierra subarea. In previous comments I have asked that the monitoring network be expanded to include some of the near-boundary monitoring wells in the Laguna Seca subarea of the Seaside Subbasin. Including those wells should be mentioned in this para.

Draft Chapter 10 – Comments from Seaside Basin Watermaster 9-6--21

Page	Section	Comment
10-5	10.2	In the 3rd sentence of the top para on page 10-5 the wording "as well" is repeated. In the 3rd para there is discussion of data collection by other agencies. The Seaside Basin Watermaster should also be listed as it collects monitoring well data that will be useful.
10-6	10.2.2	In the 2nd para of this Section there is discussion of data collection by other agencies. MPWMD and the Seaside Basin Watermaster should also be listed as they collect monitoring well data that will be useful.
10-9	10.2.4.5	There is the statement in this Section that "…monitoring wells outside the Monterey Subbasin cannot be included in the Subbasin's monitoring well network…" I believe this is an incorrect statement. I could find no such prohibition anywhere in SGMA. Also in this Section there is discussion regarding monitoring well FO-9 shallow. That language should be edited to read as follows: *Within the Seaside Subbasin, ~~the Watermaster is proposing to replace~~ monitoring well FO-09 Shallow where casing leakage has been identified is likely to be replaced. The monitoring well is located near the coastline just south of the Seaside-Monterey Subbasin boundary. It is used to (a) monitor groundwater levels relative to seawater intrusion protective groundwater elevations and (b) monitor ~~chloride concentrations~~ water quality in groundwater to detect occurrences of seawater intrusion into both Subbasins*
10-10	10.2.5	In the next-to-last bullet on this page the word "the" should be inserted before the word "boundary."
10-11	10.3	In the first para of this Section "the Seaside Basin Watermaster" should be inserted just before the word "other."
10-12	10.5	At the end of the 3rd para in this Section the words "and the Seaside Basin Watermaster's Seaside Basin Model" should be added. In the 4th para in this Section please clarify what is meant by the words "standing up" as it pertains to the Dry Well Notification System.
10-17	Table 10-1	My comment on page 10-9 about including monitoring wells outside of the Monterey Subbasin seems to be addressed in the line-item titled "Voluntary monitoring of non-RMS wells." Please clarify in the text if that is correct.
10-18	Table 10-1	In the line-item titled "Improving Monitoring Networks" the same language that is contained in Table 10-2 on page 10-21 "Add Seaside Subbasin wells to monitoring GWL network" should be added.
10-25	Figure 10-1	Is there a statutory allowance of 2 years for DWR to review GSPs? This seems inordinately long and could cause problems for the GSAs if DWR took that look to provide its feedback.

Farm Bureau Monterey

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831-751-3100 www.montereycfb.com

October 8, 2021

Salinas Valley Basin Groundwater Sustainability Agency
Att: Emily Gardner, Deputy General Manager
P.O. Box 1385
Carmel Valley, CA 93924

VIA: E-Mail

RE: Groundwater Sustainability Plans

Dear Ms. Gardner:

On behalf of the Board of Directors of Monterey County Farm Bureau, we express our appreciation for the dedication and diligence of both the SVBGSA's staff and the consultants of Montgomery & Associates for the progress made on the draft groundwater sustainability plans for all sub-basins, due in January 2022. This has been a tremendous lift of a workload, and the transparency provided at all the sub-basin committee meetings has greatly aided in the drafting of these plan documents.

We are encouraged that the draft sustainability plans, in their present form with minor revisions for clarification to be considered as the comments submitted are processed and reviewed, represent a pathway forward for sustainability. While we are not expressing specific language or policy suggestions in this letter, our Board and Committee members have participated in numerous meetings and expressed their comments during those specific chapter reviews.

As the drafts move forward to the SVBGSA Board of final approval, and then submission the Department of Water Resources in January 2022, it is important to keep in mind that the integration of all the collective plan provisions, practices, and projects does not propel harm on neighboring or adjacent sub-basins of the Salinas Valley during long-term implementation. The plans should all work as a cohesive whole, working towards sustainability for the entire groundwater basin regardless of the individual characteristics or status of any individual sub-basin.

In other words, the entire Salinas Valley basin needs to work together through congruent integration of all sub-basin plans to achieve the full groundwater sustainability objectives. Only through this integrated approach can all water users of the basin achieve the success that the individual plans detail.

Indeed, the collective management practices and proposed projects of all the sub-basin plans are a comprehensive and cohesive program that serves to achieve the sustainability of the entire Salinas Valley Groundwater Basin.

Sincerely,

Norman C. Groot
Executive Director

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October 14, 2021

Colby Pereira, Chairperson
Members of the Board of Directors
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Via email board@svbgsa.org

Subject: Draft Groundwater Sustainability Plans for the Upper Valley Aquifer Subbasin, Forebay Aquifer Subbasin, Eastside Aquifer Subbasin, Langley Aquifer Subbasin, and Monterey Subbasin

Dear Chair Pereira and Members of the Board of Directors:

LandWatch Monterey County offers the following comments on the draft Groundwater Sustainability Plans (GSPs) for the above referenced subbasins.

A. Selection and funding of proposed projects are not coordinated among subbasins, which is contrary to the 180/400 GSP and DWR's findings approving it. And the five new GSP's fail to provide the evidence SGMA requires that their proposed projects are financially feasible.

1. The GSA represented to DWR in the 180/400 GSP that it will identify a suite of Basin-wide projects needed to attain sustainability, which will be funded through the Basin-wide water charges framework based on pumping allowances, and that this system will be set up by June 30, 2023.

The 180/400-Foot Aquifer Subbasin GSP (180/400 GSP) that was approved by DWR identifies 13 projects that purport to "constitute an integrated management program for the entire Valley," 9 of which are identified as "priority projects." (180/400 GSP, p. 9-25.) The 180/400 GSP states that "[s]ome subset of these priority projects <u>will be implemented</u> as part of the six Salinas Valley Groundwater Subbasin GSPs," although some additional projects may be needed in some basins. (*Id.*) The 180/400 GSP found that the "projects and management actions identified in Chapter 9 are sufficient for attaining sustainability in the 180/400-Foot Aquifer Subbasin <u>as well as the other five subbasins in the Salinas Valley Groundwater Basin</u>." (*Id.* at 10-9.)

The 180/400-Foot Aquifer Subbasin GSP (180/400 GSP) provides that a "water charges framework" (WCF) will be implemented basin-wide in order to fund these projects and to deter pumping in excess of groundwater allowances. (180/400 GSP pp. 9-2 to 9-4.) The WCF is to be based on tiered charges for different levels of groundwater pumping. Tier one charges would be based on a "Sustainable Pumping Allowance," and its revenues would cover just the GSA administration. Tier 2 and 3 charges would be assessed for amounts in excess of a "Transitional Pumping Allowance" and, after the Transitional Pumping Allowances are phased out, for amounts in excess of the Sustainable Pumping Allowance. Tier two and three revenues would be used to fund the new water supply projects. The pumping allowances and fee structures were to be separately determined for each subbasin, so they would not be uniform for each subbasin; but each subbasins tiered charges would be included "in the final water charges framework agreement." (*Id.* at 9-4.)

In approving the 180/400 GSP, DWR relied on the feasibility and likelihood of the integrated set of Basin-wide projects funded by a Basin-wide WCF:

> The projects and management actions designed to eliminate overdraft and prevent seawater intrusion are reasonable and commensurate with the level of understanding of the basin setting, as described in the Plan. The water charges framework, at this time, appears feasible and reasonably likely to mitigate overdraft, which is an important management action to help prevent undesirable results and ensure that the 180/400 Foot Aquifer Subbasin is operated within its sustainable yield.

(DWR, Statement of Findings Regarding The Approval Of The 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan, June 3, 2021, p. 2.) DWR found:

> To achieve sustainability, the Plan proposes to assess fees for groundwater extraction and use these funds to implement other projects or management actions, as needed. The proposal to charge fees for extraction is called the water charges framework and involves a three-tiered system where groundwater users will be charged a series of fees based on the volume of annual groundwater extraction. The proposal includes exemptions for some groundwater pumpers, including de minimis users that will not be included in the fee program. The foundation of the water charges framework is a sustainable pumping allowance that each parcel will be allocated based on the calculated sustainable yield. Groundwater users will be allowed to pump more than their sustainable allocation; however, this additional pumping (supplemental pumping) will be subject to higher extraction fees. The proposed water charges framework is also proposed to be instituted in the other five groundwater subbasins overseen by the SVBGSA, representing a Salinas Valley Basin-wide management action.

(*Id.*, p. 5.) DWR concluded that the "fundamental structure of groundwater management in the Subbasin is a management action called the water charges framework." (*Id.* at 31, emphasis added; see also *id.* at 33.) DWR found that "implementation of projects will depend, fully or partially, on revenue generated by the proposed water charges framework." (*Id.* at 13; see also *id.* at 33, 6.)

The 180/400 GSP requires development of the WCF by January 31, 2023 for all six subbasins:

> 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.

(180/400 GSP at 10-4.) The 180/400 GSP also requires refining the list of projects intended to support the integrated management of the entire Basin on the same schedule:

> 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.

(*Id.* at 10-10.)

Since the WCF is based on pumping allowances, these allowances must be determined on the same schedule:

> This GSP proposes a water charges framework that 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.

(*Id.* at ES-14.) The Sustainable Pumping Allowance is the "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." (*Id.* at 9-3.) Pumping 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." (*Id.*)

In short, determining pumping allowances, setting the tiered rates for the WCF, and selecting the basin-wide projects to be financed is supposed to accomplished simultaneously by January 2023 for all six subbasins.

2. **The five draft GSPs are inconsistent with the 180/400 GSP because they do not rely on, assume, or identify a common set of Basin-wide projects and do not include participation in a Basin-wide Water Charges Framework.**

Each of the five GSPs identify a different set of projects than each other and different than the projects identified in the 180/400 GSP. (See Tables 9-1 in each GSP.) There is little overlap among the projects, and there are no projects that are common to all of the GSPs.

Furthermore, both the UVA and Forebay GSPs expressly reject the Water Charges Framework. (Forebay GSP at 10-15 to 10-16; UVA GSP at 10-15 to 10-16.) The Eastside, Monterey, and Langley GSP's do not mention the water charges framework in their discussions of funding options. (Eastside GSP at 10-15; Monterey GSP at 10-23; Langley GSP at 10-15.)

At this point, the "fundamental structure" on which DWR relied to approve the 180/400 GSP has been set aside because the five new draft GSP no longer propose a Basin-wide Water Charges Framework or a common set of Basin-wide projects to attain sustainability.

If the GSA approves the five new GSPs as written, it must fundamentally revise the 180/400 GSP, which no longer appears viable if other subbasins will not fund a common set of projects. The problem that the GSA must address squarely is that pumping reductions, not just capital projects, are needed to attain sustainability in the 180/400-Foot Aquifer Subbasin. For example, instead of investing in a permanent $100 million+ pumping barrier to hold back seawater intrusion, the GSA should consider investing in a finite period of pumping reductions that would be sufficient to restore groundwater levels to protective elevations. A finite period of pumping reductions that restores protective elevations would obviate and may be less expensive than financing and operating a permanent pumping barrier. Once the protective elevations are restored, the 180/400 could resume pumping the full sustainable yield of the subbasin, which is all that SGMA allows. (The pumping barrier would not allow any <u>more</u> pumping than the sustainable yield.) In any event, pumping reductions are at least feasible, and as discussed below, there is no evidence that a pumping barrier is financially feasible.

3. **The UVA and Forebay GSPs do not require, and presumably will not fund, common Basin-wide projects.**

The only project listed by the UVA GSP and Forebay GSP that is common to some of the other GSPs is the Multi-benefit Stream Channel Improvements, which is included in the

Eastside and Monterey GSPs and which contains as one component the Invasive Species Eradication project described by the 180/400 GSP. But the Multi-benefit Stream Channel Improvements projects are expected to benefit primarily the GSP's along the Salinas River, rather than the Langley or Eastside subbasins, and it is not even included in the Langley GSP. Indeed, the GSPs do not estimate any benefits to the Monterey, Eastside, and Langley Subbasins from this project.

Furthermore, neither the UVA GSP nor the Forebay GSP actually purport to require any projects to attain sustainability. (UVA GSP at 9-1 [projects not necessary to maintain sustainability]; Forebay GSP at 9-1 to 9-2 [subbasin sustainable; only management actions to be pursued].) Both GSPs anticipate ongoing maintenance of sustainability through management actions, not projects. They list projects only in case they might be needed in the future.

At this point, no GSP should assume that the Forebay and UVA water users would agree to provide funding for any large Basin-wide capital projects, either through a water charges framework or a Proposition 218 vote. To the extent that the Eastside, Langley, and Monterey GSPs assume funding contributions or project-participation from the Forebay and UVA subbasins, the five draft GSPs are inconsistent on their faces and cannot be approved. The project discussions in the Eastside, Langley, and Monterey GSPs should be revised to make clear that the proposed projects do not rely on funding contributions or project-participation from the Forebay and UVA subbasins.

4. **The Eastside, Langley, and Monterey GSPs do not propose a commons set of Basin-wide projects and do not provide the evidence required by SGMA that any large capital projects that benefit multiple subbasins are financially feasible.**

Contrary to the expectation set up by the 180/400 GSP, there is no common set of Basin-wide projects proposed by the GSPs. Although there are several large capital projects that are listed by more than one of the GSPs, the GSPs fail to provide evidence that these projects are financially feasible. This failure is because the GSPs do not address the critical question of the willingness to pay for the water these projects might deliver.

For agricultural uses, irrigation water is an input to production, so the maximum value of water is constrained by expected returns. There must be some price beyond which agricultural users will not pay for water projects. Is it $500 AF? $750 AF? $1,000 AF? $1,500 AF? And how much water would be demanded at each of these prices? What does the demand curve for agricultural water supply look line in the Valley? The GSP's simply fail to address these critical questions.

Water markets provide some evidence of willingness to pay. Although some farmers have reportedly paid as much as $2,200 per AF for some amounts of water for high value crops (e.g., on a short term basis to protect investments in permanent crops), the average NASDAQ Veles California Water Index water futures price is now only $686 AF, an extraordinarily high price attained only as a result of a long drought period[1] Agricultural water has reached market prices in the $500 to $1000 range only in times of water stress.[2] Salinas Valley farmers may be willing to pay more for water due to their higher productivity than the average California farmer, but obviously there is a limit.

The analysis of fallowing options in the Eastside GSP provides some indirect evidence of willingness to pay; and since it is based on local land prices, it should reflect the range of agricultural productivities in the Salinas Valley. The Eastside GSP concludes that land could be fallowed to make its water available to other users by paying farmers rent and cover crop expenses. (Eastside GSP, p. 9-67.) Based on these land rents and cover crop expenses, farmers would be willing to forego farming for payments that represent water values of from $590 to $1,730 per AF. If agricultural users would find it more profitable not to use water at all when it is worth more than these values to others, it is not reasonable to suppose that they would vote to assess themselves for a capital project that produces water at higher costs per acre foot.

Despite this, the GSPs propose large capital water projects with unit costs well in excess of $1,000 per AF.[3] For example, the Eastside GSP identifies the Chualar and Soledad diversion projects using the 11043 water rights as costing $55 million and $104 million respectively. The 6,000 AFY provided by these diversion projects would cost $1,280 and $2,110 per AF respectively. The projects would benefit Eastside and 180/400 water users, but there is no analysis in either the Eastside GSP or the 180/400 GSP that would support the assumption that agricultural users would be willing to pay that much for water.

Similarly, both the Monterey and Eastside GSP's identify winter reservoir releases with ASR as a potential project, costing $172 million to provide 12,900 AFY at a unit cost of $1,450 per AF. Both the Monterey and Eastside GSPs say that the distribution of benefits would be determined through a benefits assessment. But there is simply no analysis that supports the assumption that there is a willingness to pay $1,450 per AF for agricultural water, much less to do so through a long term commitment in a Proposition 218 vote or through adoption of a Water Charges Framework.

The Eastside and Monterey GSPs both identify a Regional Municipal Supply project that is based on desalinating brackish water pumped from a seawater intrusion barrier. The unit cost for desalinating this water would come to $2,900 per AF, to which must be

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[1] Aquaoso, California Agricultural Water Prices by Water District, June 17, 2021, available at https://aquaoso.com/blog/california-agricultural-water-prices/.

[2] *Id.*

[3] By contrast, many of the projects that are proposed to benefit only one subbasin are more modest in scale and in price per AF.

added the $1,200 per AF to pump the source water from the seawater intrusion barrier. While municipal users are willing to pay more than agricultural users for water, there is no analysis in the Eastside and Monterey GSPs of how the costs would be allocated between agricultural and urban beneficiaries or whether either group would be willing to pay as much as $4,100 per AF for this water, which they now enjoy for the cost to pump it..

Some proposed large capital projects may make sense financially. The 3,500 acre CSIP expansion, identified in the Langley and Eastside GSPs, and already proposed in the 180/400 GSP, could proceed based on the existing CSIP model if the expanded benefit assessment district is willing to assess itself $630 per AF for this water. Similarly, the direct delivery (as opposed to the aquifer storage and recovery or ASR) of winter release water for MCWD's winter urban demand at $1,100 per AF may make sense given the likely willingness of new urban customers to pay higher rates.

Each of the GSPs should be revised to include a discussion of likely willingness to pay for the proposed capital projects and the likely financial feasibility of proposed projects. The discussion should reflect whether the large capital projects are scalable and whether sufficient numbers of water users would be willing to pay the average cost per AF to actually cover the minimum scale project's entire cost. The willingness of one water user to pay the average cost per AF is not evidence that the entire project can be funded.

Without an analysis of the willingness to pay for large capital projects, especially those projects for which the cost per AF is in excess of $500, the GSP's cannot be approved by DWR. SGMA requires that a GSP include both the estimated cost for each project and "a description of how the Agency plans to meet those costs." (23 CCR § 354.44(b)(8).) DWR must have substantial evidence to support a finding that the projects are "feasible" and that the GSA "has the financial resources necessary to implement the Plan." (23 CCR § 355.4(b)(5),(9).) The GSP's do not provide evidence that funding is actually feasible. Their discussions of project funding merely list the kinds of funding arrangements that are commonly used for large capital projects. (Eastside GSP at 10-15; Monterey GSP at 10-23; Langley GSP at 10-15; UVA GSP at 10-15; Forebay GSP at 10-15.) As noted, the UVA and Forebay GSPs do not propose to provide <u>any</u> project funding because they determine that no projects are actually needed, and they specifically reject participation in the Water Charges Framework. (Forebay GSP at 10-15 to 10-16; UVA GSP at 10-15 to 10-16.) Merely listing the kinds of arrangements that can <u>conceptually</u> be used to fund projects does not explain how the GSA could <u>actually</u> meet their costs, especially where there is substantial uncertainty about willingness to participate in these funding arrangements.

The findings that projects are financially feasible are particularly critical for the Eastside and Monterey Subbasins because they depend on the success of high capital, multi-subbasin projects to address overdraft conditions. (Eastside GSP at 9-103 to 9-104; Monterey GSP at 9-105.)

B. For the Monterey Subbasin GSP, the groundwater level sustainable management criteria and interim milestones fail to support the seawater intrusion criteria.

1. SGMA requires coordination of sustainable management criteria: groundwater level minimum thresholds must support the seawater intrusion minimum threshold.

SGMA requires that each minimum threshold must avoid *each* undesirable result because SGMA 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. Furthermore, a GSP must not "adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of its sustainability goal." (23 CCR § 355.4(b)(7).)

2. The Monterey Subbasin GSP's proposed seawater intrusion SMCs do not permit any additional intrusion.

The Monterey Subbasin GSP sets the MT and MO for seawater intrusion for the lower 180-Foot Aquifer and the 400-Foot Aquifer at the line of advancement as of 2015. (Monterey GSP, p. 8-51.) The Monterey GSP sets the MT and MO for seawater intrusion to the Deep Aquifers at Highway 1, based on the observation that there is limited intrusion in these aquifers. (*Id.*, pp. 8-51 to 8-52.) In effect, the Monterey GSP commits the GSA not to permit any additional seawater intrusion in these aquifers. This is a proper goal in light of the clear impacts to beneficial users.

3. The Monterey Subbasin GSP's groundwater level SMCs and groundwater level interim milestones are set based on their effects on seawater intrusion.

The Monterey GSP acknowledges that the MT and MO for groundwater levels must support attainment of the seawater intrusion MT and MO because it identifies the primary consideration in setting the groundwater level MT and MO as the effect on seawater intrusion:

> As discussed in Section 3.1.6, groundwater use within the Marina-Ord Area is almost exclusively limited to generation of municipal supplies by MCWD. Groundwater elevations are significantly higher than municipal production well screen elevations in all aquifers in the Marina-Ord Area, and there is limited concern regarding the potential dewatering of groundwater production wells. Therefore, *groundwater levels that could cause undesirable results associated with other locally relevant sustainability indicators, such as the lateral or vertical*

> *expansion of the existing seawater intrusion extent and/or eventual migration of saline water into Deep Aquifer wells, have been used to define groundwater level minimum thresholds in the Marina-Ord Area*.

(Monterey GSP, p. 8-16, emphasis added.) The Monterey GSP also provides that

> . . . undesirable results caused by chronic lowering of groundwater levels in the Marina-Ord Area are primarily associated with the expansion of seawater intrusion and other locally relevant sustainability indicators. *These sustainability indicators have been considered when defining groundwater level minimum thresholds in the Marina-Ord Area*.

(Monterey GSP, p. 8-19, emphasis added.)

4. **Setting the Monterey Subbasin GSP's groundwater level SMCs at historic 1995-2015 conditions is purportedly justified by the stability of the lateral extent of seawater intrusion in the Monterey Subbasin during that historic period.**

The Monterey GSP contends that setting the groundwater level MT and MO for the 180- and 400-Foot Aquifers on the basis of the 1995 to 2015 groundwater levels is justified because the lateral extent of seawater intrusion in the Monterey Subbasin has been "generally stable" in that period:

> As discussed in the preceding sections, the potential effects of undesirable results caused by chronic lowering of groundwater levels in the Marina-Ord Area are primarily associated with the expansion of seawater intrusion. *The observed lateral extent of seawater intrusion within the Subbasin appears to have been generally stable within the 180- and 400-Foot Aquifers between 1995 and 2015. As such, minimum thresholds have been set based upon minimum groundwater elevations observed between 1995 and 2015 in the 180- and 400 Foot aquifers*. Seawater intrusion is additionally monitored and managed pursuant to seawater intrusion SMCs (Section 8.9 below) to verify seawater intrusion does expand within the Subbasin due to sea-level rise and/or changes in the groundwater gradient.

(Monterey GSP, p. 8-30.) There are several problems with this contention, discussed below.

5. The "stability" rationale for setting the Monterey Subbasin GSP's groundwater level SMC's based on historic conditions is undercut by the Monterey GSP's projections that historic conditions will not continue: groundwater levels will actually continue to decline and remain below historic conditions and the interim milestones permit such declines.

First, the contention that groundwater level SMCs are justified by historic conditions ignores the GSP's own projection that groundwater levels will continue to decline until at least 2033 and will not attain the MO until 2042. The Monterey GSP documents and projects in its "Example Trajectory for Groundwater Elevation Interim Milestones" that groundwater levels for a Marina-Ord well fell below the MT in 2019, will continue to fall until 2033, will not rise above the MT until 2039, and will not attain the MO until 2042. (Monterey GSP, pp. 8-42, Figure 8-12.) The interim milestones for wells in the 400-Foot Aquifer and the Deep Aquifers assume and permit that groundwater levels will remain below historic levels and the MT for most of the next 20 years:

> Within the Monterey Subbasin, for wells in the 400-Foot Aquifer, Deep, and El Toro Primary Aquifer System Aquifers where groundwater levels have been declining, groundwater elevation interim milestones are defined based on a trajectory informed by current (fourth quarter of 2020) groundwater levels, historical groundwater elevation trends [footnote], and measurable objectives. This trajectory allows for and assumes a continuation of historical groundwater elevation trends during the first 5-year period of GSP implementation, a deviation from that trend over the second 5-year period, and a recovery towards the measurable objectives in the third and fourth (last) 5- year period.

(Monterey GSP, p. 8-41.) The proposed interim milestones for wells in the 180-Foot and Deep Aquifers permit substantial declines in groundwater levels from 2020 conditions in the years 2027 and 2032. (*Id.*, p. 8-43 to 8-44, Table 8-3.) For some wells, the interim milestones would not require that the minimum threshold be met until 2037 or later. In short, the Monterey GSP does not expect that groundwater levels will actually remain within historic levels.

Allowing groundwater levels to fall below historic levels is purportedly justified because "there are large volumes of freshwater in the Subbasin that provide additional time and flexibility to reach identified SMCs while projects and management actions are implemented." (*Id.,* p. 8-41.) However, the draft GSP provides no evidence to suggest that groundwater levels that fall and remain below the historic conditions for at least the next ten years in the Marina-Ord area will not induce further seawater intrusion, resulting in a failure to meet the seawater intrusion SMCs. The evidence is to the contrary: lower groundwater levels increase seawater intrusion.[4] Thus, declining groundwater levels

[4] Geoscience, Protective Elevations to Control Seawater Intrusion in the Salinas Valley, 2013, available at https://www.co.monterey.ca.us/home/showdocument?id=19642.

will make it impossible to meet the seawater intrusion minimum threshold and measurable objective, which require a halt to the advancement of seawater intrusion.

In summary, the historic "stability" rationale cannot be extrapolated to claim that groundwater levels well below the historic record will continue to result in a stable areal extent of seawater intrusion. It makes no sense to contend that setting the MT and MO on the basis of historic conditions will halt seawater intrusion when the GSP would effectively fail to maintain those historic conditions.

The historic stability rationale also ignores the fact that Deep Aquifer groundwater levels began dropping in 2014, have continued to drop, and are projected to continue to drop due to increased levels of extractions. MCWRA reported in 2020 that Deep Aquifer groundwater levels have been falling since 2014, are well below sea-level, and that induced vertical migration of contaminated water to the Deep Aquifers themselves is in fact occurring:

> As is the case with the 180-Foot and 400-Foot Aquifers, groundwater levels in the Deep Aquifers are predominantly below sea level. Beginning around 2014, groundwater levels in the Deep Aquifers began declining and are presently at a deeper elevation than groundwater levels in the overlying 400-Foot Aquifer based on comparisons of multiple well sets at selected locations, meaning that there is a downward hydraulic gradient between the impaired 400-Foot Aquifer and the Deep Aquifers (Figure 16 and Figure 17). This decrease in groundwater levels coincides with a noticeable increase in groundwater extractions from the Deep Aquifers (Figure 16 and Figure 17). The potential for inducing additional leakage from overlying impaired aquifers is a legitimate concern documented by previous studies and is something that would be facilitated by the downward hydraulic gradient that has been observed between the 400-Foot Aquifer and Deep Aquifers.
>
> Seawater intrusion has not been observed in the Deep Aquifers. However, the Agency has documented the case of one well, screened in the Deep Aquifers, that is enabling vertical migration of impaired groundwater into the Deep Aquifers. The Agency is working with the well owner on destruction of this well.[5]

In addition to the threat to contaminate the Deep Aquifers, the induced vertical migration of upper aquifer groundwater to the Deep Aquifers aggravates seawater intrusion in those upper aquifers. A 2003 study for MCWD concluded that increasing pumping of the Deep Aquifers from the 2002 baseline level of 2,400 AFY to just 4,000 AFY would (1) induce

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[5] Monterey County Water Resources Agency (MCWRA), Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin: 2020 Update, May 2020, p. 31, https://www.co.monterey.ca.us/home/showdocument?id=90578

further seawater intrusion into the upper aquifers (the 180-Foot and 400-Foot Aquifers), which were vertically connected, and (2) risk contamination of the Deep Aquifers themselves.[6] Deep Aquifer pumping is now in excess of 10,000 AFY.[7]

And, in fact, the Monterey GSP admits that falling groundwater levels in the Deep Aquifer threatens to contaminate the Deep Aquifers and to induce seawater intrusion in the upper aquifers:

> Seawater intrusion has not been observed in the Deep Aquifer to date. However, groundwater elevations have been declining and are significantly below sea level. The declining groundwater elevations in the Deep Aquifer may be causing groundwater elevations to fall within the 400-Foot Aquifer in the southwestern portion of the Marina-Ord Area (i.e., near wells MPMWD#FO-10S and MPMWD#FO-11S). Although there is some uncertainty whether the Deep Aquifer is subject to seawater intrusion from the ocean, continued decline of groundwater elevations in the Deep Aquifers could increase the risk of seawater intrusion and may eventually cause vertical migration of saline water from overlying aquifers into the Deep Aquifers. As such, minimum thresholds for the Deep Aquifers are set to historically observed minimum groundwater elevations between 1995 and 2015, which is equivalent to the groundwater elevations observed in 2015 for most Deep Aquifer wells.

(Monterey GSP, p. 8-30.) Again, setting the groundwater level MT and MO to historic levels but then allowing another ten to twenty years to pass before the interim milestones actually require attainment of these historic levels cannot demonstrably ensure that there is no further advancement of seawater intrusion. However, no further advancement is precisely what is required by the seawater intrusion MT and MO.

In sum, interim milestones cannot be set at a level that permits continued declines in groundwater levels if the Monterey GSP is to find that the groundwater levels are consistent with the seawater intrusion SMCs.

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[6] WRIME, Deep Aquifer Investigative Study, May 2003, pp. 4-7, 4-11 to 4-12, pdf available upon request.

[7] Monterey County Water Resources Agency (MCWRA), Well Permit Application Activities Update, prepared for May 17, 2021 MCWRA Board of Directors meeting, https://monterey.legistar.com/View.ashx?M=F&ID=9381226&GUID=34ED34CD-3A39-4851-87A3-298BE70D383C

6. The Monterey Subbasin GSP fails to assess the effects on <u>other</u> subbasins of setting groundwater level SMCs based on historic conditions or allowing groundwater levels to decline further through relaxed interim milestones.

As the Monterey GSP acknowledges, the interconnectivity between the 180/400-Foot Aquifer Subbasin and the Monterey Subbasin requires coordination of the sustainable management criteria for both subbasins. (Monterey GSP, p. 8-35.) Coordination is required in order to meet SGMA's requirement that the SMC's for one subbasin do not prevent another subbasin from meeting its sustainability goal. (23 CCR § 355.4(b)(7).)

Setting the groundwater level MT and MO at historic levels and then effectively ignoring these criteria through use of relaxed interim guidelines for ten to twenty years may very well impair attainment of the seawater intrusion criteria for the 180/400-Foot Aquifer GSP, which are also set at a level that permits no further advancement of the seawater intrusion front.

However the Monterey GSP provides no analysis of that possibility. Instead, the Monterey GSP proposes to defer the assessment of the impact of the Monterey Subbasin's groundwater level MTs on the Deep Aquifers in the neighboring 180/400-foot Aquifer Subbasin until after completion of the long-delayed Deep Aquifers Study and the eventual establishment of Deep Aquifer SMCs for the 180/400-foot Aquifer Subbasin.

The Deep Aquifer Study, recommended four years ago, has not commenced.

Furthermore, there is no reason that an assessment of the effects of the Monterey Subbasin's groundwater level MTs should be limited to its effects on the Deep Aquifers in the 180/400-Foot Subbasin. The assessment should also include an assessment of the effects of the Monterey Subbasin's groundwater level MTs on seawater intrusion of <u>each</u> of the principal aquifers in that neighboring subbasin. The Monterey Subbasin GSP argues that pumping in the 180/400-Foot Aquifer Subbasin has caused seawater intrusion in the Monterey Subbasin. In turn, the Monterey Subbasin GSP must assess the reciprocal effects of its own pumping, SMCs, and interim milestones on the 180/400-Foot Aquifer Subbasin.

SGMA's mandate to use the best available science is not an invitation to let the perfect be an enemy of the good pending completion of the Deep Aquifer study. The Monterey GSP must use the whatever science is <u>now</u> available to provide <u>some</u> discussion and assessment of the effect on the neighboring subbasins of allowing continued reductions in Monterey Subbasin groundwater levels below historic conditions through relaxed interim thresholds.

Again, it is not reasonable to extrapolate beyond the historic data to assume that lower-than-historic groundwater levels in the Monterey Subbasin will not impair adjacent basins. The purported stability of the lateral extent of seawater intrusion in the Monterey Subbasin from 1995 to 2015 was certainly not matched in the 180/400-Foot Aquifer

Subbasin, where seawater intrusion rapidly advanced during that period. The Monterey GSP provides no evidence to justify the assumption that allowing lower-than-historic groundwater levels in the Monterey Subbasin will not contribute to the continuing seawater intrusion in the neighboring subbasin.

Finally, the Monterey Subbasin GSP must also evaluate and address the effects of reduced groundwater levels in the Corral de Tierra Subarea on the Seaside Subasin. Again, there is no evidence in the record that merely maintaining historic groundwater levels is sufficient to support groundwater levels in the Seaside Subbasin. To the contrary, comments by the Seaside Basin Watermaster indicate that chronic lowering of groundwater levels in the Laguna Seca Subarea of the Seaside Subbasin can only be corrected by <u>reducing</u> existing pumping in the Corral de Tierra, i.e., <u>increasing</u> groundwater levels <u>above</u> historic levels. (Robert Jacques, PE, email to Sarah Hardgrave, et al., March 22, 2021.) Setting Monterey Subbasin groundwater level SMC's at historic levels violates SGMA because it will prevent attainment of groundwater level objectives in the adjacent Seaside Subbasin.

C. For the Eastside Subbasin GSP, the groundwater level sustainable management criteria and interim milestones also fail to support the seawater intrusion criteria.

As discussed above, SGMA requires that each minimum threshold must avoid *each* undesirable result because SGMA 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.

However, the groundwater level SMCs for the Eastside Subbasin fail to support the seawater intrusion SMC. Although the Eastside Subbasins is not seawater intruded itself, its GSP sets its seawater intrusion minimum threshold to prevent any seawater intrusion over the 500 mg/l threshold in <u>any</u> subbasin, in effect acknowledging that conditions in the Eastside Subbasin can cause seawater intrusion in adjacent subbasins. (Eastside GSP, p. 8-29.) In its discussion of its sustainability indicators for groundwater levels, the Eastside GSP acknowledges that "interference with other sustainability indicators," e.g., the sustainability indicators for seawater intrusion, would be a significant an unreasonable condition. (*Id.*, p. 8-7.) The Eastside GSP states that that the groundwater level minimum threshold is "intended not to exacerbate the rate of seawater intrusion." (*Id.*, p. 8-15.)

Overdraft conditions in the Eastside Subbasin that lower groundwater levels create a gradient causing subsurface flows from the 180/400 Subbasin to the Eastside Subbasin. These subsurface outflows from the 180/400 Subbasin contribute to seawater intrusion by negatively affecting the water budget in the 180/400 Subbbasin. The Eastside GSP acknowledges that the historic groundwater levels in the Eastside Subbasin, including the pumping trough around Salinas, have resulted in net subsurface outflows from the 180/400 Subbasin to the Eastside Subbasin. (*Id.*, p. 6-19.) Figure 6-9 demonstrates that there have been increasing net subsurface outflows from the 180/400 Subbasin to the Eastside Subbain since 1980. (*Id.*) For example, there are substantial net subsurface outflows from the 180/400 Subbasin to the Eastside Subbasin in both 2011 and 2015, and all of the other years after 1980. (*Id.*) Despite this, the Eastside GSP sets the minimum threshold for groundwater levels at the historic 2015 levels and sets the measurable objective at the 2011 level.[8] (*Id.*, pp. 8-7, 8-18.) In short, the Eastside SMC's are set at levels that will continue to induce subsurface outflows from the seawater intruded 180/400 Subbasin.

The Eastside Subbasin GSP fails to analyze the possibility that its minimum thresholds for groundwater levels and storage depletion will contribute to seawater intrusion in the 180/400 Subbasin. Instead, the Eastside GSP simply punts this issue to the future:

> Minimum thresholds for the Eastside Subbasin will be reviewed relative to information developed for the neighboring subbasins' GSPs to ensure that these minimum thresholds will not prevent the neighboring subbasins from achieving sustainability.

(Eastside GSP, p. 8-16.) It is unclear when this review will occur, especially for the 180/400 Subbasin, for which a GSP has already been adopted. Regardless, deferral of the analysis is not sufficient. SGMA requires that the Eastside GSP squarely address whether it "will adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of its sustainability goal." (23 CCR § 355.4(b)(7).) The GSP must support its conclusions with substantial evidence after applying the best science that is available <u>now</u>. (23 CCR § 354.44(c).) It is clear that the groundwater level and storage depletion sustainability indicators for the Eastside Subbasin will continue to contribute to seawater intrusion in the 180/400 GSP by inducing subsurface flows out of the 180/400 Subbasin. Since the 180/400 Subbasin minimum threshold for seawater intrusion requires halting <u>any</u> further seawater intrusion, any further inducement of seawater intrusion will prevent the attainment of sustainability by the 180/400 Subbasin.

The Eastside GSP must be revised to provide minimum thresholds and measureable objectives for groundwater levels that will not prevent attainment of sustainability by the 180/400 Subbasin, and it must provide an analysis based on the best available science to explain why.

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[8] The Eastside GSP also sets the minimum threshold for storage reduction using the groundwater level minimum threshold as a proxy indicator. (Eastside GSP, p. 8-23.)

D. Water quality sustainable management criteria should not be limited to effects caused by "direct GSA action." The GSPs must also regulate extractions that cause undesirable results, and do so through a specific and enforceable management action.

The five new GSPs purport to limit significant and unreasonable conditions related to groundwater quality degradation to just those "[l]ocally defined significant and unreasonable changes in groundwater quality resulting from *direct GSA action*." (Monterey GSP, p. 8-56, italics added; see also, e.g., Eastside GSP, p. 8-34.) Thus, the GSPs claim that the GSA need only address water quality degradation that is a "direct result of projects or management actions conducted pursuant to GSP implementation:"

> For the Subbasin, any groundwater quality degradation that leads to an exceedance of MCLs or SMCLs in potable water supply wells or a reduction in crop production in agricultural wells that is a direct result of GSP implementation is unacceptable. 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:
>
> > *Any exceedances of minimum thresholds during any one year as a direct result of projects or management actions conducted pursuant to GSP implementation is considered as an undesirable result.*

(Monterey GSP, p. 8-56, underlining added.)

This language does not define what constitutes a "direct result" of GSP implementation or "direct GSA action." However, elsewhere, the GSP's give three examples of conditions that may lead to an undesirable result and that the GSA is presumably prepared to address:

> • 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 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 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 could lead to an undesirable result.

(Monterey GSP, p. 8-58; see also Eastside GSP, p. 8-42 [same].) Significantly, none of these three conditions that might trigger GSA action include excessive pumping or changes in pumping by other parties that may cause water quality degradation; each condition includes only the secondary effects of the GSA's own projects. But the GSA's failure to take management action to regulate other parties, e.g., its failure to restrict excessive extractions or changes in pumping by other parties, may also cause water quality degradation. For example, the Community Water Center (CWC) has documented that for the San Jerardo Cooperative, Inc., increasing levels of nitrate and arsenic correspond to lower groundwater levels.[9] CWC has documented that "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."[10] It is clear that pumping levels and pumping changes can mobilize, concentrate, or move existing contaminants so as to cause water quality degradation. The GSA has a duty under SGMA to prevent this.

The Monterey GSP contends that because other agencies have authority over groundwater quality, the GSA's role is somehow limited:

> The powers granted to GSAs to effect sustainable groundwater management under SGMA generally revolve around managing the quantity, location, and timing of groundwater pumping. SGMA does not empower GSAs to develop or enforce water quality standards; that authority rests with the SWRCB Division of Drinking Water and Monterey County. Because of the limited purview of GSAs with respect to water quality, and the rightful emphasis on those constituents that may be related to groundwater quantity management activities.
>
> Therefore, this GSP is designed to avoid taking any action that may inadvertently move groundwater constituents already in the Subbasin in such a way that the constituents have a significant and unreasonable impact that would not otherwise occur.

(Monterey GSP, pp. 8-60 to 8-61; see also Eastside GSP, p. 8-35.) The fact that the County *and* the RWQCB also have authority and responsibility to address water quality degradation demonstrates that the statutory scheme does not rely on the regulatory

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9 Community Water Center, letter to SVGBGSA, April 23, 2021, re Comments on the Draft Salinas Valley GSP Chapters 1-8 for the Langley, East Side, Forebay, Upper Valley and Monterey Subbasins, p. 1.

10 *Id.*, pp. 1-2, citing 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/156 0371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896.

actions of any single agency. Nothing in SGMA's mandate that the GSP address water quality degradation permits the GSA to ignore water quality degradation that results from third party pumping or to ignore such third party degradation unless the GSA has affirmatively regulated pumping. The GSP must address the effects of its regulatory acts or omissions, including omissions that move, mobilize, or concentrate pollutants by permitting excessive extractions or changes in extractions by groundwater pumpers.

Indeed, DWR has made it clear in its imposition of corrective actions on the 180/400-Foot Aquifer Subbasin GSP that "groundwater management *and extraction*" mustg be addressed because it may result in degraded water quality:

> RECOMMENDED CORRECTIVE ACTION 5 Coordinate with the appropriate groundwater users, including drinking water, environmental, and irrigation users as identified in the Plan, and water quality regulatory agencies and programs in the Subbasin to understand and develop a process for determining if groundwater management *and extraction* is resulting in degraded water quality in the Subbasin.[11]

Accordingly, the GSP cannot limit its concern to the effects of its own projects without taking responsibility for the effects of unregulated, excessive, or changed extractions on water quality degradation.

For example, if there is evidence that arsenic contaminations are mobilized or concentrations increased by new or excessive extractions, then the GSP must manage extractions to avoid undesirable results from mobilized, moved, or concentrated arsenic. The GSP cannot simply state that there "is no clear correlation that can be established between groundwater levels and groundwater quality at this time" as if that disposes of the matter for the GSP planning horizon. (Monterey GSP, p. 8-58.) The GSA must adopt an effective program to investigate, apply the best available science, and manage the resource to prevent undesirable contaminant concentrations caused by excessive or changed extractions, whether those are due to changes the GSA requires in subbaasin pumping or due to the failure of the GSA to regulate existing pumping in the first instance.

In sum, the GSPs fail to propose a coordinated system of meaningful sustainable management criteria and a management action to address water quality degradation. The minimum threshold and measureable objectives should be based on zero exceedances of water quality standards, as in the Eastside GSP so that each and every instance of water quality degradation can be determined and action can be prompted. (Eastside GSP, pp. 8-34, 8-41.) The GSP's should provide for a more robust monitoring program and a self-reporting program so that any exceedance will actually be determined. It is not sufficient to monitor only a small sampling of domestic wells.

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[11] Department of Water Resources, GSP Assessment Staff Report Salinas Valley – 180/400 Foot Aquifer (Basin No. 3-004.01), June 3, 2021, p. 37, emphasis added available at https://sgma.water.ca.gov/portal/gsp/assessments/29.

Most importantly, the proposed "Water Quality Partnership" implementation action needs to be revised so that it is an effective, enforceable commitment to action by the agency with the most direct oversight of the cause of any exceedance. (See, e.g., Eastside GSP, pp. 9-100 to 9-101.) The proposed Water Quality Partnership contains only the flowing proposals for action:

> SVBGSA will coordinate with the appropriate water quality regulatory programs and agencies in the Subbasin to understand and develop a process for determining when groundwater management and extraction are resulting in degraded water quality in the Subbasin. . . . Under this implementation action, SVBGSA will play a convening role by developing and coordinating a water quality partnership (Partnership). . . . The Partnership will review water quality data, identify data gaps, and coordinate agency communication. The Partnership will include the Regional Water Quality Control Board, local agencies and organizations, water providers, domestic well owners, technical experts, and other stakeholders. The Partnership will convene at least annually. The goal of the Partnership will include documenting agency actions to address water quality concerns. An annual update to the SVBGSA Board of Directors will be provided regarding Partnership efforts and convenings.

(Eastside GSP, p. 9-101.) In effect, the Water Quality Partnership calls for holding an annual meeting and writing a report. This is not a sufficient basis to find that the GSA has met its statutory obligation to adopt a plan that will actually address water quality degradation.

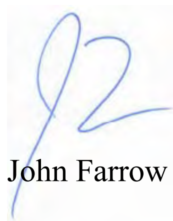
At minimum, a management action that addresses water quality degradation should include the following specific steps, which should be negotiated and memorialized in an MOU with the CCRWQCB and the Monterey County Department of Environmental Health:

- The agencies should arrange to monitor a sufficiently representative sampling of domestic wells to reliably determine any instance of a domestic well's failure to meet water quality standards.
- The agencies should accept and verify self-reporting of instances of failures to meet water quality standards.
- For each instance of failure to meet water quality standards, the agencies should ascertain whether the cause includes (1) discharge of pollutants, as determined by the CCRWQCB or the County DEH, and/or (2) pumping activity that has concentrated, mobilized, or moved pollutants, as determined by SVBGSA or the County DEH.
- Where the cause includes pumping activity, the SVBGSA should take action to abate the pumping that is causing the failure to meet water quality standards.

Absent such a program, the GSPs do not meet the statutory obligation to adopt a plan that will actually address water quality degradation.

Yours sincerely,

M. R. WOLFE & ASSOCIATES, P.C.



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October 15, 2021

Via Electronic Mail

Colby Pereira, Chairperson
Members of the Board of Directors
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Email: board@svbgsa.org

Subject: Comments on Draft Groundwater Sustainability Plans for the Upper Valley Aquifer, Forebay Aquifer Subbasin, Eastside Aquifer Subbasin, Langley Aquifer Subbasin, and Monterey Subbasin

Dear Chair Pereira and Members of the Board of Directors:

Thank you for the opportunity to submit comments. The following comments are offered on behalf of the members of California Coastkeeper Alliance and Monterey Waterkeeper.

Our comments are offered for all subbasin groundwater sustainability plans, including for the Upper Valley Aquifer, Forebay Aquifer Subbasin, Eastside Aquifer Subbasin, Langley Aquifer Subbasin, and Monterey Subbasin (collectively "GSPs"). Given the interdependence of the planning for all subbasins, comments are relevant to all the GSPs and the approach of the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") as applied to every subbasin. There is urgency to begin implementing meaningful projects and management actions which are protective of all beneficial uses of water, and we voice our agreement with the comments Community Water Center and LandWatch Monterey County have provided on plans developed by the SVBGSA and incorporate them here by reference.[1]

1. Overview of Requirements for Groundwater Sustainability Plans Under the Sustainable Groundwater Management Act.

The Sustainable Groundwater Management Act ("SGMA") requires the SVBGSA to include findings in the GSPs demonstrating the sustainability goal is likely to be achieved within 20 years of Plan implementation and is likely to be maintained through the planning and

[1] All comments on the GSPs and the 180/400 Foot Subbasin Plan through October 15, 2021, including comments to the Department of Water Resources.

implementation horizon.[2] Projects and management actions must be sufficient to support a determination that the GSPs will achieve the sustainability goal,[3] including descriptions of "circumstances under which projects or management actions shall be implemented, the criteria that would trigger implementation . . . and the process by which the Agency shall determine that conditions requiring the implementation of particular projects or management actions have occurred."[4] Time-tables for initiation and completion must be included,[5] along with an explanation of how the project or management action will be accomplished. Sustainability Plans must identify and *cause* the implementation of projects and management actions.[6] Providing concrete triggers and timetables for implementation is a critical and required component for demonstrating the GSPs are likely to meet the sustainability goal.

The GSPs are also required to support decisions with the best available science,[7] while Sustainable Management Criteria ("SMCs") and projects and management actions must be commensurate with the level of understanding of the basin setting.[8]

2. The Disparity Between the Basin-Wide Integrated Management Approach of the 180/400 Aquifer Subbasin GSP, and The Remaining GSPs Must Be Resolved.

The GSPs do not satisfy the SVBGSA's duty under SGMA because of conflicts between the approaches across the numerous GSPs and the 180/400 Foot Aquifer Plan. Plans for adjacent basins must not adversely affect the ability of one another to maintain their sustainability goals over the planning and implementation horizon.[9] We voice our agreement with comments LandWatch Monterey County has provided to the SVBGSA outlining concerns with consistency across the SVBGSA's GSPs, namely that inconsistency undermines the likelihood that any of the SVBGSA's subbasin plans will achieve their sustainability goals.

The groundwater sustainability plan for the 180/400 Ft Aquifer that was approved by the Department of Water Resources ("DWR") identifies 13 projects that "constitute an integrated management program for the entire Valley."[10] However, this basin-wide integrated management program has not been carried forward into the GSPs being drafted now. The GSPs each identify different sets of projects, which are also different from the projects identified in the 180/400 GSP. There is little overlap among the projects, and there are no projects that are common to all of the GSPs. Perhaps the most problematic example relates to the water charges framework. DWR relied on the feasibility and likelihood of the integrated set of basin-wide projects funded by the basin-wide water charges framework:

[2] 23 CCR § 354.24 (requiring discussion of measures that will be implemented to ensure likely achievement of sustainability goal).
[3] 23 CCR § 354.44(a).
[4] 23 CCR §§ 354.44(b)(1)(A).
[5] 23 CCR §354.44(b)(4).
[6] 10721(u) (emphasis added).
[7] *See* Cal. Water Code § 113; 23 CCR § 355.4.
[8] 23 CCR § 350.4.
[9] 23 CCR §350.4(f),
[10] 180/400 Aquifer plan, p. 9-25.

> The water charges framework, at this time, appears feasible and reasonably likely to mitigate overdraft, which is an important management action to help prevent undesirable results and ensure that the 180/400 Foot Aquifer Subbasin is operated within its sustainable yield.[11]

DWR considers the water charges framework to be the "fundamental structure of groundwater management" for the 180/400 Foot Subbasin.[12] The framework was intended to be implemented across all the SVBGSA basins.[13] However, the Upper Valley and Forebay Plans reject the Water Charges Framework,[14] meanwhile the Eastside, Monterey, and Langley plans do not mention the water charges framework in their discussions of funding options.[15]

The disparity between the basin-wide integrated management approach of the 180/400 Aquifer Subbasin GSP and the lack of integrated approach of the remaining GSPs must be resolved. After undertaking the process of developing and approving plans, a GSP must be implemented.[16] The conflict between the GSPs and the 180/400 Foot Aquifer Plan undermines the likelihood the approved 180/400 Foot Subbasin Plan will achieve its sustainability goal.

3. **Timelines for Implementation of Plans Must Be Concrete and Conservative to Ensure the Sustainability Goal Is Fulfilled.**

The GSPs do not satisfy the SVBGSA's duty to demonstrate a likelihood of achieving the sustainability goal by describing how projects and management actions are sufficiently concrete to be relied upon. The GSPs also fail to adequately address evidence of changing water supplies.

As a result of the passage of time, the SVBGSA forecloses its options to manage the basin sustainably. The SVBGSA is responsible for managing the basin sustainably, including being responsible for its choices *not* to initiate projects in a timely manner. Said differently, the choice to allow the status quo to persist is a management decision, the consequences of which the SVBGSA is responsible for under SGMA.

The urgency to begin implementation and commit to a *viable* strategy cannot be overstated. An increasing body of climate change research shows that drought will continue to intensify. For example, NOAA summarized the updated consensus on drought last month:

> The warm temperatures that have helped make this drought so intense and widespread will continue (and increase) until stringent climate mitigation is pursued and regional warming trends are reversed. As such, continued greenhouse gas warming of the U.S.

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[11] DWR, Statement of Findings, 180/400 Foot Aquifer Subbasin, p. 2.
[12] DWR, GSP Assessment Staff Report, 180/400 Foot Aquifer Subbasin (June 3, 2021), p. 31.
[13] DWR, GSP Assessment Staff Report, 180/400 Foot Aquifer Subbasin (June 3, 2021), p. 5 ("Groundwater users will be allowed to pump more than their sustainable allocation; however, this additional pumping (supplemental pumping) will be subject to higher extraction fees. The proposed water charges framework is also proposed to be instituted in the other five groundwater subbasins overseen by the SVBGSA, representing a Salinas Valley Basin-wide management action")
[14] Forebay GSP at 10-15 to 10-16; UVA GSP at 10-15 to 10-16.
[15] Eastside GSP at 10-15; Monterey GSP at 10-23; Langley GSP at 10-15.
[16] Cal. Water Code § 10727(a)

> Southwest will make even randomly-occurring seasons of average- to below-average precipitation a potential drought trigger, and intensify droughts beyond what would be expected from rainfall or snowpack deficits alone.[17]

We concur with Community Water Center's objections to the GSPs relying on the "Central Tendency" scenario in DWR's guidance.[18] Besides the fact that expectations of future drought scenarios have changed since DWR's guidance was published in 2018, the guidance itself encourages groundwater sustainability agencies to analyze the more extreme Dry-Extreme Warming and Wet-Moderate Warming scenarios. There is no reasonable basis for not following DWR guidance and analyzing these scenarios, and choosing not to consider these scenarios constitutes a failure to consider the best available science and information as required by SGMA.

Conservative estimates and plans for water budgeting will protect front line communities from the immediate impacts of groundwater overdraft. The GSPs are expressly required to consider these impacts by SGMA[19] and to ensure consistency with California's Human Right to Water Law[20] which holds up each person's right to have safe, clean, affordable, and accessible water. Overestimating the sustainable yield will undermine the likelihood of maintaining the sustainability goal through the planning and implementation horizon as required under SGMA.[21] Unfortunately, underrepresented communities and ecological and recreational beneficial uses will be the most impacted by the GSPs' failures in the short and long-term.

The SVBGSA's reliance on projects and management actions (such as large infrastructure projects) with uncertain viability due to issues including lack of funding and unpredictable political and permitting regimes that are outside its control does satisfy its legal duties. The SVBGSA must provide concrete triggers and timelines for projects within its control, including pumping restrictions, to demonstrate a likelihood of avoiding undesirable results and meeting the sustainability goal as required under SGMA. Indeed, the State Water Resources Control Board has emphasized to the SVBGSA the importance of establishing specific and reasonable timelines with respect to projects that may be reliant on water rights, including pumping restrictions.[22] Failure to avoid undesirable results, including sea water intrusion impacts, will be devastating, and will create irreversible and expensive impacts for the entire region to deal with once they occur. Management actions that will have an immediate, quantifiable impact, including limiting new wells and taking the necessary steps to initiate pumping restrictions must be included in the GSPs because they provide certainty and therefore are reasonably likely to help meet sustainability goals for the region as SGMA requires.

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[17] NOAA Drought Task Force Report on the 2020–2021 Southwestern U.S. Drought, September 21, 2021. Available at https://www.drought.gov/documents/noaa-drought-task-force-report-2020-2021-southwestern-us-drought

[18] Community Water Center Comments on the Draft Salinas Valley GSP Chapters 1-8 for the Langley, East Side, Forebay, Upper Valley and Monterey Subbasins, April 23, 2021, p. 11-14

[19] Cal. Water Code §10723.2.

[20] Cal. Water Code § 106.3.

[21] *See* 23 Cal Code of Reg ("CCR") § 354.24.

[22] State Water Resources Board letter to Craig Altare, Supervising Geologist, SGMA Office, Department of Water Resources, 180/400 Foot Aquifer Groundwater Sustainability Plan (December 8, 2020).

4. **The Sustainable Management Criteria and Management Actions for Depletion of Interconnected Surface Waters are Deficient and Violate SGMA and Public Trust and Reasonable Use Doctrines.**

Ecological and recreational surface water beneficial uses are not adequately protected under the GSPs.

A. Legal Background and SVBGSA's Duties Related to Depletion of Interconnected Surface Waters.

Plans are required to define sustainable groundwater management by first characterizing undesirable results.[23] Undesirable result number six is defined as "depletions of interconnected surface water that have significant and unreasonable adverse on beneficial uses of the surface water."[24] Plans must include sustainable management criteria ("SMCs") for undesirable results along with sufficiently concrete timelines and commitments for projects and management actions to demonstrate the sustainability goal is likely to be achieved and maintained throughout the planning and implementation horizon.[25] The GSPs' decisions must be supported by the best available science,[26] and SMCs and projects and management actions must be commensurate with the level of understanding of the basin setting.[27]

California's Reasonable Use Doctrine requires the SVBGSA to protect water resources and balance competing beneficial uses consistent with public interest. This doctrine is enshrined in SGMA.[28] Article X, section 2 requires "water resources of the State be put to beneficial use to the fullest extent of which they are capable, and the water or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare." The Reasonable Use Doctrine is the principle governing all uses of water resources in California.[29] Section 100 of the Water Code further mandates "that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare."[30]

The SVBGSA also has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible.[31] The SVBGSA must consider public trust resources as they relate to groundwater pumping impacts to surface water beneficial uses.

To summarize, the GSPs must first establish criteria, set out measures in sufficient detail to ensure sustainability according to the criteria, and then implement the plan. The SVBGSA

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[23] *See* 23 CCR 354.22; Cal. Water Code § 10721(u).
[24] *See* Cal. Water Code § 10721(x)(6).
[25] *See* 23 CFR 354.22 et seq.
[26] *See* Cal. Water Code § 100; 23 CCR § 355.4.
[27] 23 CCR § 350.4.
[28] Cal. Water Code § 10720.1.
[29] *Joslin v. Mann Municipal Water Dist.,* (1967) 67 Cal.2d. 132, 137-38.
[30] Cal. Water Code § 100.
[31] *National Audubon Society v. Superior Court* (1983) 33 Cal.3d. 419, 446 (1983).

must be guided by the Public Trust and Reasonable Use doctrines, especially given the significant interaction between surface water and groundwater in the Salinas Valley. These doctrines are guideposts for developing the SMCs.[32] The GSPs must undertake an analysis of the impacts to public trust resources and ensure the reasonable use of water. Any consideration of reasonableness must include analysis of the costs to public trust resources and the reasonableness of the loss of fish populations, for example. Ecological beneficial uses of the Salinas River are essential to meeting the success and viability of the South Central Southern California Steelhead.[33]

B. The Sustainable Management Criteria for Depletion of Interconnected Surface Waters Fail to Adequately Consider Impacts to Ecological Beneficial Uses Including Habitat for Steelhead Trout.

Prevention of Undesirable Result Number Six requires the SVBGSA to develop SMCs considering all impacts beneficial uses of surface water including Steelhead habitat. The overarching legal doctrine of reasonable use and public trust provide boundaries governing beneficial uses of surface water, and inform the analysis of what constitute "significant and unreasonable adverse impacts" on beneficial uses of the surface water as a result of these depletions under SGMA.

Groundwater pumping will impact surface waters and have an adverse impact on fish and wildlife. Yet the GSPs fail to provide any analysis of the impacts to public trust resources, the first step in the process to satisfy the public trust doctrine.[34] The SVBGSA has not acknowledged, let alone provided any analysis of the damage to Steelhead Trout habitat that will be caused under the proposed SMCs. This failure also violates the Reasonable Use Doctrine.

I. Reliance on the 2007 Biological Opinion Does Not Fulfill the SVBGSA's duties under SGMA, the Public Trust Doctrine, or the Reasonable Use Doctrine.

The SVBGSA has been repeatedly alerted to the damage being caused under the Biological Opinion and Incidental Take Statement for the Salinas Valley Water Project ("2007 Biological Opinion"),[35] and it should not be used to develop SMCs for the preventing of undesirable results related to the depletion of interconnected surface water. The GSPs fail to consider the impacts on Steelhead populations in particular. Steelhead are of particular importance because of their protected status, and their value as an indicator species for the health and sustainability of Salinas River management. Stakeholders, The National Marine Fisheries Service ("NMFS") in particular, have pressed the SVBGSA for changes due to concerns about

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[32] Belin, A., Guide to Compliance With California's Sustainable Groundwater Management Act: How to avoid the "undesirable result" of "significant and unreasonable adverse impacts on beneficial uses of surface waters" (2018) (available at https://stacks.stanford.edu/file/druid:kx058kk6484/Woods%20Groundwater%20Mgmt%20Act%20Report%20v06%20WEB.pdf).

[33] *See* NMFS Comment on UVA (May 7, 2021) Appendix A (Role of Salinas River in Meeting NMFS' South-Central California Coast Steelhead Viability/Recovery Criteria.**)**

[34] *National Audubon Society v. Superior Court* (1983) 33 Cal.3d. 419, 426.

[35] June 21, 2007.

the failure of the SMCs to undertake a meaningful analysis of impacts to ecological beneficial uses, including for Steelhead Trout habitat. The status quo management strategy under the withdrawn 2007 Biological Opinion does not adequately support ecological beneficial uses and constitutes an unauthorized take of steelhead trout under federal law.[36] This amounts to a violation of both the Reasonable Use Doctrine and Public Trust Doctrine. The GSPs, including projects and management actions that depend on the establishment of valid SMCs, must be revised accordingly.

The GSA has not interrogated the question of how recreational and ecological uses, including flows for Steelhead, are impacted under recent activities managing groundwater. NMFS has commented extensively throughout proceedings on the 180/400 and the proceedings on the remaining GSPs, explaining that the current regime does not protect ecological beneficial uses. Importantly, NMFS has explained that implementation of the withdrawn 2007 Biological Opinion should not be relied on by the GSA as evidence that the current regime supports ecological beneficial uses.

The 2007 Biological Opinion was withdrawn because it did not adequately protect Steelhead and was not protective of public trust resources. For example, the Biological Opinion assumed precipitation would follow historical wet and dry year patterns,[37] and the Salinas Valley Water Project would operate as planned. Neither assumption has proved correct, however. California has experienced severe, multi-year droughts that began after NMFS issued the Biological Opinion in 2007. The Flow Prescription only contemplated water releases from the Nacimiento and San Antonio Reservoirs for steelhead flows in the Salinas River when combined water storage is above 150,000 acre-feet for smolt outmigration or 220,000 acre-feet for adult upstream migration and juvenile passage to the lagoon. The Flow Prescription does allow for 2 cfs of flow to the lagoon during dry years where flows for migration are not triggered. Due to the droughts, reservoir storage capacity has not exceeded the migration-flow trigger levels, relieving Monterey County Water Resources Agency from any obligation to provide conservation releases. Due to declining reservoir storage and low rainfall, fish passage has been impossible, effectively precluding steelhead reproduction. As a result, steelhead trout receive essentially no conservation flow benefit from the Biological Opinion that was crafted with the object of protecting the species.

Since the Biological Opinion was withdrawn, federal and state agencies have made clear that the flow regime it proposed was inadequate and must be updated.[38] The SVBGSA has not explained how it can rely on a withdrawn Biological Opinion and comply with SGMA's mandate to use the best available science and information. The SVBGSA maintains that it can wait for a revised flow regime in a yet-to-be developed Habitat Conservation Plan. Meanwhile The

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[36] "Unauthorized take" is defined as "to harass, harm pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(19).
[37] *See, e.g.*, 2007 Biological Opinion, p. 12-13.
[38] *See* South-Central California Coast Steelhead Recovery Plan, National Marine Fisheries Service, West Coast Region, California Coastal Area Office, Long Beach, California (2013) (explaining the failures).

California Department of Fish and Game advise conservatism in such situations, where impacts of groundwater-surface water dynamics are either unknown or in the process of being analyzed.[39]

The Biological Opinion does not support ecological beneficial uses, and the SVBGSA has not explained how reliance on it to establish SMCs will protect ecological beneficial uses, protect public trust resources, and reasonably balance beneficial uses of water. NMFS has commented that the using the proposed SMCs are "likely a take," explaining:

> Given that 2015 pumping levels, and the corresponding impact of surface water depletion on beneficial uses, were likely some of the highest on record due to California's historic drought, preventing those impacts from worsening in the future is hardly a "benefit" to ecological users of surface water, and akin to ensuring a dry river channel doesn't get any drier.[40]

The fact that implementation of the proposed SMCs will cause a take to occurr, in and of itself, constitutes a "red light" scenario under Undesirable Result Number Six, and requires remedial steps by the SVBGSA.[41] The SVBGSA has responded to NMFS concerns, not by changing the substance of the GSPs to better protect ecological uses with meaningful action, but merely by explaining the intent to wait for a new Habitat Conservation Plan to establish a new flow regime that will be protective. This strategy does not analyze, much less incorporate the best information or science as required under SGMA. Neither has the SVBGSA provided any discussion or support for how waiting for a new Habitat Conservation Plan, a process completely outside the control of the SVBGSA, satisfies its duties to safeguard public trust resources and ensure the reasonable use of water.

The fact that the current flow regime is inadequate to support ecological beneficial uses has consequences for the GSPs' water budgets as well. The GSPs must consider the best available information and science in establishing the water budget.[42] The GSPs use of the withdrawn Biological Opinion does not satisfy the SVBGSA's duty to use the best available information and science for the purpose of water budgeting.

II. The Use of Groundwater Levels as a Proxy for Interconnected Surface Water Sustainable Management Criteria is Not Adequately Supported.

Under SGMA, the use of groundwater levels as a proxy in the depletion of interconnected surface water SMCs requires that a "significant correlation exists between groundwater elevations" and undesirable surface water depletion impacts they are designed to measure.[43] However, the GSPs do not establish a significant correlation, ignoring significant and

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[39] Fish & Wildlife Groundwater Planning Considerations. California Department of Fish and Wildlife, Groundwater Program. California Department of Fish and Wildlife (2019) p. 14 (available at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=170185&inline)
[40] NMFS Comment to Upper Valley Aquifer GSA, May 7, 2021.
[41] Belin, A., Guide to Compliance With California's Sustainable Groundwater Management Act: How to avoid the "undesirable result" of "significant and unreasonable adverse impacts on beneficial uses of surface waters" (2018).
[42] 23 CCR § 354.18(e).
[43] 23 CCR § 354.36(b).

unreasonable impacts to Steelhead, and by proxy, to the ecological health of the Salinas Basin, that are accruing under the current and projected future levels of groundwater pumping. These local circumstances, including the most relevant and current facts and impacts on recreational and ecological resources must be analyzed to establish any significant correlation. Simply citing to a 2018 Environmental Defense Fund guidance, as the SVBGSA has done, is not adequate to establish the proxy relationship. In fact, that guidance makes clear that local conditions and circumstances must be analyzed, and does not suggest that groundwater levels should be used as a proxy without such analyses.[44]

The SMCs must be reevaluated in light of the body of evidence that ecological and recreational beneficial uses are not adequately being protected. SGMA requires this information be included in the analysis of significant and unreasonable adverse impacts on beneficial uses of surface water. Despite the requirements of the Public Trust and Reasonable Use doctrines, the GSPs fail to use reasonable means available under its authority to analyze, much less limit unreasonable impacts to surface water beneficial uses and public trust resources. The SVBGSA must, as a starting point, acknowledge what those impacts are. Then the SVBGSA must determine the implications for sustainable groundwater management in the Salinas Valley.

C. Projects and Management Actions for Preventing Undesirable Result Number Six Are Not Supported by the Best Available Science.

Projects and management actions to address depletion of interconnected surface waters must consider the best available science.[45] The GSA must support its conclusions with substantial evidence after applying the best science that is available now. As explained above, the proposed SMCs, which are supposedly designed to protect against undesirable result number six, depletion of interconnected surface waters, rely on outdated findings from the 2007 Biological Opinion that has been retracted, and ignore more recent data and information. The GSP ignores ample evidence that has been submitted to the SVBGSA demonstrating the need for increased flows to support ecological beneficial uses. Relying on the Biological Opinion's flow regime while ignoring the reasons it was withdrawn and supplemental information violates SGMA regulations requiring the best available science and information support decisions in plans.

D. The GSPs Do Not Include Reasonable Steps to Develop Protective Sustainable Management Criteria, Projects, and Management Actions.

As with other SMCs, SGMA's mandate that the GSPs address depletion of interconnected surface waters requires that management actions the GSPs proposes are reasonable and supported by the best available science. In addition, the Public Trust places an affirmative duty on the SVBGSA to consider public trust resources and protect them "whenever

[44] *See* Hall, M., Babbitt, C., Environmental Defense Fund, Addressing Regional Surface Water Depletions in California, A proposed approach for compliance with SGMA (2018) p. 7 (available at https://www.edf.org/sites/default/files/documents/edf_california_sgma_surface_water.pdf).
[45] 23 CCR § 354.44(c).

feasible,"[46] and the Reasonable Use Doctrine requires that GSPs provide for "the greatest number of beneficial uses which the supply can yield."[47]

The SVBGSA's plan to "continue to coordinate with NMFS on the effect of pumping on interconnected surface water and steelhead trout" falls well short of these standards. The GSPs must set forth concrete steps that will be taken to establish legally sufficient SMCs, including impacts to Public Trust resources. SGMA requires corresponding projects and management actions, sufficient to support the determination by the SVBGSA that the sustainability goal will be met, be included in the GSP, and then implemented. The SVBGSA must separately demonstrate that it has fulfilled its duties under the Reasonable Use and Public Trust doctrines. Indeed, an attempt to avoid or minimize the harm to public trust uses is the second step required by the Public Trust Doctrine.[48]

5. Sustainable Management Criteria and Management Actions Related to Water Quality Violate SGMA.

The GSPs must analyze how groundwater conditions impact and degrade water quality. While the SVBGSA may not be the only agency with some responsibility over groundwater quality, the fact that other agencies including the County and the Regional Water Quality Board have authority and responsibility to address water quality degradation does not relieve the SVBGSA from its duty to ensure groundwater conditions in the basin do not create undesirable results. DWR rejected the SVBGSA's narrow interpretation of its responsibility to protect against water degradation.[49] The fact that multiple other agencies share responsibility demonstrates that the statutory scheme does not intend to rely on the regulatory actions of any single agency.

SGMA requires the GSPs to address degradation of water quality that accrues after January 1, 2015.[50] SGMA states that a plan "may, but is not required to, address undesirable results that occurred before, and have not been corrected by, January 1, 2015." Thus, the GSPs must address all worsening water quality that results from groundwater use, including instances where water quality may have already violated maximum contaminant levels in 2015.

Nothing in SGMA's mandate that the GSPs address water quality degradation permits the SVBGSA to ignore water quality degradation that results from third party pumping. The GSPs must address the effects of its regulatory acts, and its failures to act.[51]

The State Water Resources Board identified the importance of the SVBGSA sorting out its responsibilities vis-à-vis other agencies in 2020:

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[46] *National Audubon Society v. Superior Court* (1983) 33 Cal.3d. 419, 446.
[47] *Peabody v. City of Vallejo*, 2 Cal. 3d 351, 368 (1935).
[48] *National Audubon Society v. Superior Court* (1983) 33 Cal.3d. 419, 426.
[49] DWR GSP Assessment Staff Report, Salinas Valley – 180/400 Foot Aquifer (June 3, 2021) p. 27.
[50] Cal. Water Code §§10727.2(b)(4); 10721(x)(4).
[51] *See, e.g.,* Cal. Water Code § 10721(u) (explaining that the plans must achieve the sustainability goal by identifying and causing the implementation of projects and management actions).

> The GSP states that only water quality impacts caused by GSP implementation are unacceptable but does not explain how SGMA-related water quality changes will be distinguished from other water quality changes. The GSP should outline the process the GSAs would use to decide whether or not an exceedance of an MT for water quality degradation was caused by GSP implementation; otherwise, it is difficult to judge how adequately the GSP addresses undesirable results related to water quality degradation. Staff recommends that the GSAs consult with the Central Coast Water Board in developing this process.[52]

Not only does the SVBGSA have responsibility to consider water quality impacts, but the GSPs must also put in place concrete plans for determining which agency will take responsibility under which circumstances, to ensure that water quality issues are dealt with. The State Water Board and DWR have identified the importance of consulting with the Central Coast Water Board to ensure responsibilities are understood and water quality is adequately protected.[53]

The proposed "Water Quality Partnership" project and/or management action in the GSPs[54] does not satisfy SGMA's requirement that he SVBGSA provide findings determining the project and management actions will achieve the sustainability goal,[55] nor do the GSPs include required descriptions of circumstances under which the partnership will be implemented, criteria triggering implementation,[56] time-tables for initiation and completion,[57] or an explanation of how the project or management action will be accomplished. The GSPs must identify and *cause* the implementation of the Water Quality Partnership actions.[58] Providing these details is a critical and required component for demonstrating the GSPs are likely to meet the sustainability goal, as the SVBGSA is required to do.

The Water Quality Partnership needs to be revised to be an effective, enforceable commitment to action by the agencies with the most direct oversight of the cause of any exceedance. At minimum, a management action that addresses water quality degradation should include the following specific details, which should be negotiated and memorialized in a memorandum of understanding ("MOU") to include the SVBGSA, the Regional Water Quality Board, and the Monterey County Department of Environmental Health:

- The agencies must monitor a sufficiently representative sampling of domestic wells to reliably determine any instance of a domestic well's failure to meet water quality standards;

- An approach to reach agreement between the agencies, for each instance of failure to meet the measurable threshold for water quality, about whether the cause includes (1)

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[52] State Water Resources Board letter to Craig Altare, Supervising Geologist, SGMA Office, Department of Water Resources, 180/400 Foot Aquifer Groundwater Sustainability Plan, Groundwater Subbasin No. 3-004.01(December 8, 2020), p. 3.

[53] *Id*; DWR GSP Assessment Staff Report, Salinas Valley – 180/400 Foot Aquifer (June 3, 2021), p. 27.

[54] *See, e.g.*, Eastside Aquifer Plan, pp. 9-100 - 9-101.

[55] 23 CCR § 354.44(a).

[56] 23 CCR § 354.44(b)(1)(A).

[57] 23 CCR §354.44(b)(4).

[58] Cal. Water Code § 10721(u) (emphasis added).

discharge of pollutants and/or (2) pumping activity that has concentrated, mobilized, or moved pollutants. Each instance, there must be public oversight and clear system of accountability for the agency/agencies that are assigned responsibility;

- Where the cause includes pumping activity, the SVBGSA should take action to abate the pumping that is causing the failure to meet water quality standards;
- Adequate funding for all aspects of the project, including financial support for outreach to underrepresented communities;
- Unless and until the Water Quality Partnership approach results in an improvement in the water quality for the impacted well immediately after reporting, the minimum threshold should be set at 75% of the relevant maximum contaminant level to adequately protect public health.

In addition, the MOU for the Water Quality Partnership should be finalized in a timely manner. Further, the agencies should report out to the public on those meetings regularly and the GSPs should establish a concrete timeline for when the respective requirements of the MOU will be complete, and consequences if the timelines are not met.

Lastly, we voice our agreement with the voluminous comments Community Water Center has provided to the SVBGSA on water quality impacts for disadvantaged communities in particular. We implore the SVBGSA to give attention to the robust and detailed contribution of Community Water Center staff on the GSPs.

6. The SVBGSA Should Take Meaningful Steps to Improve Representation of Underrepresented Communities

The SVBGSA must take meaningful steps to remedy the disparity of representation with the SVBGSA and its board, as required by SGMA[59] and to ensure consistency with California's Human Right to Water Law.[60]

The GSPs' discussion of Underrepresented Communities acknowledges that they "have little or no representation in water management and have often been disproportionately less represented in public policy decision making."[61] However, the SVBGSA makes no meaningful commitment to remedy this issue. The GSPs should identify funding for these projects, and provide specifics as to exactly how these plans will be executed. The GSPs should explain what metrics they will use to evaluate and demonstrate the increased "representation" for underrepresented communities. The GSPs should attach specific timelines to these metrics, and also describe binding consequences that will be triggered if the SVBGSA fails to meet its goals.

In addition, to increase the representation of underrepresented communities, we implore the SVBGSA to incorporate the suggestions and direction of organizations such as Community Water Center, an organization that has dedicated significant resources to the ongoing creation of

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[59] Cal. Water Code § 10723.2 (expressly requiring SVBGSA to consider interests of all beneficial users).
[60] Cal. Water Code § 106.3.
[61] *E.g.,* Upper Valley Aquifer Subbasin plan, p. 10-8.

SVBGSA GSPs and which has an express mission to represent underrepresented communities on the Central Coast.

Lastly, there is a systemic flaw that underlies the SVBGSA creation of its plans and will surely plague the implementation until it is resolved: the structural over-representation of agricultural interests in decision making for the SVBGSA. In addition to strong agricultural interests intrinsic to seats appointed by municipalities and the County of Monterey, four seats of the eleven-seat board are allocated to "agricultural interests." A super majority of three of those four agricultural votes are required for the most consequential decisions including to impose certain fees and impose pumping limits. To increase "representation" of underrepresented communities who often bear the burdens of unsustainable groundwater use, the SVBGSA should increase the representation of non-agricultural beneficial users, especially underrepresented communities, on the SVBGSA board to allow interests of these other beneficial users to meaningfully participate in decision making. Funding should be set aside for seats designated for underrepresented communities to ensure the seats are accessible for those with limited resources.

Thank you for your consideration, and we look forward to ongoing work with the SVBGSA to ensure our shared groundwater resources are managed sustainably.

Sincerely,

Tyler Sullivan, Staff Attorney
Drevet Hunt, Legal Director
California Coastkeeper Alliance

Sean Bothwell, Board Member
Monterey Waterkeeper

Copy via email to:
Donna Meyers, General Manager, meyersd@svbgsa.org
Emily Gardner, Deputy General Manager, gardnere@svbgsa.org

COMMUNITY WATER CENTER
EL CENTRO COMUNITARIO POR EL AGUA

San Jerardo Cooperative, Inc.

October 15, 2021

Salinas Valley Basin Groundwater Sustainability Agency
Submitted electronically to:
Emily Gardner, Deputy General Manager
Donna Meyers, General Manager

Subject: Comments on the Draft Salinas Valley Subbasin GSPs for the Langley, East Side, Forebay, Upper Valley and Monterey Subbasins

Dear Salinas Valley Basin Groundwater Sustainability Agency:

The Community Water Center (CWC) and the San Jerardo Cooperative offer comments and recommendations in response to the draft Groundwater Sustainability Plans (GSPs) for the Langley, East Side, Forebay, and Upper Valley Subbasins as released in the Fall of 2021 by the Salinas Valley Basin Groundwater Sustainability Agency (SVB GSA). Previously, we submitted comments on April 23, 2021 regarding Chapters 1-8, on April 28, 2021 on a preliminary draft of Chapter 9, and on June 17, 2021 regarding Chapters 2, 9, and 10.

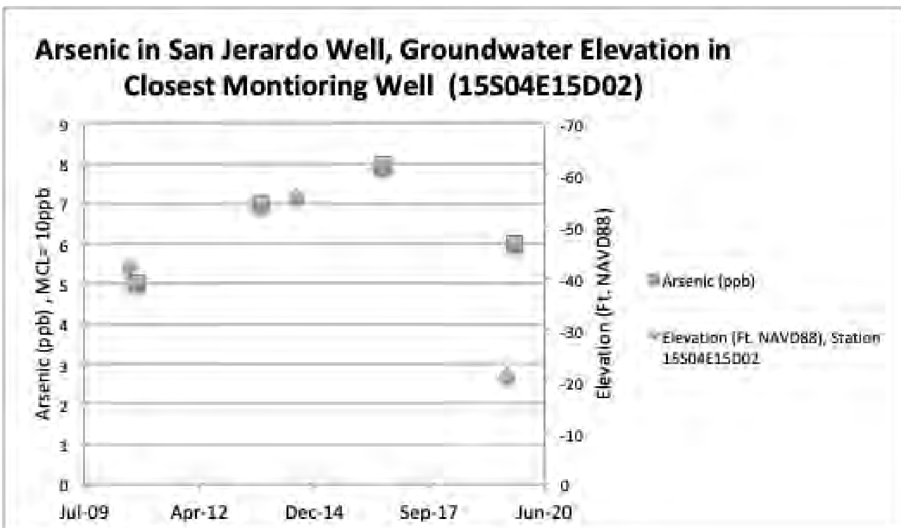
Because the Subbasin GSP drafts are now to be reviewed and voted upon by the SVB GSA Board, we take this opportunity to synthesize many of our comments into one document and provide relevant updates based on SVB GSA Staff responses and our answers in turn. Responses included here from SVB GSA, unless otherwise cited, were published in the Comment Letter Comment Tables responding to public comments made mid-2021 when drafts were prepared for the Subbasin Committees.[1] Additionally, unless otherwise noted, GSP Section numbers refer to the Eastside Subbasin GSP and the comments apply to all SVB GSA subbasins. As always, these comments are intended to add to the public record and are submitted in addition to previous written and spoken comments.

We reiterate the following context for this comment letter and the San Jerardo Cooperative's participation in particular. The challenges facing San Jerardo and similar communities throughout all the Subbasins in the Salinas Valley are the foundation of our comments in this letter. The San Jerardo Cooperative's well is highly vulnerable to changes in groundwater levels and groundwater quality. Over decades of living and working at San Jerardo Cooperative, Advisory Committee Member Horacio Amezquita has observed firsthand how the irrigation practices on properties surrounding the cooperative impact the water quality in their current and former wells. The San Jerardo Cooperative receives drinking water from a small public water system (CA2701904) and is very concerned that

[1] SVB GSA. (2021). *Subbasin GSP Comment Letter Comment Tables*. On file with SVB GSA and available at: svbgsa.org. *See e.g.*, https://svbgsa.org/wp-content/uploads/2021/08/Eastside-Comment-Letters-Responses-081021.pdf.

pumping, irrigation practices, and groundwater management in the East Side Subbasin will cause their drinking water well, which currently meets all drinking water standards, to exceed the maximum contaminant levels for arsenic and/or nitrate. Unfortunately, data from the State Water Board indicates increasing levels of nitrate and arsenic in their well with a high arsenic level of 8 ppb on 8/22/2016 that also corresponds to a low groundwater elevation of -61.5 in Station 15S04E15D02, the closest monitoring well to the San Jerardo Cooperative's well (See CWC Figures 1 and 2).[2] While there are too few monitoring data points to draw significant conclusions, CWC Figure 1 does suggest that arsenic levels are higher when groundwater levels are lower. Scientific studies confirm that 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.[3]

CWC Figure 1: Arsenic in San Jerardo Well, Groundwater Elevation in Closest Monitoring Well
(Note: The groundwater elevation y-axis is reversed to illustrate that lower groundwater elevations are associated with higher arsenic levels.)



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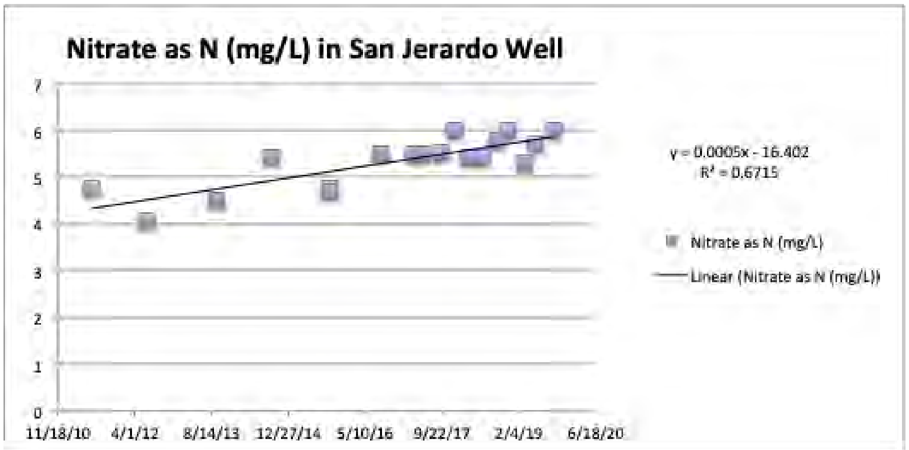
[2] CWC Figure 1 contains all available arsenic data from the State Water Board's Drinking Water Watch online database (https://sdwis.waterboards.ca.gov/PDWW/) which was collected in October 2010, 9/11/13, 8/22/16, and 9/23/19. We then added the monitoring data for Station 15S04E15D02 for the dates most close to the arsenic sampling dates (August 2010, August 2014, August 2016, and August 2019). CWC Figure 2 data was also downloaded from the same online database.

[3] Community Water Center and Stanford University (2019). *Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium*. Available at: https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896.

CWC Figure 2: Nitrate in San Jerardo Well.



We provide more specific chapter-by-chapter comments below. We emphasize that the GSP must be revised throughout to further incorporate the best available science[4] showing that groundwater pumping and groundwater level changes can influence water quality, and the GSA has obligations to prevent the significant and unreasonable exacerbation of degraded water quality. We also note that a management decision to *not* regulate pumping and to therefore permit current pumping rates is still a management decision. This recommendation is supported by DWR's 180/400 ft Aquifer GSP Determination on June 3, 2021:

> "**[S]taff find that the approach to focus only on water quality impacts associated with GSP implementation, i.e., GSP-related projects, is inappropriately narrow.** Department staff recognize that GSAs are not responsible for improving existing degraded water quality conditions. **GSAs are required; however, to manage future groundwater extraction to ensure that groundwater use subject to its jurisdiction does not significantly and unreasonably exacerbate existing degraded water quality conditions.**
> Where natural and other human factors are contributing to water quality degradation, the GSAs may have to confront complex technical and scientific issues regarding the causal role of groundwater extraction and other groundwater management activities, as opposed to other factors, in any continued degradation; but **the analysis should be on whether groundwater extraction is causing the**

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[4] 23 CCR § 355.4(b)(1). "When evaluating whether a Plan is likely to achieve the sustainability goal for the basin, the Department shall consider the following:
(1) Whether the assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are reasonable and supported by the best available information and best available science."

degradation in contrast to only looking at whether a specific project or management activity results in water quality degradation.

Department staff recommend that the SVBGSA coordinate with the appropriate water quality regulatory programs and agencies in the Subbasin to understand and **develop a process for determining when groundwater management and extraction is resulting in degraded water quality in the Subbasin** (see Recommended Corrective Action 5)."[5]

We strongly recommend that the GSPs incorporate a more robust and representative monitoring network and minimum thresholds to protect vulnerable communities like San Jerardo and those dependent on shallow domestic drinking water wells. This network should include state and local small water systems. In tandem, we recommend the incorporation of a Well Impact Mitigation Program, as discussed below.

Thank you for reviewing this letter and for the consideration of our comments on the draft GSP chapters. We look forward to working with the SVB GSA to ensure that the GSPs are 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. We also look forward to meeting with you in the future to further discuss issues raised in these and past comments.

Sincerely,

Heather Lukacs
Community Water Center

Horacio Amezquita
General Manager, San Jerardo Cooperative, Inc.

Justine Massey
Community Water Center

Mayra Hernandez
Community Water Center

[5] Department of Water Resources. (2021). *Statement of Findings Regarding the Approval of the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan.* Pp. 26-27. (Internal citations omitted; emphasis and paragraph breaks added). Available for download at: https://sgma.water.ca.gov/portal/gsp/status.

GSP Chapter 2: Communications and Public Engagement

SGMA requires GSAs to consider all beneficial users in groundwater management decisions and specifically names domestic well users and disadvantaged communities (DACs) as beneficial users.[6] SGMA also requires GSAs to "encourage the active involvement of diverse social, cultural, and economic elements of the population within the groundwater basin *prior to and during the development and implementation of the groundwater sustainability plan."*[7] The regulations similarly require that a GSP summarize and identify, "opportunities for public engagement and a discussion of how public input and response will be used."[8] The GSA thus must engage, "diverse social, cultural, and economic elements of the population within the basin."[9] SGMA Regulations recognize that failure to engage adequately with a diverse cross-section of the public undermines the likelihood that a GSP will avoid undesirable results and meet its sustainability goal.[10]

Community Water Center appreciates the statement found in Chapter 2 of the Langley, Eastside, Forebay, and Upper Valley subbasins: "[T]he success of the... Subbasin GSP will be determined by the collective action of every groundwater user."[11] Public engagement invites citizens to get involved in deliberation and to take 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 those who are traditionally underrepresented. DWR's Guidance for Stakeholder Communication and Engagement acknowledges that 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.[12] Additionally, as part of a Strategic Planning Review, SVB GSA has recently recognized an overrepresentation of agricultural interests in its GSP formation process and voiced interest in balancing its representation, however has not yet taken action to do so. In this light, we offer the following recommendations:

- **Fast-track stakeholder outreach efforts in order to meaningfully engage beneficial users throughout the basin in the GSP development process currently underway.**
    - Based on our review of the language in Chapter 2 of the Subbasin GSPs, it appears that the outreach and engagement strategies outlined in Section 2.7, which are specific to the underrepresented communities and disadvantaged communities in the Basin, are to be put in place only after the GSP is submitted in 2022.

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[6] Cal. Water Code § 10723.2.
[7] Water Code § 10727.8. (Emphasis added).
[8] 23 CCR § 354.10(d)(2).
[9] DWR (2018). *Guidance Document for Groundwater Sustainability Plan: Stakeholder Communication and Engagement.* P. 1. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Assistance-and-Engagement/Files/Guidance-Doc-for-GSP---Stakeholder-Communication-and-Engagement.pdf.
[10] 23 CCR §355.4(b)(4).
[11] SVB GSA (2021). *Subbasin GSPs Draft - Chapter 2: Goals for Communication and Public Engagement.* P. 10 (in all drafts). Available at: https://svbgsa.org/subbasins/.
[12] DWR (2018). *Guidance Document for Groundwater Sustainability Plan: Stakeholder Communication and Engagement.* Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Assistance-and-Engagement/Files/Guidance-Doc-for-GSP---Stakeholder-Communication-and-Engagement.pdf.

- This delay results in little to no participation or input from these communities during the GSP development process currently underway.

- Update: While SVB GSA held workshops with DAC representatives to develop a plan for outreach to DACs, **the resulting plan to solicit DAC input regarding the core management decisions in the GSP—including the setting of SMCs and the representative monitoring network—was *not* implemented during GSP development.** Consulting DAC stakeholders solely in regards to outreach strategies is not sufficient engagement. It is likely that due to SVB GSA's lack of implementation of their outreach strategy plan[13] many DAC voices and opinions have been left out of this current GSP because DAC residents have not been made aware of this process. Even if they are aware of the GSP process, many still lack the information and tools they need to participate. It is critical to have DAC stakeholders engaged in the development of the GSP as well as on a continuing basis.
  - Section 2.4 asserts that SVB GSA "deployed… [an] inclusive outreach and education process conducted that best supports the success of a well- prepared GSP that meets SGMA requirements." However, acknowledging that initial steps were taken, the GSA has not provided evidence of carrying out this outreach and fulfilling SGMA requirements.
- **Specify which outreach strategies will be used to reach underrepresented communities and disadvantaged communities.** The proposed goals for communication and engagement actions and strategies in this chapter lack important details to ensure that all beneficial users, especially underrepresented communities and disadvantaged communities, will have access to the resources that are being proposed. It must be noted that underrepresented communities and disadvantaged communities may not have access to the internet, therefore they may not have access to the online resources on either the SVB GSA website or through social media. Additionally, in the case that they do have access to the internet, they may lack knowledge or familiarity regarding how to access the online resources.
- **Provide a strategy for how to reach stakeholders with limited or no SGMA knowledge.** In Subbasin GSPs' Section 2.6.3, SVB GSA acknowledges that there is a "variety of audiences targeted within the Basin whose SGMA knowledge varies from high to little or none." However, no strategy is provided for how those with no knowledge will be reached. This chapter should be modified to include more details on how and what additional strategies will be implemented to ensure that SVB GSA is reaching all beneficial users. We recommend the following approaches:
  - **Include more grassroots-based approaches to request and incorporate DAC and drinking water user feedback in the GSP, which are critical to actually reaching stakeholders and fulfilling the GSA's goal.** One of the goals of the Communications and Public Engagement (CPE) Actions which we strongly support is to "invite input from the public at every step in the decision-making process and provide transparency in outcomes and recommendations." However, based on the communication/ outreach strategies mentioned in the chapter, efforts fall short of inclusivity. The general public

[13] As outlined in February 2021 SVB GSA Staff Report, Available at: https://legistarweb-production.s3.amazonaws.com/uploads/attachment/pdf/820418/Item_5a_-_Staff_Report.pdf.

does not always have access to certain resources like the internet, and even if they do have access they may not know how to use social media, use email, or browse the web.

- **Document and continue the policy of providing translation services at public meetings and of providing bilingual (English and Spanish) information and materials on the website, via email, and paper mail.** The Dymally-Alatorre Bilingual Services Act requires that public agencies serving over 10% of non-English speaking constituents provide appropriate translation services.[14] At a minimum, translated information should be provided during Plan updates and prior to critical decisions. In particular, the submitted GSP released during the formal comment period should include bilingual materials highlighting key summaries of the GSP. Critical decision points also include the adoption of groundwater fees, the approval of new groundwater projects or management actions, and decisions around pumping restrictions.
- **Consider inserting short notices in water bills and/or community newsletters on a monthly basis (notices should include key messages, visuals and information that is relevant to the average water user).** These notices must be translated as described above.
- **Specify how and when the accessible and culturally responsive GSA materials mentioned in Section 2.7 will be developed to communicate impacts of groundwater management on local water conditions and how they will be delivered or made available to URCs and DACs that do not have internet access.** Accessibility includes appropriate visual content and translation.
- **Consider using USPS every door direct mail (EDDM) to send out educational materials and updates to all stakeholders.** This tool can be used to map ZIP Code(s) and neighborhoods, it also has a filter feature that lets you filter by age, income, or household size using U.S. Census data. This tool can be helpful to reach stakeholders that do not have internet access.
- **Clearly identify and utilize existing community venues (on a monthly basis if possible) for community meetings, workshops, and events to provide information**. For example, the GSA could hold educational workshops during water board and school district board meetings, or after church services. Venues should be carefully selected in order to meet the needs of the targeted audience.
- **Clearly identify radio channels, social media avenues, websites, and other media outlets readily accessible to the community**. The submitted GSP should be revised with a policy requiring a broader outreach effort in the near future, with bilingual outlets.
- **Specify a timeline to work with key community leaders or trusted messengers on at least a monthly basis to distribute information and encourage community participation.** Venues for such leaders to share information could include churches, civic groups, clubs, non-profit organizations, and schools.
- **Consider hosting Spanish-only outreach meetings, as they can be more effective in transferring knowledge and receiving feedback.** It can be a challenge to provide

[14] California Government Code §7290.

real-time translation of technical groundwater terms and concepts in a way that is understandable and promotes participation, so it may be appropriate to conduct a meeting entirely in Spanish so that participants can be fully immersed in the discussion.

    - **Consider hiring a bilingual Stakeholder and Outreach Communication specialist as part of the SVB GSA staff.** Expanding the GSA's reach to different audiences and maintaining a robust stakeholder list of interested individuals, groups and/or organizations is a good step to ensure that the general public is informed about the GSA's activities. However, it will require substantial time and effort to develop a clear outreach methodology, obtain a representative list of stakeholders (including those who do not engage online), ensure language accessibility, and make sure stakeholders stay informed and engaged. A bilingual Stakeholder and Outreach Communication specialist could support this work.

- **We recognize and appreciate the inclusion of Appendix 2D Disadvantaged Communities in this draft of the subbasin GSPs. We recommend the following corrections / improvements to better represent DACs and their drinking water sources:**
    - **Clarify the number of domestic water systems that Monterey County Department of Environmental Health regulates under its Local Primacy Agency Authority as well as the local small water systems regulated under County Code.** See page 61 of the Eastside Volume 1 Appendices which states "There are approximately 160 such systems in the County regulated under this program."[15] This number is likely referring to the total number of public water systems serving less than 200 connections regulated by Monterey County but does not include state and local small water systems. From Monterey County's webpage on Small Water Systems "The Drinking Water Protection Services regulates Local and State Small Water Systems, which serve 2-14 connections. Many residents and visitors receive their water from these systems. Drinking Water Protection Services currently administers 969 systems, which serve about 4232 connections."[16]
    - Update the maps of **all disadvantaged communities (DACs) currently in Appendix 2D in the following ways:**
        - To reflect more recent census data from 2019 or later (the current map shows data from 2016). Continue to share the DAC/SDAC status of all census block groups, census designated places, and census tracts.
        - Include DAC or SDAC communities according to household income surveys conducted in accordance with state and federal agency guidelines to determine eligibility for state funding programs.
        - More clearly show the location of DACs, their drinking water sources, and their water quality in the subbasin including private wells. Figure 2 in Appendix 2D

[15] https://svbgsa.org/wp-content/uploads/2021/08/Eastside-Volume-1-Appendices.pdf

[16] https://www.co.monterey.ca.us/government/departments-a-h/health/environmental-health/drinking-water-protection/state-and-local

should combine data from GAMA and Monterey County to show the levels of COCs, including but not limited to nitrate, in recent years in drinking water sources in DAC areas. This would also provide data for Figure 2 in the Monterey County Subbasin which currently does not show any water quality data, because the Monterey Subbasin was not part of the geographic scope of the CCGS (2015) information included in the appendix.

- Update Figure 2 to show the entire Salinas Valley and not only the subbasins in the north. The Upper Valley Subbasin Volume 1 Appendices, for example, includes Figure 2 that does not show the Upper Valley subbasin.[17]

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 Disadvantaged Communities (DACs) and all drinking water users including domestic well communities are explicitly addressed early on in the GSP. In addition to comments previously submitted to the GSA on July 10, 2020, we recommend the following updates to this chapter:

- **Clarify the number and type of public water systems in the subbasins throughout the entire plan.** In each subbasin plan, there are discrepancies between types and numbers of public water systems in different chapters. It is absolutely critical to clearly include the number of public supply wells *currently in use* in the GSPs. For example, the East Side GSP lists the following:
    - Table 3-2 Well Count Summary shows “Public Supply= **24 wells**”
    - Table 5-3 GAMA Water Quality Summary shows "Number of Existing Wells in Monitoring Network Sampled for COC to be **78** for 123-TCP, **89** for Nitrate, and **70** for TDS.
    - Section 7.5 says "**Ninety** DDW wells have been chosen to be part of the RMS network. These wells are shown on Figure 7-4 and listed in Appendix 7D.” This table includes all DDW wells that were sampled for COCs between December 1982 to December 2019, yet it is unclear whether all these wells are still active, and after consulting Appendix 7D, it is unclear whether these wells are all public water system wells, as defined in Section 7.5, or whether wells of other types are also included.
    - Table 8-4 Groundwater Quality Minimum Thresholds - **No well count shown**.

  We recognize that different data sources have different limitations and recommend using the best available data consistently throughout the plan.
- Add a clear reference to a **table of all public water systems, their names, locations, number of connections, and number of active wells** in the text that is consistent with the numbers of wells in Table 3-2, Table 5-3, Section 7.5, and other locations where mentioned in the GSPs.

[17] See page 58 of Upper Valley Subbasin Volume 1 Appendices: https://svbgsa.org/wp-content/uploads/2021/08/Upper-Valley-Volume-1-Appendices-1.pdf)

- Appendix 7-D: DDW and ILRP Wells in the Water Quality Monitoring Network should be updated to include the number of connections served by that well and the status of the well as active or inactive according to DDW.

- **Revise Section 3.6.2 on the Agricultural Order to indicate that Agricultural Order 4.0 includes monitoring requirements including on-farm domestic well monitoring of nitrate and 123-trichloropropane (123-TCP).** 123-TCP should also be included in the monitoring network (see comments in Chapter 7).

GSP Chapter 4: Hydrogeologic Conceptual Model

The hydrogeologic conceptual model is a key component of the basin setting. The basin setting represents the baseline assumptions that the GSA relies on throughout the GSP when choosing minimum thresholds, measurable objectives, and undesirable results, as well as when planning projects and management actions. We recommend that the GSA:

- **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.**[18] As indicated in our cover letter, this is of particular importance for the San Jerardo Cooperative who has experienced increases in nitrate and arsenic in their well.
    - SVB GSA response (Section 5.4.3): "Text about the effect of groundwater pumping on groundwater quality was added to Chapter 5 in the "Distribution and Concentrations of Diffuse or Natural Groundwater Constituents" section. A discussion on the effect of lowering groundwater elevation on groundwater quality is included in Chapter 8 in the "Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators" section for groundwater elevations under the degraded water quality bullet."
    - Our response: We appreciate the addition of a paragraph in Section 5.4.3 and recommend that this is also acknowledged in Section 4.6 since the topic of "natural groundwater quality" is being discussed. Furthermore, the release of arsenic into groundwater can be attributed to low dissolved oxygen levels, high rates of pumping, and an increase in pH. These changes can all be attributed to how groundwater is managed.

GSP Chapter 5: Groundwater Conditions

SGMA Regulations require: "Each Plan shall provide a description of current and historical groundwater conditions in the basin, including data from January 1, 2015, to current conditions, based on the best available information that includes the following: … (d) Groundwater quality issues that may affect the

[18] 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.

supply and beneficial uses of groundwater, including a description and map of the location of known groundwater contamination sites and plumes."[19] We do not believe the GSA is meeting this requirement and recommend that the GSA make the following changes to Chapter 5 of all subbasin GSPs (East Side, Langley, Upper Valley, Forebay, and Monterey) to clearly represent current and past water quality conditions in the subbasin in order to inform the monitoring network, sustainable management criteria, planning, management actions, and projects.

Groundwater Quality Distribution and Trends

- **Clearly state in the introduction to Section 5.4 that the amount and location of pumping can impact groundwater quality distribution and trends.** We recommend including the following language in the letter submitted by the State Water Board to DWR regarding the 180/400 foot aquifer GSP (Dec. 2020): "Not all water quality impacts to groundwater must be addressed in the GSP, but significant and unreasonable water quality degradation due to groundwater conditions occurring throughout the subbasin, and that were not present prior to January 1, 2015, must be addressed in the GSP's minimum thresholds."[20] High rates of groundwater pumping can pull in contaminant plumes towards drinking water wells, cause the release of arsenic from the strata in the ground, and when shallow wells go dry or are too contaminated to use, new wells must be drilled into deeper portions of the aquifer where they are more likely to encounter high arsenic levels.[21] As previously mentioned, this is of direct concern to the San Jerardo Cooperative, which has observed increasing arsenic levels in their relatively new drinking water well, which was drilled to replace a more shallow well contaminated with nitrate and 123-trichloropropane.
    - SVB GSA response: "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."[22]
    - Our response: CWC recommendation in this section is not to extend the GSA's responsibility to improving water quality. But if extraction rates that the GSA allows to occur result in water quality degradation, then that is within the GSA's responsibility to address. The GSA has explicit statutory authority and responsibility to prevent significant and unreasonable water quality degradation.[23] In line with this responsibility, DWR has instructed GSAs to map out where water quality issues exist in the basin, and to prevent

[19] Cal. Code of Regulations § 354.16(d)
[20] DWR SGMA GSP Portal: https://sgma.water.ca.gov/portal/gsp/comments/29
[21] Community Water Center and Stanford University, (2019). *Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium*. Available at: https://www.communitywatercenter.org/sgmaresources.
[22] Salinas Valley Groundwater Sustainability Agency, Langley Area Subbasin GSP, p. 5-21.
[23] Cal Water Code § 10721, subd. (x)(4).

new impacts from occurring.[24] This includes managing contaminant plumes that may migrate or increase in concentration due to extraction rates and locations.

- **Include trend data for drinking water wells in the subbasins.** In some places, nitrate and other contaminants are increasing in drinking water wells. It is important to understand current contamination values and also whether well water quality is improving, staying the same or declining as well as the relationship of water quality to other sustainability indicators. As indicated by the data provided in this section, Monterey County maintains an exceptional dataset of water quality data for over 900 state and local small water systems serving 2-14 connections that should be utilized throughout the GSPs. Monterey County has sampled many small water systems for decades. CWC Figures 3 and 4 show nitrate concentrations increasing over time in two state small water systems in the East Side sub basin with high levels in one of the systems (Middlefield Rd. Water System #4) in 2015. Figure 5 illustrates arsenic concentrations in the Metz Road Water System #4 in the Forebay Subbasin. In some cases, data shows fluctuations and peaks in concentrations during the 2015-2016 timeframe. This is similar to the San Jerardo example shared previously. Further, the Central Coast Regional Water Board has analyzed data from their Irrigated Lands Regulatory Program to show that many wells across the region are showing increasing levels of nitrate concentrations and recent studies have confirmed that there is a link between decreased water quality and declining groundwater levels observed during times of drought.[25]
    - SVB GSA staff responded: "Nitrate trends are included based on a review of existing studies. The analysis of temporal trends are not required and would entail substantial additional work that would not likely change the management approach. Water quality data for DDW wells and ILRP on-farm domestic and irrigation supply wells were used to make maps showing the spatial distribution of water quality exceedances of Title 22 or Basin Plan standards from 2013 to 2019 are now included in a new Chapter 5 Appendix."
        - Our response: : We maintain our position on the importance of including trend data as previously recommended because the way in which the GSA manages the basin impacts water quality. GSAs are responsible for monitoring water quality conditions in the basin and ensuring that they do not degrade beyond 2015 conditions.[26] The rate, timing, and location of pumping as well as fluctuations in groundwater levels overtime can result in the horizontal and

[24] Dept. of Water Resources, 180/400 Foot Aquifer Groundwater Sustainability Plan Determination, (June 3, 2021), pp. 26-27.
[25] Draft Ag Order, Attachment A, 141-143. Available at: https://www.waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/docs/ag_order4_renewal/2021april/pao4_att_a_clean.pdf; *see also* U.S. Geological Survey (USGS). (Sept 2021). *Increased Pumping in California's Central Valley During Drought Worsens Groundwater Quality.* California State Water Resources Control Board's Groundwater Ambient Monitoring and Assessment Program (GAMA). Available at: https://www.usgs.gov/news/increased-pumping-california-s-central-valley-during-drought-worsens-groundwater-quality.
[26] Cal. Water Code §§ 10721 subd. (x)(4) and 10722.2 subd. (b)(4).

vertical migration of contaminant plumes into drinking water sources, including vulnerable private domestic wells.

- SVB GSA Staff replied: "The relationship between declining water levels and water quality degradation was evaluated for the Eastside Subbasin as presented in the December 2020 Subbasin Planning Committee Meeting. Although there seems to be a relationship between decreasing groundwater elevations and degrading water quality, within the analysis for the Eastside, subbasin-wide data does not show a strong correlation. Thus, the data is not definitive enough to determine if the decline in groundwater quality is due to additional loading of constituents or lowering of groundwater elevations. There may be a correlation within individual wells, like is seen in San Jerardo, however, that could be due to those other factors."
    - Our response: The current best available science[27] clearly links decreasing groundwater levels, including through overpumping of groundwater, to exacerbated degradation of groundwater quality. The U. S. Geological Survey (USGS) analyzed trends of increased pumping in California's Central Valley and further degradation of water quality and concluded that they are interlinked.[28] There is no reason to assume that the Central Coast would be subject to a hydrology so distinct as to negate the applicability of this finding to SVB GSA's groundwater management. Because of this established correlation, in instances of further water quality degradation, particularly when resulting in impacts to drinking water wells, SVB GSA should have the burden of proof to show that exacerbated water quality degradation is *not* linked to pumping practices, and identify the responsible source.
        - This is another example of why a more representative monitoring system for water quality (ie including SSWS and LSWS data from the Monterey County Environmental Health Department) would benefit Salinas Valley groundwater management, so that impacts can be identified and addressed in a highly localized manner. Additionally, even if the Subbasin GSPs plan to maintain current water levels, the GSA should be prepared to respond in case basin conditions do not evolve as planned and water quality degradation is exacerbated by ongoing pumping practices, including if hotspots (highly concentrated areas of

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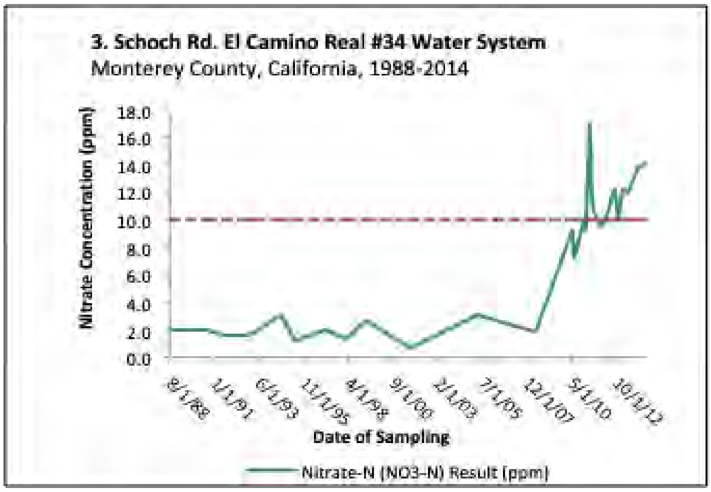
[27] 23 CCR § 355.4(b)(1). "When evaluating whether a Plan is likely to achieve the sustainability goal for the basin, the Department shall consider the following:
(1) Whether the assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are reasonable and supported by the best available information and best available science."
[28] U.S. Geological Survey (USGS). (Sept 2021). *Increased Pumping in California's Central Valley During Drought Worsens Groundwater Quality.* California State Water Resources Control Board's Groundwater Ambient Monitoring and Assessment Program (GAMA). Available at: https://www.usgs.gov/news/increased-pumping-california-s-central-valley-during-drought-worsens-groundwater-quality.

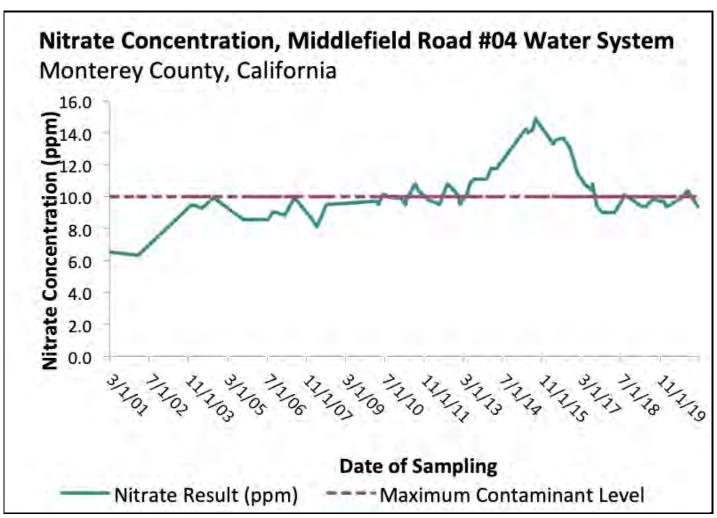
impact) of contamination form which impact drinking water beneficial users.

- We further request additional information be added to the GSP about the analysis conducted by the SVB GSA to understand the relationship between groundwater quality and groundwater levels. It is not sufficient to say this analysis was conducted without also providing the public information about the data sources, methods, and findings.

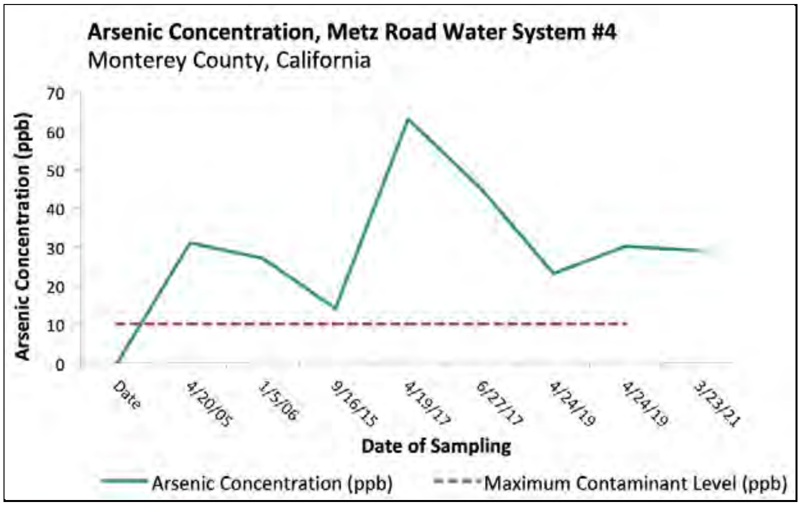
CWC Figure 3: El Camino Real WS #34 - Nitrate as N, East Side Subbasin



CWC Figure 4: Middlefield Road WS #4 - Nitrate as N, East Side Subbasin



CWC Figure 5: Metz Road Water System #4, Arsenic, Forebay Subbasin



- **Revise Section 5.4 to include a specific discussion, supported by maps and charts, of the spatial or temporal water quality trends for all constituents that have been detected in the subbasin and may affect drinking water beneficial users, as required under 23 CCR § 354.16(d).** This section should include water quality data (both in map and tabular form) for all constituents (where available) with primary drinking water standards that have been detected in the subbasin including, but not limited to, **nitrate, 123-trichloropropane, hexavalent chromium,**[29] **arsenic, uranium, and perchlorate for all public drinking water wells, state and local small water system wells, and private domestic wells.** It is especially important for all groundwater stakeholders to be able to understand and visualize the location of contaminant hotspots throughout each subbasin.
    - **Present maps and supporting data for all constituents of concern.** The review of water quality data in the groundwater conditions section of the draft Section 5.4 in the subbasin GSPs is focused primarily on nitrate. The GSPs identify numerous constituents that have been detected in groundwater above drinking water standards, but, with the exception of nitrate, do not present this data spatially. Even though the subbasin GSPs set water quality minimum thresholds for additional constituents (See Tables 8-4 and 8-5), the supporting data is not all presented, and limited 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)).
    - We reiterate the request made in previous comment letters and acknowledge the inclusion of Appendix 5-B, Figure 1: Water Quality Exceedances for DDW Wells which shows DDW wells that have had a COC exceedance between 1986-2019. This new appendix has significant limitations. For example, San Jerardo Cooperative's well is

[29] The maximum contaminant level for hexavalent chromium should be reinstated in 2021. Data is available from the State Water Resources Control Board and Monterey County Environmental Health Bureau (public water system data, state/local small water system data) as well as on GAMA from the Central Coast Regional Water Quality Control Board's private well testing program.

shown to have multiple exceedances of COCs during the time period shown (between 1986-2019). Yet, the well that had these exceedances is no longer active. Instead, San Jerardo's new well is showing increased trends of nitrate and arsenic. CWC's Figures in this comment letter illustrate the importance of presenting trend data for San Jerardo Cooperative's well and others throughout the Salinas Valley Basin. It is also important to include COC data for wells that are not yet in violation of drinking water standards. In addition, *CWC Figure 6: Arsenic Concentrations in Public Water System Wells, Monterey, Langley East Side Subbasins (Red dots = >10 ppb, Orange = 5-9.9 ppb, Yellow = 0.6-5.9 ppb, Green= non-detect)* illustrates hot spots for arsenic and also areas in orange (5-9.9 ppb arsenic), like San Jerardo, that are at risk if business-as-usual groundwater management continues.

- **Augment and clarify data presented in Table 5-3 GAMA Water Quality Data Summary and Section 5.4.1 in the following ways:**
    - **Add all state and local small water systems data.** Table 5-3 should include all state and local small water system data for nitrate, arsenic, hexavalent chromium, and any other contaminants that Monterey County monitors in the subbasin.
    - **Include additional contaminants that have been detected in the subbasin(s) to be consistent with Tables 8-5 and 8-6.** Our review of publicly available data on drinking water wells of all types (private domestic wells, state/local small water systems, and public water systems) indicate that there are additional constituents of concern beyond those currently listed. We included CWC Figure 6 (page 9) to highlight the spatial distribution of arsenic in public water system wells in the **East Side, Langley and Monterey Subbasins**, and CWC Figure 7 (page 10) to highlight the spatial distribution of hexavalent chromium in public water system wells in the **Langley Subbasin**. We recommend a more comprehensive analysis of all other constituents in the subbasins, including, but not limited to the following[30]:
        - **East Side Subbasin:** Table 5-3 presents data on two primary contaminants in drinking water: nitrate and 123-trichloropropane, but arsenic is also of particular concern to San Jerardo Cooperative and others in the subbasin. GAMA shows that four public water system wells have exceedances of the arsenic MCL in the past three years (CWC Figure 8), and state/local small water system out of compliance lists from the Monterey County Health Department (2021) show that both Old Stage Rd WS #6 and Old Stage Rd WS #7 are out of compliance for arsenic and that at least five other state or local small water systems have between 6-8 ppb of arsenic, which means they are similar to San Jerardo

[30] All Monterey County data shared in this section was collected by the small water system program. https://www.co.monterey.ca.us/government/departments-a-h/health/environmental-health/drinking-water-protection/state-and-local
It was downloaded from the Greater Monterey County Community Water Tool on April 22, 2021: http://www.greatermontereyirwmp.org/documents/disadvantaged-community-plan-for-drinking-water-and-wastewater/

Cooperative in terms of their vulnerability to water level fluctuations or other changes.

  - **Forebay Subbasin:** While arsenic is less common in the Forebay than in the Langley, Monterey, and East Side Subbasins, our review of the Monterey County Health Department data indicates that 17 state or local smalls had arsenic at levels above 1 ppb in the 2015-2017 time period, and at least two of these had levels above the MCL. See CWC Figure 5 (page 8) which illustrates trends in one of the out-of-compliance small water systems, Metz Road Water System #4. In addition, three systems monitored by Monterey County as part of their Local Primacy Program for public water systems serving 15-199 connections had hexavalent chromium detections of 2.8 ppb, 3.4 ppb, and 2.1 ppb in the 2014-2017 timeframe.
  - **Upper Valley Subbasin:** Although arsenic is not as common in the Upper Valley as other subbasins, it has been detected in levels between 3.2 and 5 ppb in six small water systems monitored by Monterey County.

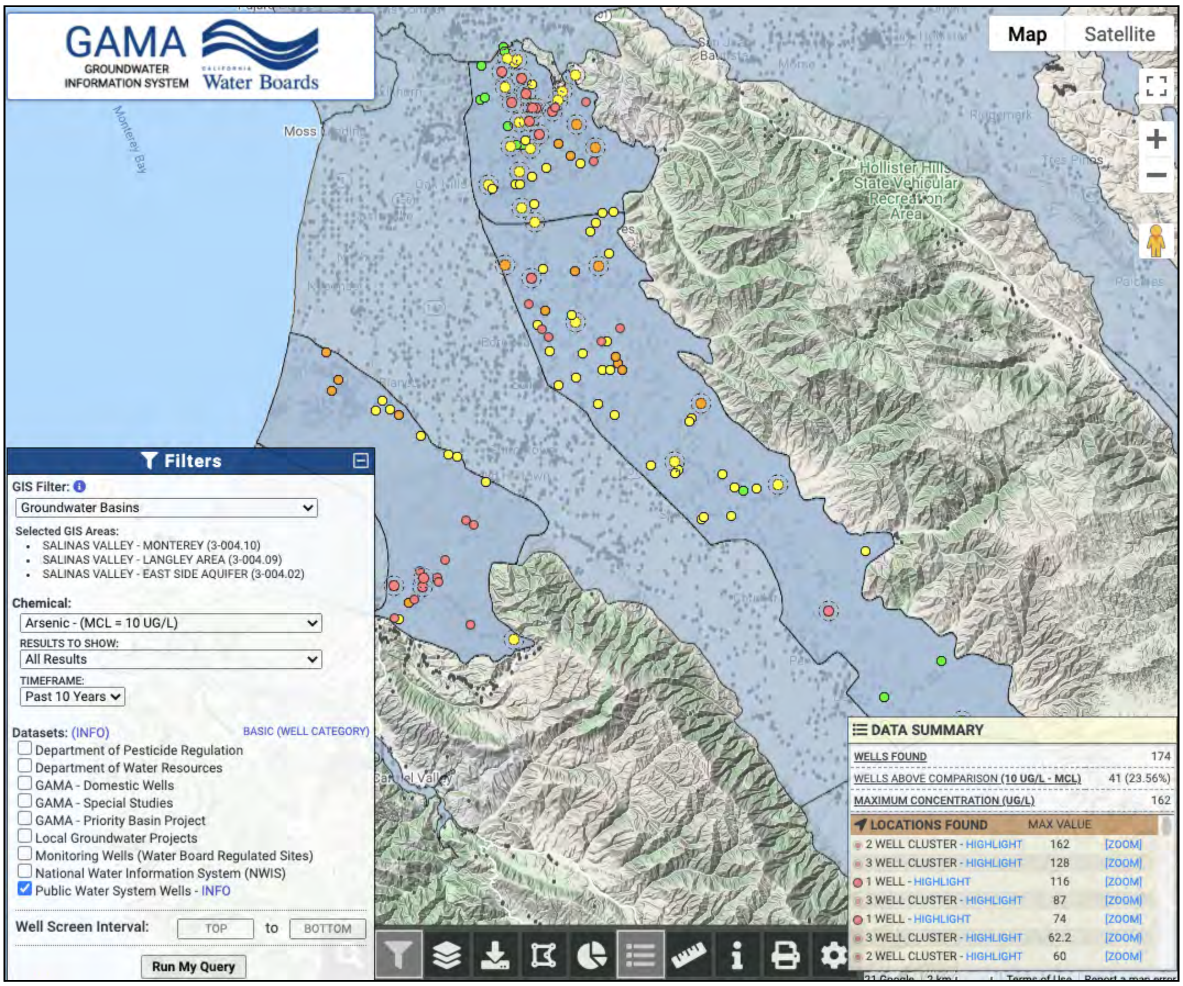
- SVB GSA Response: "The water quality analysis was redone for V2 to include both current and historic groundwater quality data, and arsenic is now a constituent of concern in the Eastside Subbasin. Section 5.4.3 and 5.4.4 text was also revised to provide more specificity about the constituents and wells sampled."
  - Our Response: We acknowledge that the SVB GSA added arsenic as a constituent of concern in the Eastside Subbasin GSP. We reiterate these comments to ensure that all subbasin GSPs include all contaminants detected in the subbasins as COCs. It is important to include all contaminants detected in the subbasins as COCs and not only those greater than the MCLs because many contaminants, such as arsenic and hexavalent chromium, pose a risk to public health at levels much lower than the MCL. The Office of Environmental Health Hazard Assessment (OEHHA) sets a public health goal (PHG) for each chemical. PHGs are levels of a contaminant in drinking water that do not pose a significant risk to health. The public health goal for Arsenic is 0.004 ppb and hexavalent chromium is 0.02 ppb.[31]
  - SVB GSA Staff replied: “Table 5-3 list the constituents of concern (COC) with exceedances in the latest sample for each COC in each well that has not been destroyed or abandoned, and it has been updated to be consistent with Table 8-5 that lists the minimum thresholds and measurable objectives for these constituents only. Table 8-6 list all the constituents for which data is available for the 3 types of wells in the monitoring network (DDW wells, ILRP on-farm domestic, and ILRP irrigation supply wells). Table 5-3 and Table 8-5 do not list all the constituents that have had an the exceedance in these 3 sets of wells, it only includes exceedances that occured in the latest sample, while Table 8-6 includes

[31] https://oehha.ca.gov/water/public-health-goals-phgs

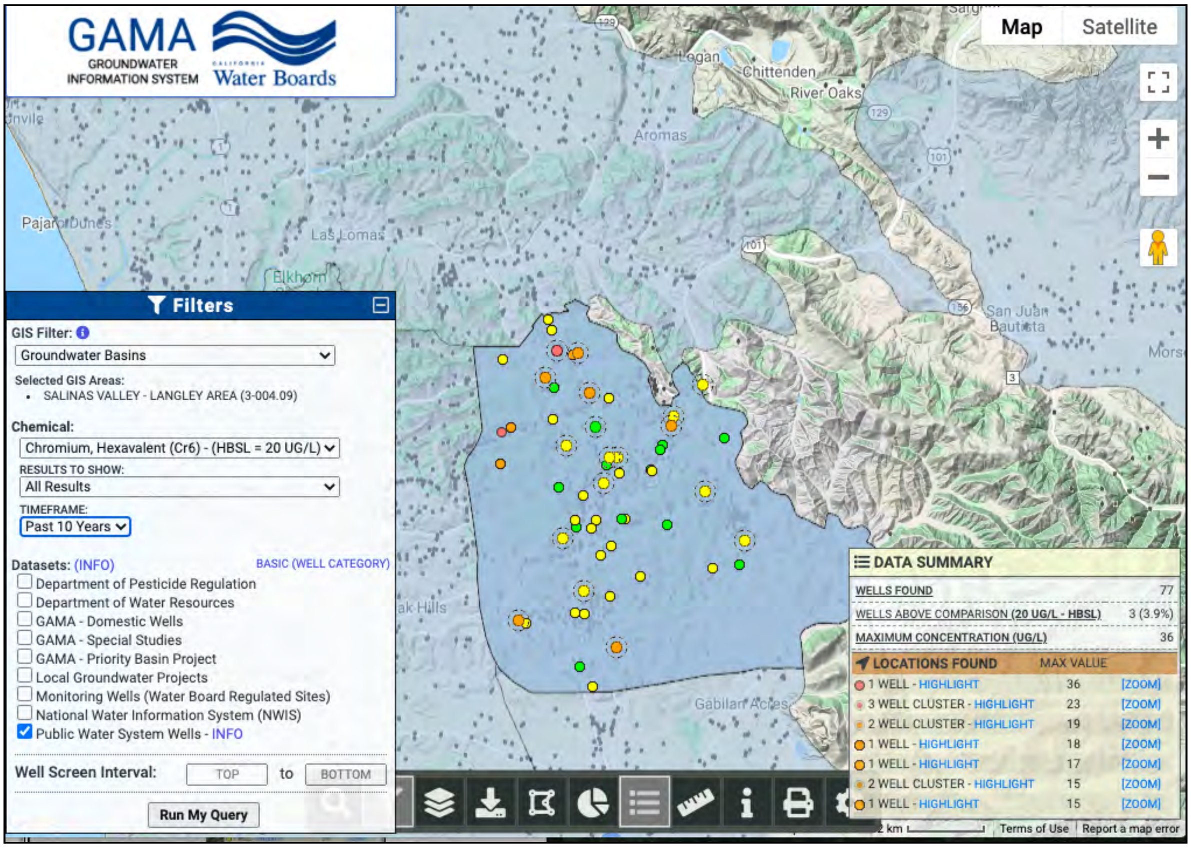
all the constituents that were included in the analysis that have been sampled for historically in each set of wells."

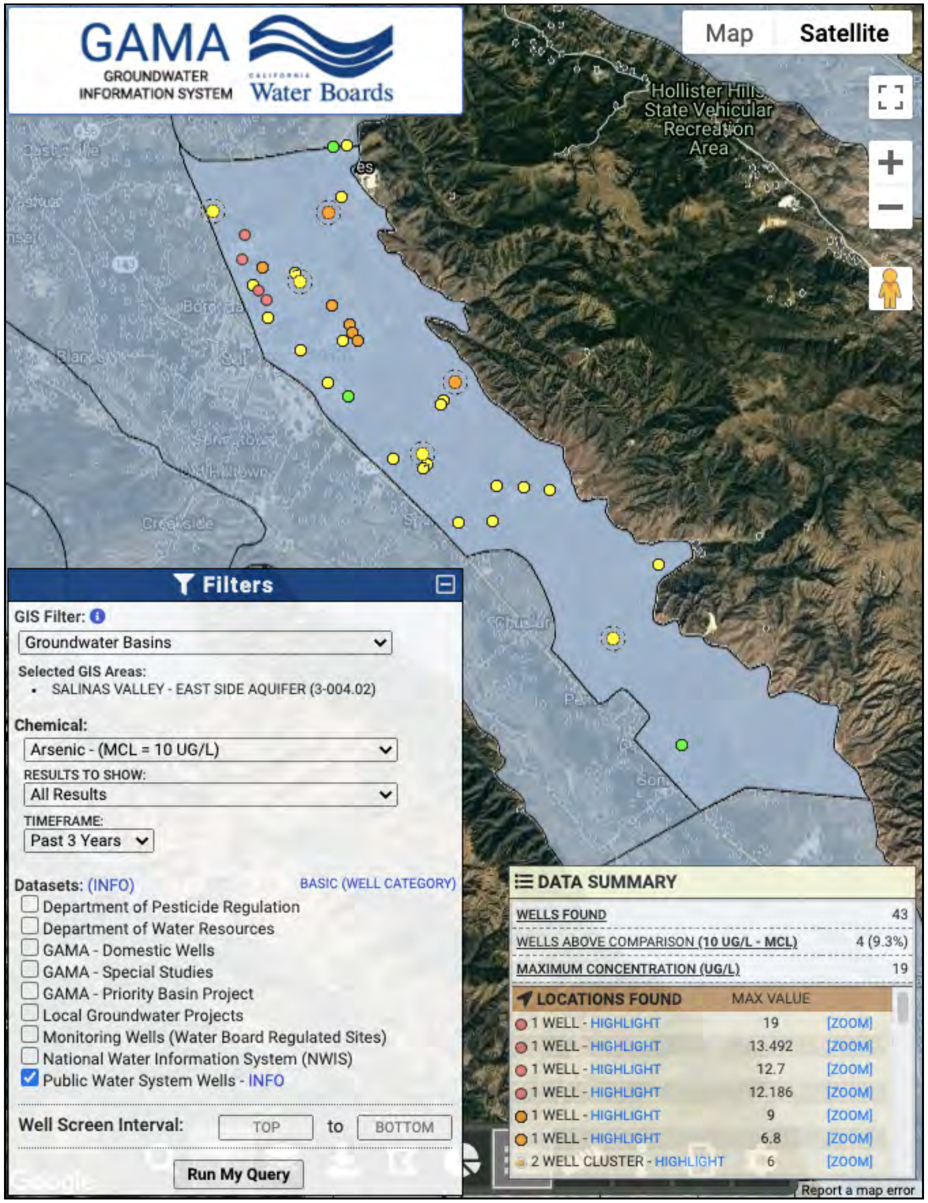
- Our response: We acknowledge the updates to Table 5-3 and request clarity on whether the DDW wells are all public water system wells, as defined in Section 7.5, or whether wells of other types are also included. Also, please add text explaining why two different time periods of data used in this table for DDW and ILRP wells. This table includes DDW wells sampled for COCs between December 1982 to December 2019, and ILRP Wells sampled from May 2013-December 2019.

CWC Figure 6: Arsenic Concentrations in Public Water System Wells, Monterey, Langley East Side Subbasins (Red dots = >10 ppb, Orange = 5-9.9 ppb, Yellow = 0.6-5.9 ppb, Green= non-detect)

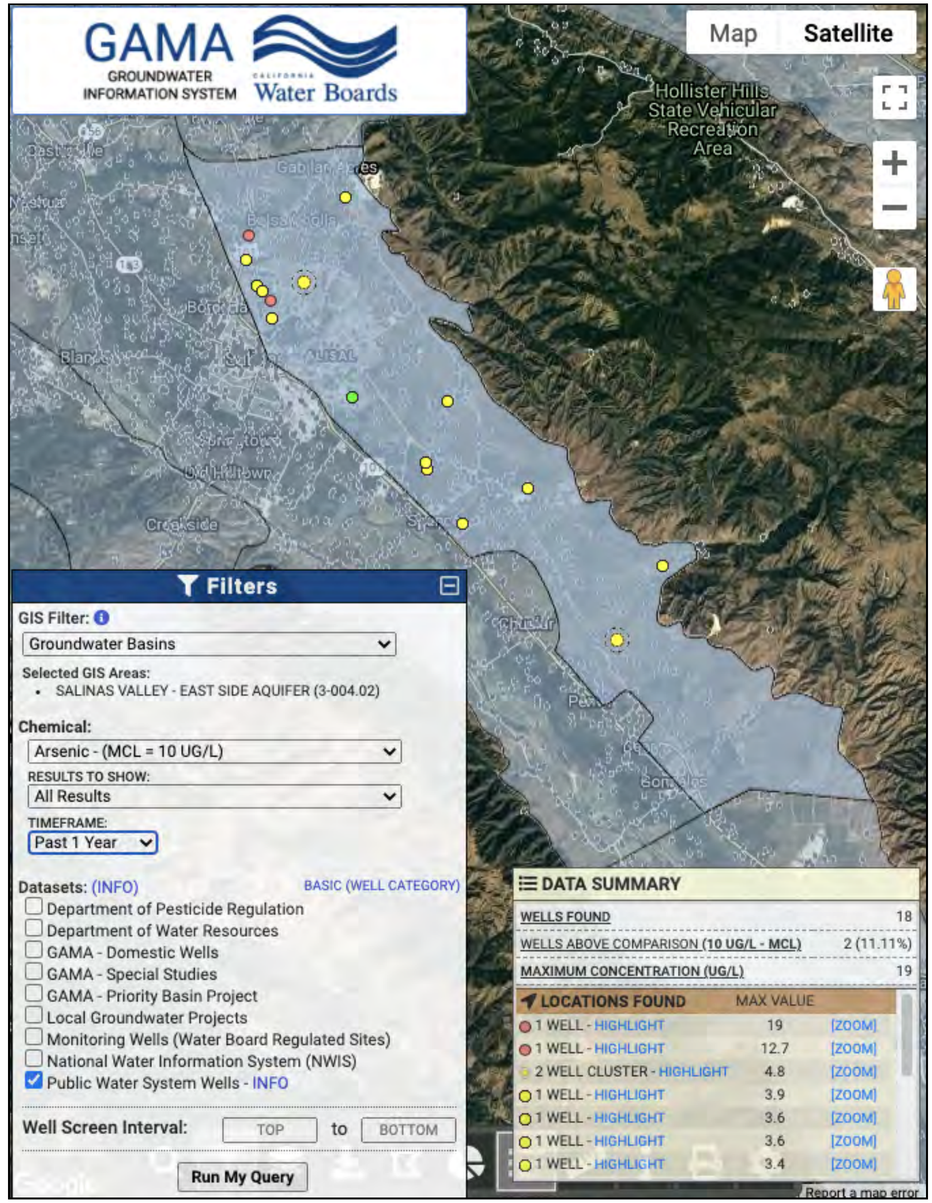


CWC FIgure 7: Hexavalent Chromium Concentrations in Public Water System Wells, Langley Subbasin





CWC Figure 8: 43 Public Water System Wells have arsenic data in the past 3 years. One well at San Jerardo Cooperative appears orange on this map.



CWC Figure 9: Only 18 Public Water Systems Wells have arsenic data in the past year. San Jerardo Cooperative's wells are not shown on this map.

GSP Chapter 6: Water Budgets

SGMA requires a GSP to quantify the water budget in sufficient detail in order to build local understanding of how historic changes have affected the six sustainability indicators in the basin.[32] Ultimately, this information is intended to be used to predict how these same variables may affect or guide future management actions.[33] GSAs must provide adequate water budget information to demonstrate that the GSP adheres to all SGMA and GSP regulation requirements, that the GSA will be able to achieve the sustainability goal within 20 years, and be able to maintain sustainability over the 50 year planning and implementation horizon.[34]

The calculations of sustainable yield and the water budget in this chapter may *overestimate the actual sustainable yield and water availability of the subbasins*. We highlight points of concern below and recommended changes.

6.4 Projected Water Budgets

The SVB GSA Subbasin GSPs explain that "[p]rojected water budgets are extracted from the SVOM, which simulates future hydrologic conditions with assumed climate change. Two projected water budgets are presented, one incorporating estimated 2030 climate change projections and one incorporating estimated 2070 climate change projections. … The climate change projections are based on data provided by DWR (2018)."[35] Including climate change scenarios in water planning is an important step for California's increased resiliency. However, which scenarios to include is a critical question.

Climate change is affecting when, where, and how the state receives precipitation.[36] Impacts to water supply, particularly drinking water supply, could be devastating if planning is inadequate or too optimistic. GSAs must adequately incorporate climate change scenarios in water budgets. As such, the DWR Climate Change Guidance[37] makes recommendations to GSAs for how to conduct their climate change analysis while preparing water budgets. DWR also provides climate data for a 2030 Central Tendency scenario and 2070 Central Tendency, 2070 Dry-Extreme Warming (DEW), and 2070 Wet-Moderate Warming (WMW) scenarios. While DWR's Guidance should be improved with more specific guidelines and requirements, the current Guidance specifically encourages GSAs to analyze the more extreme DEW and WMW projections for 2070 to plan for likely events that may have costly outcomes. Therefore, we recommend that the SVB GSA subbasin GSPs:

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[32] 23 CCR § 354.18.

[33] California Department of Water Resources (DWR), 2016. Best Management Practices for the Sustainable Management of Groundwater, Modeling (BMP #5), December 2016.

[34] 23 CCR § 354.24.

[35] California Department of Water Resources (DWR), 2018. Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development. https://data.cnra.ca.gov/dataset/sgma-climate-change-resources/resource/f824eb68-1751-4f37-9a15-d9edbc854e1f?inner_span=True.

[36] Union of Concerned Scientists. Troubled Waters: Preparing for Climate Threats to California's Water System, 2020. https://www.ucsusa.org/resources/troubled-waters#top.

[37] See DWR (2018) reference above.

- **Include water budget analyses based on DWR's 2070 DEW and WMW scenarios in order to analyze the full range of likely scenarios[38] that the region faces.**
    - Currently, the SVB GSA's exclusive use of the "central tendency" climate scenario predicts an increase in surface water availability, as represented in the tables in Section 6.4.3 of the subbasin GSPs. The Projected Groundwater Budgets show increases in deep percolation of stream flow, deep percolation of precipitation, and irrigation. The subbasin GSPs are relying on this presumed increase for their water budgets. However, the 2070 DEW scenario provided by DWR could likely result in a significant decrease in precipitation and increase in evapotranspiration, which would have substantial effects on the subbasin water budgets. By analyzing only the central tendency scenario and not other likely scenarios such as the extremely dry and wet scenarios provided by DWR, the SVB GSA is ignoring the specific 2070 DEW and WMW scenarios provided by DWR as well as an increasing trend in drought frequency. In doing so, the GSP could be overestimating groundwater recharge or underestimating water demands, inadequately planning, and jeopardizing groundwater sustainability. This will waste precious time to prepare and reduce the vulnerability of the basin's agriculture and already vulnerable communities.
    - DWR's guidance (2018) states that the central tendency scenarios *might* be considered most likely future conditions -- that is not a clear endorsement of a higher statistical probability. It appears that they are calling it the central tendency merely because it falls in the middle of the other two projections, not because it is significantly more probable.
    - DWR (2018) explicitly encourages GSAs to plan for more stressful future conditions:
        - "GSAs should understand the uncertainty involved in projecting future conditions. The recommended 2030 and 2070 central tendency scenarios describe what might be considered 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. Therefore, GSAs are encouraged to plan for future conditions that are more stressful than those evaluated in the recommended scenarios by analyzing the 2070 DEW and 2070 WMW scenarios.."[39]

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[38] Terminology used in the California Climate Change Assessment, 2019. (Table 3). https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf.

[39] California Department of Water Resources (DWR), 2018. Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development. Section 4.7.1. https://data.cnra.ca.gov/dataset/sgma-climate-change-resources/resource/f824eb68-1751-4f37-9a15-d9edbc854e1f?inner_span=True. (In red is a statement about the central tendency scenarios referenced in SVB GSA public meetings and email communications by the GSA's engineering consultant, and in blue is the important text accompanying it, urging GSAs to analyze the more extreme scenarios. CWC staff cited this complete paragraph in email communications with the consultant and GSA staff on April 8, 2021. CWC also raised this point at Forebay and Upper Valley Subbasin Committee meetings in March and at the April SVB GSA Board Meeting.)

    - Including the DEW and WMW climate scenarios as part of the 2070 water budget analysis is necessary to meet the statutory requirement to use the "best available information and best available science."[40] Sustainable planning must include planning for foreseeable negative and challenging scenarios. The extreme scenarios provided by DWR are certainly foreseeable, as they have been modeled and made available to the GSA for analysis.
    - It is important for the SVB GSA to include the 2070 DEW and WMW scenarios, because shallow drinking water wells in the area are particularly vulnerable to various extreme conditions, especially drought.
- **Share water budget results based on the 2070 central tendency, DEW and WMW scenarios that DWR has provided with the Subbasin committees, the Advisory Committee, and the GSA board**. This should be done at a *minimum* to see what the difference in outcomes could be, and to provide a transparent process for selecting the preferred scenario. This analysis is particularly important because of the drastic differences between the dry and wet scenarios for this region. Drought and/or intensified rainfall (more water falling over a shorter period of time) would pose severe challenges[41] to the Subbasins' plans for recharge, which is a critical component of their plans to reach sustainability.
- **Plan for potential adverse climate conditions when determining Projects and Management Actions.** The results of limited-scope planning will be detrimental to beneficial users throughout the SVB GSA. "If water planning continues to fail to account for the full range of likely climate impacts, California risks wasted water investments, unmet sustainability goals, and increased water supply shortfalls."[42] This is true not just generally across California, but also specifically on the Central Coast. "Without effective adaptations, projected future extreme droughts will challenge the management of the Central Coast region's already stressed water supplies, including existing local surface storage and groundwater recharge as well as imported surface water supplies from the State Water Project which will become less reliable, and more expensive."[43]

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 all

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[40] See 23 CCR § 355.4(b)(1).

[41] Union of Concerned Scientists. Inter-model agreement on projected shifts in California hydroclimate characteristics critical to water management. 2020, p. 13. https://link.springer.com/content/pdf/10.1007/s10584-020-02882-4.pdf.

[42] See Union of Concerned Scientists. Troubled Waters (2020) cited above.

[43] Regional Climate Change Assessment for the Central Coast, 2019. (Discussing drought pp. 21-23. Internal citations omitted). https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-006_CentralCoast_ADA.pdf.

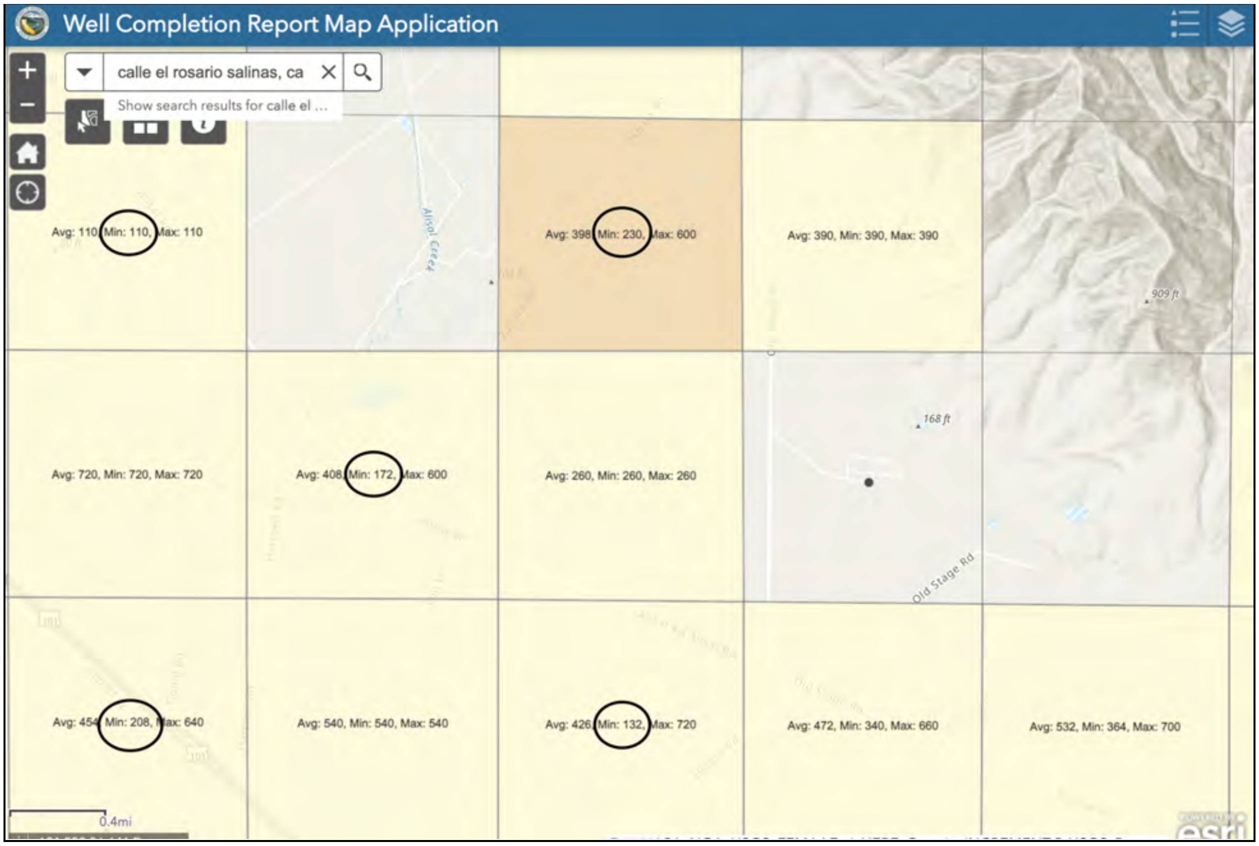
beneficial users, including domestic well owners and S/DACs. We have the following overarching recommendations for this chapter and provide more details for sub-sections below:

- **Require well registration and metering for all wells in the Salinas Valley, and begin implementation of a well registration and metering program in early 2022 with a dedicated budget.** We voice our strong support, with modifications indicated in our comments below, for proposed "Implementation Action 12: Well Registration" in Section 9.1 of Chapter 9 released in April 2021 and recommend that this action be updated and moved to Chapter 7. We agree with the SVB GSA's statement in Section 7.3.2 Groundwater Storage Monitoring Data Gaps that: "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 SVB GSA will finalize a database of existing and active groundwater wells in the Eastside Aquifer Subbasin." This is essential for the plan to achieve sustainability for all beneficial users and influences many different chapters including:
    - Monitoring networks: In order to develop a monitoring network that is representative, it will be essential to understand the number, location, well construction, and type (domestic, irrigation, other) of all wells located in the subbasins.
    - Water budget and minimum thresholds: Understanding the amount and location of pumping of all water users will be essential for creating an accurate water budget and minimum thresholds consistent with achieving sustainability.
    - Projects and management actions: Section 9.2.1 Well Registration and Metering is a key management action and component of the Water Charges Framework (in the 180/400 foot aquifer) and forthcoming subbasin GSPs. This will underpin the funding structure for many future projects.
- **Require flowmeter calibration to ensure consistent and fair monitoring among all agricultural groundwater users (Section 7.3.1).** Rather than "consider the value of developing protocols for flowmeter calibration," the GSPs should require flowmeter calibration. The water budget and sustainable yield calculation depend on reliable and fair monitoring and reporting of pumping.
- **Provide a plan and schedule for data gap resolution in Chapter 10 of the subbasin GSPs.** In the 180/400 foot aquifer GSP, there was not a clear plan or schedule for the resolution of data gaps in Chapter 7 even though it indicated that this would be included in Chapter 10.
- **Revise GSP monitoring chapters such that monitoring networks for groundwater storage (pumping), groundwater elevation, and groundwater quality adequately monitor how groundwater management actions could impact vulnerable communities including those reliant on domestic wells and shallow portions of the aquifers** (see more detail below).

7.2 Groundwater Elevation Monitoring Network

- **Include groundwater elevation monitoring sites in the network that are representative in terms of the depth and geographic distribution of private domestic wells, and that take into account areas of high agricultural pumping and wells vulnerable to groundwater decline.**
    - The draft East Side Subbasin GSP Table 7-1 of "Eastside Aquifer Groundwater Elevation Representative Monitoring Site Network" shows all irrigation and observation wells (and no domestic wells) which range in depth from 299 to 1122 feet.[44] Yet, the DWR Well Completion Report Map Application[45] shows that 1 mile by 1 mile square sections near San Jerardo Cooperative include private domestic wells with the following minimum depths: 110 ft, 210 ft, 172 ft, 208 ft, and 132 ft which are more shallow than all the wells in the current monitoring network (See CWC Figure 10).
- **Overlay the private well density map (Figure 3-7), the DWR Well Completion Report Map Application (with minimum, average, and maximum depths), the water level monitoring network (with well depths), and available pumping data to better illustrate if and how representative the proposed groundwater elevation monitoring network is of private domestic wells and which areas are vulnerable to water elevation changes.** The GSPs state: "The BMP notes that professional judgment should be used to design the monitoring network to account for high-pumping areas, proposed projects, and other subbasin-specific factors." This will also help to better visualize where there are gaps in the monitoring network which the GSAs can address.

[44] One well shows "0" depth but that must be an error or missing value.
[45] https://water.ca.gov/Programs/Groundwater-Management/Wells/Well-Completion-Reports



CWC Figure 10: Screenshot of DWR Well Completion Report Map application in the area near San Jerardo Cooperative highlighting that several 1 mi. by 1 mi. square sections include private domestic wells less than 250 feet deep.

7.5 Water Quality Monitoring Network

- **Clarify the number of public water system wells that will be included in the water quality monitoring network.** As indicated in Chapter 3 and Chapter 5 comments, the GSPs should also clearly identify the total number of public supply wells as well as the number of public supply wells that are out of compliance and at risk in each subbasin. Section 7.5 currently states that "Ninety DDW wells have been chosen to be part of the RMS network. These wells are shown on Figure 7-4 and listed in Appendix 7D." This section and appendix should be consistent with the total number of wells represented in Table 8-4 which includes groundwater quality minimum thresholds. As previously noted, we also recommend clearly presenting the number of public water system wells and state and local small water system wells located in each subbasin. A review of Appendix 7D indicates that perhaps not all wells listed are public water system wells.
- **Representative Water Quality Monitoring Wells for the shallow aquifer should be established in the GSPs based on all currently available data sources with direct agreements with landowners or public entities established.**

- **Develop long-term access agreements for Representative Monitoring Wells (RMWs) that use private wells.** It is currently difficult to reliably collect data from private wells due to access challenges, lack of well construction information, and unreliable accounting of pumping or non-pumping measurements. The GSPs 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. In order to maintain consistency for future sustainability analyses, the SVB GSA should also consider conducting its own water quality analysis of wells where access agreements have already been established to water quality RMWs.
- **Clarify that state and local small water systems will be added to the water quality monitoring network and that well construction information is no longer needed in order to fill this data gap.** Monterey County Environmental Health Bureau permits and monitors over 900 state and local small water systems in the County and have managed the data collected for decades. This dataset has advantages over the ILRP domestic well dataset in that it includes data on contaminants like arsenic and hexavalent chromium in addition to nitrate. Local small water systems serve 2-4 households and are much more similar to private domestic wells than public water systems in terms of depth, well construction, age, size, and maintenance - thus this data would provide a broader representation of shallow drinking water wells. State and local small water systems are located in areas of irrigated agricultural lands as well as rural residential and other land uses. This dataset should complement and not replace ILRP domestic well data.
    - **Clearly add state and local small water system data as a data gap in Section 7.5.2.** In Section 7.5 Water Quality Monitoring Network, the draft GSPs state: "These [state and local small] wells are not in the current monitoring system because well location coordinates and construction information are currently missing. SVB GSA will 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 7-4." However Section 7.5.2 Groundwater Quality Monitoring Data Gaps states: "There is adequate spatial coverage to assess impacts to beneficial uses and users."
- SVB response: Small public water systems wells, regulated by Monterey County Health Department, include both state small water systems that serve 5 to 14 connections and local water systems that serve 2 to 4 service connections. SVBGSA had originally planned to work with the County to add data from small and local water systems into the monitoring network. These wells are not in the current proposed monitoring system because well location coordinates, construction information and quality data are not easily accessible. The Monterey County Health Department monitors water quality in the state small and local water systems and their data is not readily transferable. In addition, there is sufficient other available data to characterize the basin. There were no water quality data gaps identified per SGMA requirements for GSPs as there is adequate

spatial coverage to assess impacts to beneficial uses and users. As stated above, the water quality monitoring approach has been updated in V2 to include last time any well was sampled, not just the most current year.

- Our response: We reaffirm our previous comments, requests, and arguments in support of including the SSWS and LSWS data. We would also like additional clarity on what the barriers are to including this important dataset and to explore how they can be resolved. SVB GSA has successfully incorporated the GIS data for the SSWS/LSWS boundaries into its dataviewer and now also into Chapter 3's recent updates. The water quality data was also included in the 180/400 foot aquifer GSP in Chapter 8 in a table indicating exceedances of nitrate and arsenic. CWC, San Jerardo Cooperative and the Greater Monterey County Regional WAter Management Group have also utilized this data successfully in past projects. The value of the full dataset, particularly that it more accurately represents domestic well conditions than any of the other current components of the water quality monitoring network, should outweigh any administrative burden to transfer the data.
- **Do not rely solely on ILRP well data to represent private domestic wells (which are often more shallow than public water system wells).** Similar to CASGEM, the current groundwater quality monitoring network includes monitoring points on private property including ILRP domestic and irrigation wells, but it should not be restricted to ILRP sites only. While on-farm domestic and irrigation wells monitored through the ILRP provide a potentially useful, though limited, 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 wells located on agricultural irrigated lands, and not all ILRP properties include domestic wells. Agricultural land use is not the primary land use in the Langley and Monterey Subbasins so this monitoring network offers very limited coverage. While agricultural land use is the primary land use in the East Side, Upper Valley, and Forebay Subbasins, there are private domestic wells in areas with different primary land uses (e.g. rural), and SGMA requires that monitoring networks are geographically representative. Monitoring network wells must also be sufficiently representative to cover all uses and users in the basin, (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, (3) Ag Order 4.0 was adopted on April 15, 2021, which means the first year of monitoring data will not be available until late 2022, (4) The GSA has no authority to determine the robustness or enforcement of monitoring in the irrigated lands network, and (5) while Ag Order 4.0 proposes to require testing for 1,2,3-TCP as well as nitrate, the current ILRP domestic well data only samples for nitrate, and neither Order tests for other contaminants found in the region. In our experience, not all growers are consistent with their water quality and other reporting, despite the regulatory requirements in place.

- SVB GSA response: "Section 7.5 text was revised to specify that the groundwater quality monitoring network is dependent on the existing samping and well density of the ILRP and DDW monitoring programs. Chapter 5 and 8 text include the constituents of concern that will be monitored in each type of well. SGMA Regulations only require "spatial and temporal coverage." Furthermore, the vertical coverage of the monitoring system cannot be further determined because ILRP well data do not include well depths or screen intervals, which would make it difficult to map vertical water quality."

- Our response: SGMA Regulations instruct GSAs to "[c]ollect 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."[46] Sufficient "spatial" data would include appropriate well depths in order to adequately capture potential groundwater quality trends, particularly those that would affect domestic well owners and DACs.

GSP Chapter 8: Sustainable Management Criteria

SGMA requires a GSA to define existing conditions within the basin and characterize undesirable results, including minimum thresholds and measurable objectives to determine a sustainability goal as sustainable management criteria.[47] We have grouped our comments in this section into general recommendations related to all sustainable management criteria (SMCs) followed by a section specific to the water quality SMCs.

General Recommendations

- **Undertake a drinking water well impact analysis that adequately quantifies and captures well impacts at the minimum thresholds, proposed undesirable results, and potential interim conditions.** Include this analysis during the annual reporting process. We disagree with the assumption included in all draft GSPs that the exact location of wells needs to be known in order to include them in a drinking water well impact analysis. In the 180/400 Foot Aquifer Subbasin GSP, the SVB GSA included a domestic well impact analysis. Although the SVB GSA did not describe the methods used in this analysis,[48] it is CWC's understanding that the analysis was based on Public Land Survey System (PLSS) section location data, demonstrating that such an analysis is feasible. Similar analyses in the Water Foundation Whitepaper (June 2020)[49] and in the Kings River East GSP[50] were completed using the same PLSS section location data for private domestic wells that is available to the SVB GSA. The current analysis is incomplete as it includes

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[46] 23 CCR § 354.34(c)(4).
[47] 23 CCR §§ 354.22-354.30.
[48] Community Water Center and San Jerardo Cooperative, Inc. Comments on the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan. May 15, 2020.
https://sgma.water.ca.gov/portal/service/gspdocument/download/4012
[49] The Water Foundation Whitepaper, April 2020: "Estimated Numbers of Californians Reliant on Domestic Wells Impacted as a Result of the Sustainability Criteria Defined in Selected San Joaquin Valley Groundwater Sustainability Plans and Associated Costs to Mitigate Those Impacts." April 9, 2020.
http://waterfdn.org/wp-content/uploads/2020/05/Domestic-Well-Impacts_White-Paper_2020-04-09.pdf
[50] Kings River East Groundwater Sustainability Agency. Groundwater Sustainability Plan. Adopted December 13, 2019.

very few wells in all subbasins. The current analysis is also substantially inaccurate as it relies on the "average computed depth of domestic wells in the Subbasin," and groundwater elevations vary significantly across the subbasin and also on an annual basis. For example, only 8 of the 154 domestic wells in the Forebay GSP with an average depth of 292.45 feet, and only 20 of 2016 domestic wells in the East Side GSP with an average depth of 365.5 feet were included. CWC Figure 10 illustrates that the average computive depth is not representative of conditions in shallow domestic wells. Therefore, we recommend revising Section 8.6.2.2 Minimum Threshold Impact on Domestic wells following the process explained below:

- **Include a map of potentially impacted wells so the public can better assess well impacts specific to DACs, small water systems, or other beneficial users of water.**
- **Quantify impacts for all drinking water wells in the subbasin for which approximate location (PLSS section) and well depth are available.** Similar analyses based on the PLSS section location of private domestic wells have been completed by Water Foundation (June 2020)[51] and in the Kings River East GSP[52].
- **Account for well screen and pump depth when available.** When not available, well screen and pump depth should be estimated conservatively to capture potential impacts to well operability under water scarcity conditions.
- **Quantify impacts for potential unfavorable interim conditions, such as droughts and short-term lowering of groundwater levels while implementation measures are put in effect.**
- **Quantify the elevation difference (in feet) between current groundwater levels and well bottoms, screens, and pumps.** If current groundwater levels are nearing well bottoms, screens or pumps, that indicates that the wells are vulnerable to interim lowering of groundwater levels.
- **Quantify the elevation difference (in feet) between the minimum threshold groundwater levels and well bottoms, screens, and pumps.** If the minimum threshold is near the well bottom, screen or pump, that well will be impacted if groundwater levels in the vicinity drop below the minimum threshold (even if minimum thresholds are met at 90 percent of monitoring wells and an undesirable result has not technically occurred).
- **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.**

[51] *Id.*
[52] *Id.*

- SVB GSA's response: Domestic well analyses were conducted for the minimum thresholds and measurable objectives. Wells that did not have accurate locations were not included, because water levels vary greatly throughout the Subbasin, thus, it is unlikely that the water level for the centroid of a PLSS section can accurately represent all wells that have the centroid of the section as their location.
- Our response: We reiterate that including the centroid of the section is a reasonable and feasible way of conducting this analysis and has been used by other GSAs and researchers. As noted, we believe that SVB GSA itself used PLSS data to conduct the well impact analysis for the 1800/400 Foot Aquifer GSP. Including such a disproportionately low number of wells in the studies is likely to produce unrepresentative results.

Groundwater Quality

We are pleased that the Salinas Valley Subbasin GSPs establish minimum thresholds based on maximum contaminant levels (MCLs) for contaminants of concern for drinking water supply systems. However, there are other 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. Therefore, we recommend the following revisions:

- **Add state and local small water systems to the monitoring network with the same water quality minimum thresholds and measurable objectives for reasons stated in Chapter 7 comments.** A table for state and local small water system minimum thresholds was included in the 180/400 foot aquifer GSP, but in the draft subbasin GSPs, there is no such table and Table 8-1 only mentions public supply and on-farm domestic wells.
- **If a contaminant was already above the MCL as of January 1, 2015, subbasin GSPs should set a MT 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 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. Further, residents who rely upon domestic wells, state small water systems, or local small water systems may not even know what contaminants are in their water and at what levels. Users of these drinking water sources are not required to conduct testing, and many times do not have the resources necessary to conduct regular testing. Rising contaminant levels put these users and their health at serious risk. 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. This recommendation is consistent with the State Water Board's recommendations regarding this topic in their letter to DWR regarding the 180/400 foot aquifer GSP in which they state: "Increasing concentrations of nitrate, arsenic, and other constituents at monitoring wells with existing exceedances may represent worsening of existing

conditions due to groundwater pumping. Staff recommend setting concentration threshold levels for these wells in order to determine if impacts due to pumping are occurring."[53]

  - **Develop management areas to protect areas where drinking water wells have water quality that are vulnerable, including the San Jerardo area.**

- **For monitoring network wells with contamination less than 75% of the MCL for all contaminants, the GSPs should set MOs at 75% of the MCLs.** Subbasin GSPs should include MOs as action triggers at 75% of MCL for each constituent of concern so that groundwater can be managed in that area to prevent a minimum threshold exceedance at a representative monitoring well. This buffer is particularly critical with contaminants like nitrate that can cause acute health effects. 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. We also recommend that groundwater quality and trigger levels at 75% are added to the Water Quality Partnership plans and/or a Well Impact Mitigation Program
  - SVB GSA response: The GSA is not responsible for improving water quality and 75% of MCLs would require remediation.
  - Our response: To clarify, our recommendation is, where water quality is currently below 75% of MCLs, to maintain levels below that mark instead of allowing them to progress up to the MCL. The objective should not be to allow water quality to degrade up to just below the MCL. Many contaminants, such as 123-TCP and arsenic, have public health goals far below the MCL. The MCL is not an established safe level, but rather is a legal limit that also takes into account the economic and technical feasibility of compliance for public water systems. For those contaminants, increasing from 50% to 75% of the MCL represents an increase in health risk.
- **Clearly identify and describe past and present levels of contamination and salinity at each representative monitoring well (RMW) and attribute specific numeric values for MTs/MOs at each RMW for each contaminant of concern.** Quantitative values need to be established for MTs/MOs for each applicable sustainability indicator at each RMW as required by 23 CCR § 354.28 and 23 CCR § 354.30. The GSPs should include a map and tables that include each individual RMW along with water quality data for each RMW (this data is currently summarized in Table 8-4 and Table 8-5). This information should be presented clearly so that the public can determine how the proposed monitoring network and sustainable management criteria (SMCs) relate to their own drinking water well or water supply system.
- **Include hexavalent chromium as a contaminant of concern and plan to add contaminants of emerging concern to the monitoring network.** While there is currently not a Maximum Contaminant Level for hexavalent chromium, there is still a Public Health Goal and public health

[53] State Water Resources Control Board. (Dec. 2020). Comments to DWR regarding 180/400 Foot Aquifer GSP. Downloaded from SGMA GSP Portal. Available under the tab "Submitted After Public Comment Period" at: https://sgma.water.ca.gov/portal/gsp/comments/29.

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 MCL. In addition to including hexavalent chromium, the GSPs must explain how the Plans will be updated to align groundwater monitoring efforts and the sustainable management criteria with any contaminants of emerging concern in the basin and any future new MCLs.

- The text in Section 8.6.2.3 now acknowledges 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. It states:
  - 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.
- **Include an analysis of the relationship between changes in groundwater levels and groundwater quality concentrations.** 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 constituent concentrations relative to change in water levels,[54] particularly over drought periods, to evaluate the potential relationship between water quality

[54] *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/.

and groundwater management activities.[55] It is our understanding that groundwater quality issues in the Salinas Valley Basin did, in fact, worsen and continue to do so during low groundwater elevations years.[56] Arsenic in the San Jerardo well was at its highest during the lowest groundwater elevation measurement (See CWC Figure 1).

- **Add the total number of wells in each category that will be included in the water quality monitoring network and have SMCs evaluated to Table 8-4. For each constituent of concern, add the number of wells included in the chart and the number exceeding the MT/MO based on the latest sample.** This comment has the same goal as the comment we provided in Chapter 7. SMCs should be set at every public drinking water well and a representative network of drinking water wells that rely on more shallow aquifers. It is essential to track the same wells each year in the monitoring network. If a well is no longer active, it should be removed from the network. In the current representation, it is not clear which wells are included in the monitoring network, which wells have data for each constituent, and which wells are exceeding the regulatory standard.
    - We acknowledge that new information was provided in Chapter 5 that partially addresses this comment, yet we still recommend that the GSP clarify the total number wells in the water quality monitoring network in each category (DDW and ILRP) and that this information be added to Table 8-4.
- **Engage stakeholders and scientists in a transparent discussion regarding "the process the GSAs would use to decide whether or not an exceedance of an MT for water quality degradation was caused by GSP implementation."**[57] The State Water Board recommended that the 180/400 foot aquifer GSP outline this process "otherwise, it is difficult to judge how adequately the GSP addresses undesirable results related to water quality degradation." This relates to the

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[55] More information about groundwater quality and the relationship between changes in groundwater levels can be found in the following resources:
U.S. Geological Survey (USGS). (Sept 2021). *Increased Pumping in California's Central Valley During Drought Worsens Groundwater Quality.* California State Water Resources Control Board's Groundwater Ambient Monitoring and Assessment Program (GAMA). Available at: https://www.usgs.gov/news/increased-pumping-california-s-central-valley-during-drought-worsens-groundwater-quality. *See also,* Stanford, Community Water Center (2019). *Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium.* Available at: https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896. *See also,* 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.

[56] U.S. Geological Survey (USGS). (Sept 2021). *Increased Pumping in California's Central Valley During Drought Worsens Groundwater Quality.* California State Water Resources Control Board's Groundwater Ambient Monitoring and Assessment Program (GAMA). Available at: https://www.usgs.gov/news/increased-pumping-california-s-central-valley-during-drought-worsens-groundwater-quality.

[57] State Water Board comments to DWR on 180/400 Foot Aquifer GSP (Dec. 2020). Downloaded from SGMA GSP Portal: https://sgma.water.ca.gov/portal/gsp/comments/29. .

undesirable result for water quality which currently reads: "There shall be no additional minimum threshold exceedances beyond existing groundwater quality conditions during any one year as a direct result of projects or management actions taken as part of GSP implementation."

Chapter 9 Projects and Management Actions

Projects and Management Actions should benefit the basin and all beneficial users.[58] Drinking water users and DACs, who are protected as beneficial users of water under SGMA,[59] can be adversely impacted by either groundwater levels or water quality degradation. Thus, projects and management actions outlined in the GSP, including those currently referred to as implementation actions, should address sustainability issues facing drinking water and other domestic water uses, hold those who cause impacts accountable for remedying them, and address secondary impacts of the projects in order to ensure continued drinking water availability.

While determining how such benefits will be distributed based on the nature of different projects and actions, and who should bear the associated costs, the SVB GSA should keep in mind the **"polluters pay" principle.** Drinking water users should not be put into the position of shouldering additional costs to protect their basic Human Right to Water. Domestic water use has not led to overdraft conditions, as evidenced by the statutory designation of "de minimis" use. Nor should benefits be distributed based on which interested parties can most easily fund a project, but rather towards the overall sustainability of the basin and equity of benefits among beneficial users.

The SVB GSA Subbasin GSPs should (1) clearly identify potential impacts to water quality from all projects and management actions, (2) include management actions that respond to immediate needs and (3) develop a more robust implementation schedule and funding plan for projects and management actions. We acknowledge that the implementation actions are currently in the beginning stages of design but encourage incorporating these elements as soon as possible so that the public and DWR can accurately assess their benefits and feasibility.

Further, because SVB GSA defines its sustainability criteria in a way that potentially allows for drinking water well impacts and because there is so much uncertainty regarding potential domestic well impacts, we recommend incorporating a **Robust Drinking Water Well Mitigation Program.** This program should include the Dry Well Notification System as well as (1) a plan to prevent impacts to drinking water users from dewatering, increases in contaminant levels and increases in salinity, and (2) a plan to mitigate the drinking water impacts that occur even when precautions are taken.

- This type of adaptive management implementation action is crucial to ensuring that all beneficial users within the basin are protected under the GSP. As we have highlighted in previous comments[60]:

[58] As outlined in the Eastside and Upper Valley April 7 meeting materials, soliciting feedback, "[p]rojects implement the GSP and enable the subbasin to reach sustainability by 2042, then maintain sustainability for another 30 years."
[59] Cal. Water Code § 10723.2.
[60] Community Water Center and San Jerardo Cooperative, Inc. Comments on the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan. May 15, 2020. Available at: https://sgma.water.ca.gov/portal/service/gspdocument/download/4012.

- A GSP that 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 (HR2W).[61] The California legislature has recognized that water used for domestic purposes has priority over all other uses since 1913[62] 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 and that the next highest use is for irrigation."[63]
- The passage of the Safe and Affordable Drinking Water Fund by Governor Newsom indicates a clear State-level commitment to provide safe and affordable drinking water to California's most vulnerable residents.[64] To ensure compliance with the Legislature's long established position, the HR2W requires that state 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.[65] Therefore, GSPs that cause disparate impacts to domestic water use are in violation of the HR2W, and cannot be approved in a manner that meets DWR's requirements under SGMA, and Water Code § 106.3.
- It is important to note that SAFER should not be counted on to remedy impacts to domestic wells that result from GSA management. In order for the state to uphold the HR2W, SAFER funds need to be reserved for issues where there are currently no other responsible regulatory authorities to cover the costs. This is not the case where GSAs are managing the groundwater in their basin in a way that allows domestic wells to go dry or degrade water quality. Local prioritization of continued pumping should not be subsidized by the SAFER fund when the demand for those funds already outstrips the available funds nearly 10-fold.[66]
- The SAFER Needs Assessment Executive Summary highlights: "$10.25 billion represents the total estimated cost of implementing interim and long-term solutions for HR2W list systems, At-Risk water systems and well owners."[67]

- In order to effectively protect drinking water users during GSP implementation, we recommend that the GSA's **Drinking Water Well Impact Mitigation Program Implementation Action,** in line with and expanding upon the currently proposed Dry Well Notification System and potentially incorporated into actions carried out under the Water Quality Partnership, should include the following components:

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[61] WAT § 106.3 (a).
[62] Senate Floor Analysis, AB 685, 08/23/2012.
[63] This policy is also noted in the Legislative Counsel's Digest for AB 685.
[64] SB 200 (Monning, 2019).
[65] WAT § 106.3 (b).
[66] SWB. *SAFER Needs Assessment*. Available at: https://www.waterboards.ca.gov/drinking_water/programs/safer_drinking_water/docs/draft_white_paper_indicators_for_risk_assessment_07_15_2020_final.pdf.
[67] SWB. *SAFER Needs Assessment: Executive Summary.* P. 23 Available at: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/needs/executive_summary.pdf

- **Include a vulnerability analysis of Disadvantaged Communities (DACs) and drinking water supplies in order to protect drinking water for these vulnerable beneficial uses and users.** Although rural domestic and small water system demand does not contribute substantially to the overdraft conditions, drinking water users could face significant impacts, particularly if the region faces another drought. Without a clear commitment and timeline for actions regarding establishing groundwater allocations or reductions in groundwater pumping, the SVB GSA may create disparate impacts on already vulnerable communities. See comments submitted by CWC and San Jerardo Cooperative on April 23, 2021 regarding Chapter 8 of SVB GSA Subbasin GSPs for further recommendations for conducting well impact analyses.
- **Develop a trigger system for both groundwater levels and quality in collaboration with stakeholders, in particular groups that are more susceptible to groundwater elevation and quality changes. Stakeholder recommendations provided back to the GSA should be incorporated into quantifiable measures, such as the GSP measurable objectives, MCLs, and numbers of partially or fully dry drinking water wells.**[68]
- **Ensure that the monitoring network is representative of conditions in all aquifers in general, including the shallow aquifer upon which domestic wells rely.**
- **Routinely monitor for all contaminants that could impact public health, including those with established MCLs, such as nitrates, and contaminants of emerging concern,through the representative water quality monitoring network.** Contaminated drinking water can cause both acute and long-term health impacts and can affect the long-term viability of impacted regions.[69] Among other causes, groundwater contamination can result through the use of man-made chemicals, fertilizers, or naturally-occurring elements in soils and sediments.[70] Routinely monitoring for contaminants will allow the GSA to accurately monitor for impacts on the most vulnerable beneficial users, and protect DACs' and domestic well owners' access to safe and affordable drinking water.[71]
  - **For monitoring network wells with contamination less than 75% of the MCL for all contaminants, the GSP should set MOs at 75% of the MCLs.** The GSP should include MOs as action triggers at 75% of MCL for each constituent of concern so that groundwater can be managed in that area to prevent a minimum threshold

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[68] See previous reference for *Framework for a Drinking Water Well Impact Mitigation Program.*

[69] 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.

[70] See previous Community Water Center (2019) reference.

[71] See previous reference for *Framework for a Drinking Water Well Impact Mitigation Program.*

exceedance at a representative monitoring well.[72] This buffer is particularly critical with contaminants like nitrate that can cause acute health effects. As discussed in previous submitted comments, water quality impacts can intensify as water levels decrease.[73] If the GSA waits until a minimum threshold set at an MCL is exceeded, it may be too late or difficult for actions to be protective of public health and prevent undesirable results. 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.

- **Include a combination of different strategies for mitigation including: replacing impacted wells with new, deeper wells, connecting domestic well users to a nearby public water system, or providing interim bottled water.**
- **Include an implementation timeframe, budget, and funding source**.[74] As currently written, the Dry Well Notification System suggests convening "a working group to assess the groundwater situation if the number of wells that go dry in a specific area cross a specified threshold." We support emergency response if one or more wells are impacted, and also request that this section be updated to include strategies to prevent impacts from occuring in the first place. Additionally, plans to address and mitigate those impacts should be solidified beforehand so resources can be mobilized in a timely manner. Drinking water users cannot afford to wait for interim plans to be developed once their primary sources of water for drinking, cooking and hygiene are compromised.

In response to our previous comments, the SVB GSA stated:

> "Thanks for support of the program (now titled Dry Well Notification System). This program focuses on access, not quality. A robust drinking water well mitigation program falls within the responsibilities of other agencies; however, the GSA may consider supporting such a program. The text has been revised to explicitly include it as a potential program that the GSA can collaborate with other agencies on through the Water Quality Partnership. To set MOs at 75% of the MCLs for drinking water, the GSA would need to take on responsibility for cleaning up groundwater contamination present prior to 2015, which would take significant effort and is not the GSA's responsibility. The GSA does acknowledge the need for action on water quality, and will work with other agencies to determine what the GSA's role in that is."

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[72] This recommendation was also made previously in a comment letter to SVB GSA from CWC and San Jerardo Cooperative regarding Chapter 8 of the 180/400 ft Aquifer GSP on November 25, 2020, as well as in our comments to the SVB GSA on April 23, 2021 regarding Chapter 8 of drafts for the SVB GSA Subbasin GSPs.

[73] Community Water Center and Stanford University. Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium. (2019). https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896.

[74] See previous reference for *Framework for a Drinking Water Well Impact Mitigation Program.*

Our response:

A drinking water well mitigation program deals with more than just water quality. Such a program also protects wells from becoming dewatered due to lowering groundwater levels. As both pertain to the GSA's mandate to manage pumping in the basin in a way to avoid undesirable results, a drinking water well impact mitigation programs would be appropriate and should be required in the SVB GSA Subbasins.

- In regard to water quality, the GSA has responsibilities, mandated by statute, to prevent significant and unreasonable degradation of water quality.[75] DWR has clarified that water quality is a meaningful component of GSA management and has specifically given corrective instructions to SVB GSA, as cited in our prior comments and above. As this is such a critical point of contention with the GSA, we again quote this section from DWR's 180/400 foot Aquifer Determination:
    - "[S]taff find that the approach to focus only on water quality impacts associated with GSP implementation, i.e., GSP-related projects, is **inappropriately narrow.** Department staff recognize that GSAs are not responsible for improving existing degraded water quality conditions. **GSAs are required; however, to manage future groundwater extraction to ensure that groundwater use subject to its jurisdiction does not significantly and unreasonably exacerbate existing degraded water quality conditions."**[76]
    - DWR clearly identifies the responsibility of the GSA to manage future groundwater extraction in order to prevent significant and unreasonable degradation of water quality conditions. DWR does not limit this duty to merely apply when the GSA regulates groundwater pumping for the purpose of maintaining sustainable groundwater levels, but rather posits an affirmative duty for the GSA to manage extraction in order to avoid exacerbating existing degraded water quality conditions. SVB GSA's jurisdiction does not hinge on whether or not a Subbasin Committee decides to instate allocations or pumping restrictions. SVB GSA does not have the power to discard this authority by opting against regulating pumping. Instead, SVB GSA is exercising its authority as an affirmative action to continue to allow pumping at current rates.
- DWR clarifies further:
    - "Where natural and other human factors are contributing to water quality degradation, the GSAs may have to confront complex technical and scientific issues regarding the **causal role of groundwater extraction and other groundwater management activities**, as opposed to other factors, in any continued degradation; but **the analysis should be on whether groundwater extraction is causing the degradation**

[75] Cal. Water Code § 10721(x)(4).

[76] Department of Water Resources. (2021). *Statement of Findings Regarding the Approval of the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan.* Pp. 26-27. (Internal citations omitted; emphasis added). Available for download at: https://sgma.water.ca.gov/portal/gsp/status.

in contrast to only looking at whether a specific project or management activity results in water quality degradation."[77]

- SVB GSA must establish a viable plan to prevent the exacerbation of degraded water quality conditions in the basin. In response to previous comments, SVB GSA asserted, "Groundwater quality is included within the purview of the SMC TAC, so it can make recommendations of projects that mitigate groundwater quality degradation for drinking water users, including impacts due to pumping."

Recharge Projects (Direct or Indirect)

We offer the following overarching comments regarding Recharge Projects in the Subbasin GSPs:

- **Assess constituents in the ground before using land for recharge, to avoid further contamination.** Reference the Groundwater Recharge Assessment Tool (GRAT) developed by Sustainable Conservation.[78]
  - On-farm recharge has the potential to further spread contaminants. Soil contaminants should be measured before dedicating the land to recharge purposes. "Short-term" impacts on domestic wells due to recharge efforts, which can include increased leaching of certain contaminants such as uranium, or displacement of contaminant plumes, should be mitigated in order to minimize the harm to beneficial drinking water users, and to replace water sources if compromised.[79]
- **In order to achieve successful recharge management, the GSA must identify where groundwater contaminant plumes are currently located, in order to then assess whether recharge projects could cause problematic movement of plumes. Implement recommendations from our previous comment letters regarding Section 5.4:**
  - "**[I]nclude a specific discussion, supported by maps and charts, of the spatial or temporal water quality trends for all constituents that have been detected in the subbasin and may affect drinking water beneficial users, as required under 23 CCR § 354.16(d).** This section should include water quality data (both in map and tabular form) for all constituents (where available) with primary drinking water standards that have been detected in the subbasin including, but not limited to, nitrate, 123-trichloropropane, hexavalent chromium, arsenic, uranium, and perchlorate for all public drinking water wells, state and local small water system wells, and private domestic wells. It is especially important for all groundwater stakeholders to be able to understand and visualize the location of contaminant hotspots throughout each subbasin.

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77 *Id.*

78 Sustainable Conservation. *Groundwater Recharge Assessment Tool.* Available at: https://suscon.org/wp-content/uploads/2016/08/GRAT-Summary-8-2017.pdf.

79 Community Water Center and Stanford University (2019). *Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium*. Available at: https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896.

- **Present maps and supporting data for all constituents of emerging concern.** The review of water quality data in the groundwater conditions section of the draft Section 5.4 in the subbasin GSPs is focused primarily on nitrate. The GSPs identify numerous constituents that have been detected in groundwater above drinking water standards, but, with the exception of nitrate, do not present this data spatially. Even though the subbasin GSPs set water quality minimum thresholds for additional constituents (See Tables 8-4 and 8-5), the supporting data is not all 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)).”[80]

- We appreciate the identification of multi-benefit improvements to streams, and agree that slowing the speed of groundwater in its course of movement is a useful way to increase recharge. Such improvements to multi-benefit streams are a cost-effective and low-harm recharge method.

Reoperation of Reservoirs

We offer the following overarching comments regarding Reoperation of Reservoirs projects:

- **Conduct holistic cost-benefit analyses for large-scale infrastructure projects such as the MCWRA Interlake Tunnel and Spillway Modification, taking into account the specific benefits that projects will or will not confer on underrepresented communities and DACs, including the San Jerardo Cooperative in the Eastside Subbasin.**
    - Benefits should be equitable and take into account how different climate projections would impact the potential benefits from such a project in the case of little to no rainfall.
    - Cost-benefit analyses should also consider alternatives that could provide affordable long-term benefits.
- **The MCWRA Drought TAC should ensure that all beneficial water users are considered, and that drinking water needs are particularly protected from harm during current and future droughts, in line with the Human Right to Water.**

Management Actions

Conservation and Agricultural BMPs

- **Best Management Practices (BMPs) should utilize the latest technologies and take advantage of opportunities to modify agricultural pumping needs in order to provide overall groundwater basin benefits for all beneficial users.**

[80] Community Water Center and San Jerardo Cooperative, Inc. *Comments on the Draft Salinas Valley GSP Chapters 1-8 for the Langley, East Side, Forebay, Upper Valley and Monterey Subbasins.* (April 2021). P. 7. On file with SVB GSA and available at: https://drive.google.com/file/d/1wH7wvCMmQd4bu_PIri5o66_y5caW9ti7/view.

- **BMPs should also be used as a mechanism to improve or stabilize groundwater quality by using evapotranspiration (ET) data with soil moisture sensors and soil nutrient data to promote efficient irrigation practices and limit the application of synthetic fertilizers.**
- **BMPs should include best available science, including climate-smart approaches and nature-based solutions which have been recognized on state, national, and international levels.** For example, while written with the Central Valley in mind, FoodFirst's *Healthy Soils, Healthy Communities* outlines the following strategies and benefits which can also be applied to the Central Coast:
    - **Soil organic matter can reduce soil fumigant emissions** – Pesticides applied directly to soils form short-lived climate pollutants, and contribute to air and water pollution. Increased soil organic matter can reduce fumigant emissions and reduce the need for fumigants in the first place.
    - **Soil organic matter slows water contamination** – Synthetic fertilizer and pesticides have contaminated drinking water in the Central Valley over the last 70 years. Soils higher in organic matter leach fewer pollutants, including nitrates and pesticides. Soils high in organic matter also require less synthetic fertilizer to produce a crop. Using compost instead of synthetic fertilizer can reduce nitrogen loads in the area. Over time, increased soil organic matter and riparian restoration could help reduce groundwater contamination.
    - **Composted manure from dairies could be a source of soil organic matter** – Concentrated manure from industrial dairies is a major local air quality and water quality issue. If that manure were properly composted, it could become a source of valuable nutrients and soil organic matter instead of a pollutant, and help displace the use and manufacture of synthetic fertilizers.[81]
    - **Composting farm waste could prevent black carbon emissions** – Instead of burning orchard waste, another local air pollutant, mulches and composted farm waste could be a source of soil organic matter for farms and rangelands.
    - **BMPs are an opportunity for rural workforce development and wildfire management** – From the Conservation Corps, to ecological restoration, nursery stock production, wetland management and fire prevention, there is a lot of work to do to conserve and increase terrestrial carbon on public and private lands. This is an opportunity to both train and employ young people with low-to-moderate incomes and in communities of color in natural resource and agricultural management.
    - **Carbon-friendly practices can support small-scale and immigrant farmers** – Public support for carbon-friendly practices could help make small to mid-scale and immigrant farmers more resilient and boost their bottom line through a combination of financial support for carbon-friendly practices and more stable land access. These programs will

[81] USDA. *Manure in Organic Production Systems.* Available at: https://www.ams.usda.gov/sites/default/files/media/Manure%20in%20Organic%20Production%20Systems_FINAL.pdf. (Citation added).

have to be accessible to small-scale farmers and take into account chronic issues around access to land, credit and technical assistance.

Fallowing, Fallow Bank, and Agricultural Land Retirement

- **Dewatered drinking water wells or migration of contamination plumes should be considered as factors when deciding where to incentivize targeted agricultural fallowing or land retirement, and should trigger pumping restrictions in affected areas as necessary.**
    - This approach is further elaborated in the Drinking Water Well Impact Mitigation Framework.[82]

SMC Technical Advisory Committee (TAC)

- **Ensure that this TAC functions as a public decision-making space and not a consultative committee.** Discussions regarding SMCs and how or whether to intervene when conditions approach MTs should be fully public and held under Brown Act rules. These discussions are core to the management of the basin and necessarily must be informed by stakeholder input.
    - Additionally, plans to prevent and/or mitigate potential undesirable results should be finalized *prior* to the emergence of such conditions. We note that the formerly proposed Forebay Drought/Pumping TAC has been adapted to mirror the Upper Valley's SMC TAC and emphasize that planning for drought conditions must be done before those conditions arise, not as an improvised reaction in the moment. Such a delay in planning would be counter to the spirit and letter of SGMA.
- **Create management zones with pumping restrictions in areas with vulnerable drinking water wells.**
- **The SMC TAC should consider and recommend projects and management actions that mitigate groundwater quality degradation for drinking water users due to GSA actions, including impacts resulting from over-extraction under GSA management, as was clarified in DWR's 180/400ft Aquifer Determination Letter on pages 26 and 27.**

Pumping Allocations and Control

- **Quantify the demand reductions (pumping restrictions) necessary to meet all minimum thresholds in the short and long term, including in dry conditions.** Designing a feasible and effective allocation structure requires thorough groundwater elevation data as well as a comprehensive, ongoing assessment of the interrelated effects of SMCs on one another. Pumping allocations must be responsive to groundwater conditions throughout the basin and avoid undesirable results.
- **Parameters for pumping restrictions in times of widespread water shortages should be decided ahead of time as part of a publicly-informed, adaptive management approach.** Decisions around pumping regulation should be made as part of GSP development and not relegated to a later decision-making body which will be inherently less accountable to the public than SVB GSA's current Committees and Board. It will not be sufficient to solely bring pumping

[82] Self-Help Enterprises, Leadership Counsel for Justice and Accountability, Community Water Center. (2020). *Framework for a Drinking Water Well Impact Mitigation Program*. Available at: https://static1.squarespace.com/static/5e83c5f78f0db40cb837cfb5/t/5f3ca9389712b732279e5296/1597811008129/Well_Mitigation_English.pdf.

decisions to the public after actions have already been designed and are at the point of being approved. Lack of public input for such a critical component of the GSA's management is especially troubling in the negative—if action is not being taken.

- **As part of an adaptive management approach, pumping restrictions should be implemented by the GSA in a timely way so as to prevent harm to beneficial users, particularly vulnerable drinking water users and DACs.**
- **Consider hybrid allocation systems which account for de minimis users, regardless of homeownership status, to ensure sustainable yields for all beneficial users.** Langley GSP proposes such a hybrid allocation system in which de minimis users are included within the estimated sustainable yield. This approach will provide a more complete picture of groundwater use within the basin, to inform groundwater management decisions.

Implementation Projects

CWC and San Jerardo see value in the projects listed in this section, though we point out insufficiencies below and offer recommendations for how these proposed projects should be adjusted so that they will support SVB GSA in coming into compliance with SGMA. We also note that "Implementation Projects" is a separate category of GSA management activities that SGMA does not specify, and believe these projects should be integrated into either the Projects or the Management Actions sections.[83] GSA activities that are necessary to meet SGMA requirements, such as those intended to prevent a water quality UR, should fit within either Projects or Management Actions.

Groundwater Elevation Management System (GEMS) Expansion

- **Include data from more drinking water wells, including small water system wells and domestic wells, in order to have a sufficiently representative monitoring program.**

Water Quality Partnership (formerly Domestic Water Partnership)

CWC would like to voice conditional support for the Water Quality Partnership, as a step towards coordinating local and regional responses to water quality issues. However, the GSA remains directly responsible for recognizing and resolving water quality degradation that results from its policies and projects.

- The GSA must clarify the role that it will play in this partnership in dealing with water quality issues. Water quality is an integral part of SGMA, one of the six Undesirable Results that GSAs are tasked with preventing while achieving sustainability.[84] Impacts from extraction, including due to overdraft and projects and management actions undertaken by the GSA, fall under the purview of the GSA and should be tracked and remedied according to the GSP. Thus, the GSP must include plans to respond to problems should they arise. If, for example, a contaminant plume were to begin migrating based on pumping patterns or a project/MA, the GSA is not permitted to allow that problem to progress unchecked. If the GSA wishes to collaborate with

[83] 23 CCR § 354.44

[84] Cal. Water Code § 10721, subd. (x)(4). "Undesirable result" means one or more of the following effects caused by groundwater conditions occurring throughout the basin: ...(4) Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.

other regulatory agencies who also deal with water quality issues as a way to fulfill its obligations, the GSA should enter into a Joint Powers Agreement (JPA) or a formal Memorandum of Understanding (MOU) in order to formalize the roles and responsibilities. Otherwise, DWR cannot determine whether the plan is sustainable.[85]

- As currently drafted, the Water Quality Partnership only guarantees one meeting per year, and a review of water quality conditions resulting in a report. These proposed actions are not sufficient to ensure that the GSA is equipped to prevent or react to exacerbated water quality should those impacts occur.
- **The GSA should work with local and regional water agencies or the county to implement groundwater quality remediation projects to prevent degradation and potentially improve both groundwater quality as well as groundwater levels to ensure groundwater management does not cause further degradation of groundwater quality.[86]** 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, GSPs 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 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.
- **Include - without delay - Monterey County water quality data for state and local small water systems.** This data is readily available and would add significantly to the proposed water quality monitoring network in draft subbasin Chapters 7. We do not want this potential partnership implementation/management action to delay the incorporation of this important data source. This action can and should, however, integrate this County data into current draft subbasin plans in order to identify potentially vulnerable populations and create management actions to protect them.
- **Integrate key components of a Drinking Water Well Mitigation Program Framework in order to protect drinking water users from losing access to their drinking water during GSP implementation.** CWC was informed by SVB GSA Staff that concepts from the Mitigation Framework were being incorporated into the Water Quality Partnership language in the GSP, but we do not see evidence of this in the current draft. CWC would like to coordinate with SVB GSA Staff to incorporate this item into the agenda of one or more of the remaining 2021 Advisory and Board meetings in order to present on the Framework to the Committees and Board.

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[85] Cal. Water Code §§ 10721, subd.(x)(4) and 10723.6.

[86] Community Water Center and San Jerardo Cooperative, Inc. *Comments on the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan.* May 15, 2020. On file with SVB GSA and available at: https://sgma.water.ca.gov/portal/service/gspdocument/download/4012.

- **Integrate water quality considerations across planning and implementation.** As now acknowledged in the GSPs, groundwater quality in the Subbasins can be influenced by pumping and the way groundwater is managed. This is of particular importance for the San Jerardo Cooperative which has experienced increases in nitrate and arsenic in their well, as highlighted in our cover letter and previous comments.[87] This relationship between groundwater levels and groundwater quality should be reflected throughout planning and implementation so that the GSA can manage the basin in a way that does not exacerbate water quality degradation.
    - Support for this recommendation is evidenced by Recommendation #5 of DWR's 180/400 GSP Determination.
- **Fill previously identified water quality data gaps in baseline information and the monitoring network.**
    - DWR assessed water quality monitoring in the 180/400 Foot Aquifer as follows: "The monitoring network to evaluate degradation of groundwater water quality is based on three existing water quality regulatory programs operating in the Subbasin: Monterey County's small community water system wells program, the State Water Resources Control Board's public supply well program, and the Central Coast Water Board's Irrigated Lands Regulatory Program. The Plan proposes to use four sets of wells that are routinely sampled under these programs. Within each set of wells, a specific set of constituents of concern will be monitored. In total, the monitoring network consists of 136 small community water system wells, 51 public supply wells, and a currently unknown number of domestic and agricultural wells from the Irrigated Lands Regulatory Program. The specific number of Irrigated Lands Regulatory Program wells will be finalized when the Central Coast Water Board adopts Agricultural Order 4.0 (anticipated in 2020). The Plan identifies the lack of well construction information (e.g., the depth of well screens or the total depth of the well) for many groundwater quality monitoring wells as a data gap. The implementation chapter of the Plan simply states that "[d]uring implementation, the SVBGSA will obtain any missing well information, select wells to include in monitoring network, and finalize the water quality network." Department staff recommend the SVBGSA provide updates on the progress toward filling this data gap in its annual reports and that more details be provided in the first five-year assessment of the Plan."[88] The remaining SVB GSA Subbasins should match a similar standard for their monitoring systems, and anticipate the need to show progress on filling data gaps in annual reports and at the five year update.

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[87] Community Water Center and San Jerardo Cooperative, Inc. *Comments on the Draft Salinas Valley GSP Chapters 1-8 for the Langley, East Side, Forebay, Upper Valley and Monterey Subbasins.* (April 2020). Pp. 4-5. On file with SVB GSA and available at: https://drive.google.com/file/d/1wH7wvCMmQd4bu_PIri5o66_y5caW9ti7/view.

[88] Department of Water Resources. (2021). *Statement of Findings Regarding the Approval of the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan.* Pp. 30-31. (Internal citations omitted). Available for download at: https://sgma.water.ca.gov/portal/gsp/status.

Dry Well Notification System (Previously Localized Groundwater Elevation Triggers)

The Dry Well Notification System, which is designed to "assist well owners (domestic or state small and local small water systems) whose wells go dry due to declining groundwater elevations" is an important potential component of the Subbasin GSPs, for tracking and responding to impacts due to droughts and overdraft. We support the inclusion of a "notification system whereby well owners can notify the GSA or relevant partner agency if their well goes dry," particularly linking them to DWR's reporting website. We also support the proposal that the GSA "could set up a trigger system whereby it would convene a working group to assess the groundwater situation if the number of wells that go dry in a specific area cross a specified threshold. A smaller area trigger system would initiate action independent of monitoring related to the groundwater level SMC." We encourage SVB GSA to commit to incorporating this project into implementation. Implementation of the Dry Well Notification System would significantly increase the GSA's ability to track and address impacts to domestic wells. To further improve upon the program's efficacy, we recommend:

- **Integrate technical assistance into this program, facilitate access to resources through a collaboration with state agencies and/or directly administer impact mitigation funding.**
    - Tracking instances of dry or depleted wells and linking impacted beneficial users to information about potential available resources is a positive step, however services such as directing DACs and other impacted drinking water users to apply for funding would only be minimally helpful while those households are experiencing a water shortage crisis. The GSA's efforts to respond to impacts due to low groundwater elevations should go further in order to be effective. Such services should include reducing pumping in areas where groundwater supply shortages are being exacerbated by over extraction, actively facilitating coordination between residents and assistance programs, and potentially providing a conduit to state funds directed towards water resiliency—a multi-billion dollar drought & water resiliency package was recently passed by the State Legislature.

Well Registration

- **We recommend that SVB GSA require all wells that pump over two acre-feet per year to be metered and charge fees based on the amount of water pumped, to pay for future projects and incentivize voluntary reductions.**

Support Protection of Areas of High Recharge

- **Develop criteria for recharge projects that prevent unintended impacts to drinking water.**
- **As with all recharge projects, evaluate whether recharge could have any unintended consequences such as moving contaminant plumes toward wells, thus degrading the water quality, and closely monitor water quality in all areas affected by recharge.** The GSP states that "[t]hese areas are typically identified using soils and soil classification maps but would need additional investigation and data to confirm." Accurate mapping of water quality issues in the basin is also crucial in order to prevent unintended water quality impacts.
- **Where applicable, encourage use of low-impact cover crops where water is captured at the site of precipitation or flooding.** Roots in the soil help to capture more water, clean the water source, and maintain healthy soils so that less fertilizer/pesticide is used, as evidenced in organic

and regenerative agricultural practices. Cover crops and compost cycles, as well as chicken manures or natural organic-matter fertilizers can also keep nitrogen in the soil longer, providing benefits to crops and keeping nitrate out of groundwater.

<u>Deep Aquifers Study</u>

- We support the Deep Aquifers Study due to the influence that hydrogeologic interconnections between aquifers in the Salinas Valley Basin would necessarily have on influencing better sustainable management of the basins.

New Water Supply Projects

- **Quantify which combinations of projects could address projected overdraft and what the costs of those combinations would be.** With high costs, permitting and other challenges, there is a high degree of uncertainty whether each project can be implemented. As written, it is difficult to evaluate how feasible it is to address overdraft via the options provided.
    - For example, in the Eastside GSP draft, Table 6-15 in Chapter 6 projects 20,400 AF/yr overdraft in 2030 and 20,500 AF/yr overdraft in 2070. Table 9-8 in Chapter 9 lists projects that could mitigate overdraft. However, Table 9-8 only quantifies benefits for some of the projects, and often for the Salinas Valley basin as a whole as opposed to the Eastside Subbasin. The table also omits costs. This information will be critical for planning and implementing projects to address overdraft.
- **Factor in known uncertainties when determining which projects to prioritize in implementation.** At the top of pg 9-24 for 11043 Diversion at Chualar, and also for 11043 Diversion of Soledad, the GSP states that the groundwater model used to estimate Salinas River flows "does not account for the uncertainty surrounding greater variations in precipitation, timing, intensities and subsequent flows." The model should provide a sensitivity analysis for potential conditions, particularly in light of large variations between climate change predictions in the region.
    - This recommendation is also in line with DWR's 180/400 Determination which instructs SVB GSA to determine how they will define "average hydrogeological conditions," in Section 4.3.3.2 and the overarching statutory requirement to continually update the GSP to meet the statutory requirement to use the "best available information and best available science."[89]
- **Where projects overlap between subbasins, clarify what effects the project will have across subbasins.** For example, provide clarity around what effects the Eastside Irrigation Water Supply Project (or Somavia Road Project) will have on the 180/400 Foot Aquifer Subbasin where water will be pumped from. Account for any effects in the 180/400-Foot GSP in ongoing updates, including pertinent sections of Annual Reports.

[89] 23 CCR § 355.4(b)(1). "When evaluating whether a Plan is likely to achieve the sustainability goal for the basin, the Department shall consider the following:
(1) Whether the assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are reasonable and supported by the best available information and best available science."

- **Quantify what the sustainable yield is for the entire basin.** This calculation should be done to ensure that the water budgets balance across all the Subbasin Plans.

GSP Chapter 10: Groundwater Sustainability Plan Implementation

Our overarching recommendations for GSP Implementation and Updates are as follows:

- **Take interim actions while working toward long-term sustainability.**
- **Address missing data for domestic wells as recommended by DWR:**
    - "[T]he GSA should inventory and better define the location of active wells in the Basin and document known impacts to drinking water users caused by groundwater management … in subsequent annual reports and periodic updates."[90]
- **Continue to include the small water system data from the County as a data gap in the subbasin GSPs, as it was in the 180/400 foot Aquifer GSP.** As Tom Berg, a DWR representative, indicated at the SVB GSA Advisory Committee meeting on June 17, 2021, the specific decisions made during the formation of the 180/400 foot Aquifer GSP allowed for it to receive DWR's approval. Mr. Berg recommended that the SVB GSA review the three other letters that DWR released on June 3, 2021, to better understand the parameters of what is required for a GSP to receive approval.
- **Engage underrepresented communities immediately.** As this section acknowledges, underrepresented communities have little or no representation in water management and have often been disproportionately less represented in public policy decision making. It is important to note that their engagement and input around their main concerns must be noted and considered during routine GSA proceedings. Their input should be (or rather should have been) solicited and received while the GSP formation process is/was still active.
- **Continually update the GSP and Implementation strategy as best available science[91] evolves.** Meaningful updates to data sources and interpretation should occur at a minimum on a yearly basis, timed with the Annual Reports.

[90] Department of Water Resources. (2021). *Statement of Findings Regarding the Approval of the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan.* P. 24. Available for download at: https://sgma.water.ca.gov/portal/gsp/status.

[91] 23 CCR § 355.4(b)(1).

Friday, October 15, 2021

SVBGSA Public Comments Form

Salinas Valley Basin Groundwater Sustainability Agency

Name	Douglas Deitch
Organization	Monterey Bay Conservancy (MBC)
Email Address	siddhartha1002@gmail.com
Subbasin	Langley, Eastside, Forebay, Upper Valley, Monterey, Whole Basin, 180/400
Chapter	Salinas Valley Basin GSA (entire)

Comments

https://twitter.com/DouglasDeitch/status/1375814806364594178/photo/1

Part I-General comments on balkanized/"sub basined" and too many Monterey Bay GSAs, our ground water commons, our Water Berry (and other similar) Ponzi Schemes (MBC @ CCC 2009 @ http://www.begentlewiththeearth.org , http://ourinconvenienttruth.net http://ourinconvenienttruth.org http://ourinconvenienttruth.com & 2011 @ http://douglasdeitch.com http://douglasdeitch.net & MBC @ http://dougforassembly.com @ SWRCB requesting SWRCB Monterey Bay Regional "Intervention" for the first time in 2016 @ 11:21 @ http://thebestthatmoneycantbuy.org), and their ongoing and worsening (terminal?) tragedy ... and our Alternatives

1. "Those who cannot remember the past are condemned to repeat it." :
"Toolittle/toolatefortheCentralValley (and Monterey Bay's $5 billion+ annual production) &it'sAG?
Those who cannot remember the past are condemned to repeat it, like we have forgotten in the Monterey Bay w/ berries&Driscolls/Reiter (et al) instead of cotton&Boswells@ http://youtube.com/watch?v=I5uloOJ5m1o&feature=youtu.be
http://santacruzfoods.com

https://twitter.com/DouglasDeitch/status/1448627629557354500

Alternative#1 @ Living within our means @ http://dougdeitch.info , 1995 Zmudowsky Beach 43 acre Pilot Project @ http://dougdeitch.com & @ MBC @ CCC in 2011 @ https://www.youtube.com/watch?v=ija6HUdP-eY

2. "VAST majority of the water/food/RE resources of World's 5th biggest economy/Community are inextricably tied to SFBay/Delta/Sierra-Snowpak&CentralValleyag. CCC predicts 3.5ftSLR in 30 years@ http://documents.coastal.ca.gov/assets/slr/CCCendorsement_SLRPrinciples.pdf .
5:42@ http://pebblebeachrealestate.com Dr.Mount sez what 1 foot will do!"
https://twitter.com/DouglasDeitch/status/1374672809163550720

Question #1: If one foot of SLR will "salt up" the Delta, as Dr. Mount tells us in 2015, how, for example will this same one foot SLR affect our already overuse/critically overstressed local ground water commons? How is this above referenced projected CCC 3.5 feet SLR in next 30 years accounted for, if at all, in any current Monterey Bay GSA, particularly the only and first two and already approved ones in this or your, my, and GM/Santa Cruz Mayor Meyer's neighbor's and partner's "Mid County Ground Water Agency" and the sustainability of each's respective ground water basins and "sub basins"? Here's my recent comment to the CCC on this exact issue:

"Good Afternoon Dear Chair and Commissioners,

Please find my four (4) comments (in reverse order) I tendered last Friday, as described in the "Subject" of this email, and various attached images/articles/etc. w/ some repetition? (please excuse)

I hope you will have the opportunity to review them and watch the 12 minute VICE video @ I suggested you please review @ www.sandiegorealestate.com (and elsewhere) at the last real public in person meeting you had in March 12 of 2020, so long ago,

... @ minute/second 12:12 @ https://cal-span.org/unipage/?site=cal-span&owner=CCC&date=2020-03-12&mode=large&fbclid=IwAR1Fh5WDXG7kaFHIj0NvpnIe58Ry8zsMXnsOAd3cgJZ9poK5LjQjXQPqW-E

Best/health/tikkun olam,

Respectfully,

Douglas Deitch

MBC

831.476.7662

http://sipodemos.democrat

http://lomejorqueeldineronopuedecomprar.com

www.dougdeitch.info

-------- Forwarded Message --------
Subject: Fwd: Please add Additional Comment 4. + attached image (Fwd: Comments on "public review draft of Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California's Coastal Zone")
Date: Fri, 24 Sep 2021 15:17:27 -0700
From: ddeitch@pogonip.org
To: StatewidePlanning@coastal.ca.gov, Ddeitch

4. continued: Here is the MC Weekly 2018 article mentioned below @ https://www.montereycountyweekly.com/news/local_news/as-seawater-intrusion-advances-new-farmland-puts-marina-s-water-supply-in-peril/article_b35ca7e0-f66e-11e7-b541-57771b472126.html

"As seawater intrusion advances, new farmland puts Marina's water
supply in peril.

* David Schmalz

* Jan 11, 2018
* Along Highway 1 just north of Marina, what has been grassland for
decades is turning into row crops. A look at satellite images on
Google, stretching back to 1984, shows that farming on the property,
known as Armstrong Ranch, started in 2014 just south of the Marina
landfill.

Expect that trend to continue: On Nov. 21, 2017, Valle Del Sol Properties LLC bought 1,784 acres of Armstrong Ranch for $81.5 million. (Monterey County Assessor Steve Vagnini says the price per-acre, just over $45,000, is in keeping with local agricultural land values.)

Three new ag wells have been drilled on the property since 2015, and an application for another is currently being processed by the county. But here's the rub: The wells are pumping from an ancient, finite water source. It's the same water source that residents of Marina and the former Fort aquifers, named for their respective depths – is impaired by seawater intrusion, a process that occurs when excessive pumping creates a pressure differential that draws seawater into the aquifers, fouling their water with salt.

The only groundwater available to irrigate the property is in the so-called deep aquifer, an ancient groundwater supply 900-plus-feet underground that is not recharging through natural mechanisms. Scientists believe the water is probably more than 20,000 years old.

The only recharge to the deep aquifer, hydrologists say, comes from leakage from overlying aquifers. In the coastal area around Marina, those aquifers are already compromised by seawater intrusion, making them unusable as municipal or irrigation water supplies.

Pumping from the deep aquifer is considered "water mining," and has long been viewed as a last-ditch water supply that is both expensive to tap – it costs upwards of $1 million to drill a well into it – and risky to rely on because its quantity is unknown. Yet Marina Coast Water District, which supplies the city of Marina and the former Fort Ord, pumps roughly 50 percent of its water from the deep aquifer. (In 2017, that came out to 1,587 acre-feet of 3,239-acre feet.)

In October, Howard Franklin, senior hydrologist with the Monterey County Water Resources Agency, presented six recommendations to the County Board of Supervisors to help combat worsening seawater intrusion.

Among those recommendations was a moratorium on new wells in the deep aquifer until a study determines its viability as a water supply..."

"All wells in the deep aquifer are of concern with respect to the recommendations," Franklin says. "This is an urgent situation. This is imminent."

According to Michael Cahn, an irrigation water resources adviser with UC Cooperative Extension in Salinas, an acre of strawberries requires about 2.5 to 3 acre-feet of water annually.

That means if the entire 1,784 acres were converted to strawberries, it would require in excess of 4,000 acre-feet of water annually – more than Marina Coast's current annual production.

Franklin, when articulating the urgency of the situation for Marina Coast, and others that rely on the deep aquifer, says the human-caused mechanism of recharge for the deep aquifer – leakage from overlying aquifers – does not happen easily, or quickly, but that it will happen in a matter of years.

"The damage is being done now, and the impact of that damage could be 10 years from now, but if you [pump the deep aquifer] today, the damage will occur," Franklin says.

Marina Coast does not have jurisdiction over new agricultural wells on Armstrong Ranch.

“It’s on our radar, and we’re concerned about it, but we’re not necessarily in the loop,” Marina Coast General Manager Keith Van Der Maaten says. “Unfortunately, I don’t think we’re as involved as we should be. We should have a more active role.”

The county’s Environmental Health Bureau processes applications for new wells, but while projects for residential water supplies face a gauntlet of bureaucratic hurdles, wells for agriculture are typically approved without any pushback.

That may change in the coming years with the formation of the Salinas Valley Groundwater Sustainability Agency, but ag wells in the region have so far have faced minimal regulation.

Marina Coast is currently exploring new potential water supplies, other than desalination. The agency is vying for up to $1 million in state grant funds – the grants will be awarded in February – to study water storage options in the aquifers around Armstrong Ranch.

The project would potentially seek to store excess winter flows in the Salinas River, which would make it similar to the Monterey Peninsula’s aquifer storage and recovery project in the Seaside Basin, where winter flows are pumped from Carmel River and injected underground.

Theoretically, Van Der Maaten says, Marina Coast could produce between 2,000-8,000 acre-feet of water annually with the project, and even send some of the water north to Castroville.

But he says there are still many unknowns, including whether it is technically feasible, whether Marina Coast could secure the water rights to those flows, and whether it would be economically feasible for Marina Coast to supply Armstrong Ranch farmland with water so that they stop pumping from the deep.

Van Der Maaten knows it won’t be easy, but the mission is clear: “We absolutely need to get into this deeper, and get people off the deep aquifer.”

---------- Forwarded Message --------

Subject: Please add Additional Comment 4. + attached images (Fwd: Comments on "public review draft of Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California's Coastal Zone")
Date: Fri, 24 Sep 2021 14:48:18 -0700
From: ddeitch@pogonip.org
To: Ddeitch , StatewidePlanning@coastal.ca.gov

4. The recent September 20, 2021 presentation by USGS and CCC staff (see attached images) on ground water and Sea Level Rise underlines and emphasizes the unadvisability and inherent risks and unknowns involved with our too many recent non DPR recycled water supply projects like Pure Water Monterey, Soquel, San Diego caused by sea level rise invading our ground waters despite our best efforts and intentions to prevent this.

At minute/second 5:41 @ the 12 minute VICE video at http://www.sanfranciscorealesatate.com , Dr. Jeff Mount in 2015 explains what just one foot of SLR will do to the Delta and the CCC plans for 3.5 feet SLR by 2050 (@ https://documents.coastal.ca.gov/assets/slr/CCCendorsement_SLRPrinciples.pdf) . So, just imagine what that same 1 foot of SLR will do to our coastal ground water, particularly in our already critically overdrafted coastal ground water basins and related new water supply infrastructure.

Now add to this uncontrolled and unplanned for increased ag coastal well pumping for new ag, such as is presEnt in the Pure Water Monterey area described in this Monterey Weekly article from a couple of years ago which will, at 5400 acre feet per year, completely offset the cleaned injected recycled water in the Monterey Pure Water expanded project.

-------- Forwarded Message --------
Subject: Comments on "public review draft of Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California's Coastal Zone"
Date: Fri, 24 Sep 2021 06:33:31 -0700
From: Douglas Deitch
To: StatewidePlanning@coastal.ca.gov, Ddeitch

"Thosewhocannotrememberthepast https://youtu.be/I5uloOJ5m1o can't adapt to 3.5' in30yrSLR? @ https://twitter.com/DouglasDeitch/status/1374672809163550720 toprotectvastmajoritywater/food/re assets w/o 1. http://sipodemos.democrat 2. http://dougdeitch.info : https://t.co/2L1RYOqKrI http://dougforassembly.com ?" (https://twitter.com/DouglasDeitch/status/1426946751336914944)

Comments on "public review draft of Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California's Coastal Zone : "This Guidance focuses on adaptation of transportation infrastructure (Chapter 5) and water infrastructure (Chapter 6), including highways, roads, railroads, wastewater, stormwater, and water supply infrastructure."

1. "VAST majority of the water/food/RE resources of World's 5th biggest economy/Community are inextricably tied to

nt_SLRPrinciples.pdf . 5:42@ http://sandiegorealestate.com Dr.Mount sez what 1 foot will do!" @ https://twitter.com/DouglasDeitch/status/1374672809163550720 :

Analysis & Conclusions: Due to this 2020 3.5 ft. SLR by 2050 "planning guideline/projection" (and other reasons like possible COVID19 and other possible contamination of our waste waters which cannot be cleaned (@ https://twitter.com/DouglasDeitch/status/1426593026571313152)

Additionally, this is why we must immediately begin investigation of feasibility and advisability of damming the Golden Gate run down @ http://sipodemos.democrat @ Linkedin:

CA - DWR

You Retweeted

Fair&Balanced! @ MakeCaliforniaGreatAgain.DEMOCRAT
@DouglasDeitch

Replying to
@CA_DWR
#CaWaterBoards
https://twitter.com/DouglasDeitch/status/1401916742541013000

DPRisbest! like @ my "NAUTURAL SOLUTION" @ http://dougdeitch.info and 21000 acre Monterey Bay Estuarine Nat'l Monument in the Monterey Bay, which will include up to 31k/a/f/yr from Castroville Reclamation Plant repurposed to urban, recharge, and conservation uses from ag use in perpetuity, to wit:

https://twitter.com/DouglasDeitch/status/1411648137878380551

*"Douglas Deitch, Balanced Law and Order Liberal Democrat for State
Senator*

September 14, 2019 ·
WELCOME TO www.DOUGDEITCH.info !!! ... Best SUSTAINABLE Monterey Bay region "SLR" (Sea Level Rise) water solution?
lomejorqueeldineroNOpuedecomprar.com /
lawandorderliberal.org
My 21,000 acre "Monterey Bay Estuarine National Monument" , etc. 'Water Fix" ..., of course.
The Castroville reclamation plant/project, run down @

1998 for around $75 million in Castroville.
This 31,000 acre feet/yr of water will be repurposed to urban use, further cleaned, processed, and distributed regionally and will easily supply and service all current and future Montrey Bay regionally urban water needs.
This will be accomplished by using the 12000 acres of land associated with this 31000 a/f/yr of water to it's highest and best use.
At present, this water is dedicated to exclusively ag use on 12,000 coastal ag acres at the mouth of the Salinas Valley to use instead of well water pumped at this location to protect the Salinas Valley from further salt water intrusion.
As farmland, this land is FMV worth around $50,000 per acre as farmland (https://www.santacruzsentinel.com/.../retired-federal.../). However, this 12,000 acres highest and best use is not as farmland but instead as a ground water conservation/aquifer recharge/ and estuarine habitat conservation/rehabilitation project, which actually doubles the FMV of this land to $100,000 per acre or $1.2 billion.
This land comprises roughly something under 5% (?) of irrigated farmland in the "Salinas Valley"
If this 12000 acres was publicly acquired and fallowed/or all well pumping ceased, along with another tract of 9000 acres of irrigated farmland at the mouth of the Pajaro Valley running from approximately Elkhorn Slough to Manresa Beach on the ocean side of Highway One in Santa Cruz County for 21000 acres in total to protect the Pajaro Valley from salt water intrusion in the same way, ag well pumping would stop on this 21000 acres and, @ 3 a/f/yr per acre for ag water, 63,000 a/f/yr of ground water, would be CONSERVED annually per year in perpetuity. Additionally, wouldn't this 63,000 a/f/yr be also de facto RECHARGED at these two most hydrologically critically important locations with the highest quality recharge water possibly available with the lowest cost and best "GREEN tech" water available possible anywhere, in perpetuity as well, ... the recharge water produced and recharged naturally by our best water purveyor named Ms. Mother Nature?
Correct.
This is what I call the "Monterey Bay Estuarine National Monument", and it is truly a national monument with the highest concentration of critically threatened critical estuarine resources and habitat of ANY LOCATION ANYWHERE IN THIS COUNTRY !!! Here's my already successful 25 year old "Pilot Project" @ "Willoughby Ranch" @ Zmudowski Beach @ to check out @ www.dougdeitch.com & www.dougdeitch.info (this page)...
"Farmlands back to wetlands"
Query: Where's the $2.1 billion?
Response: Reallocated rail bond money billions to "water/habitat/environmental projects" aka "OPM" (...other people's money) and INFRASTRUCTURE FUNDING.

2. "I wonder what the latest SCIENCE is today re:"Removing the novel coronavirus from the water cycle"& our ground water injection of "cleaned"? recycled/injection water projects like "Pure Water Soquel"? Monterey San Diego etc? @
https://twitter.com/DouglasDeitch/status/142659302657131

3152/photo/1 ?

3. SWRCB must intervene in Monterey Bay immediately to achieve sustainability and proper, legal, and responsible water management in the entire Monterey Bay @ https://twitter.com/DouglasDeitch/status/1375814806364594178/photo/1

Respectfully submitted,
Douglas Deitch

ED/Monterey Bay Conservancy

540 Hudson Lane, Aptos, Ca., 95003

831.476.7662"

Question #2:This 2018 Monterey County Weekly article @ https://www.montereycountyweekly.com/news/local_news/as-seawater-intrusion-advances-new-farmland-puts-marina-s-water-supply-in-peril/article_b35ca7e0-f66e-11e7-b541-57771b472126.html#comments cites around 1800+/- new acres of ag & new well pumping @ 5400 a/f/yr which seems to approximately cancel/use up all the new Monterey One ASR water? ... Any unanticipated problems, present or future conflicts/miscalculations, etc in this regard here or not?

Please watch my most recent and 5th request for SWRCB INTERVENTION IN THE ENTIRE MONTEREY BAY water management and "control" just on August 3, 2021 @ 9:48 @ https://www.youtube.com/watch?v=A9KTIa0RDu8&t=919s and @ https://twitter.com/DouglasDeitch/status/1422889479061196803, my first request @ 11:21 @ www.thebestthatmoneycantbuy.org pictured below from April/2015, over SIX years ago, and please REVIEW the documents I am holding in my hand I presented and went through w/ SWRCB 4/16/15 during my presentation and first request for SWRCB INTERVENTION then @ http://www.dougforassembly.com , which only ONE current SWRCB board MEMBER then, Ms. Doreen D'Adamo, was present for?

... to be continued.
Respectfully,
Douglas Deitch/MBC
siddhartha1002@gmail.com

File Upload

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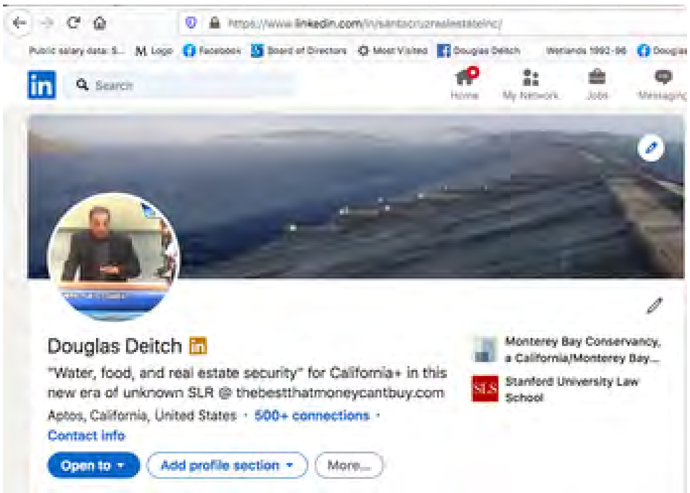

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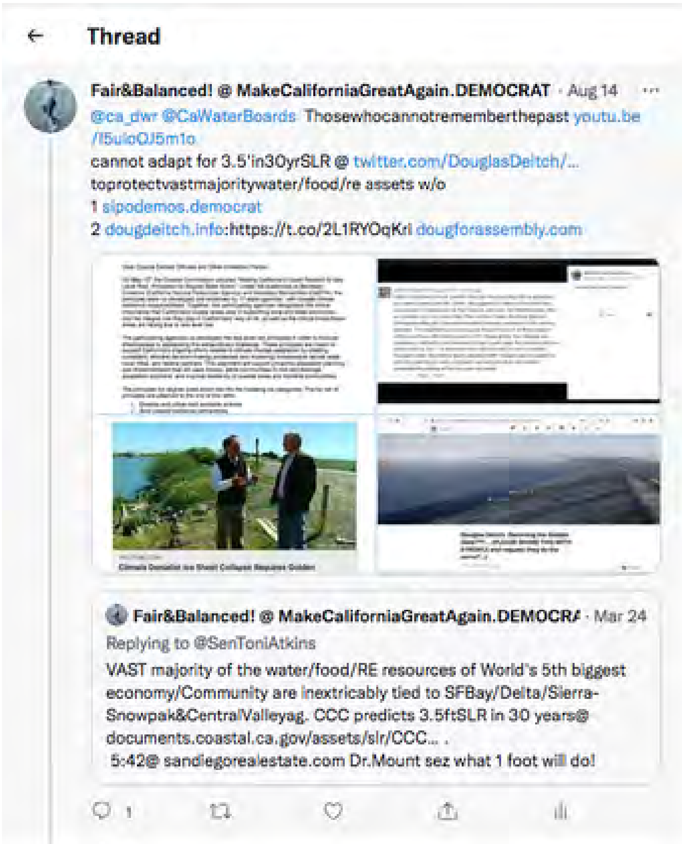

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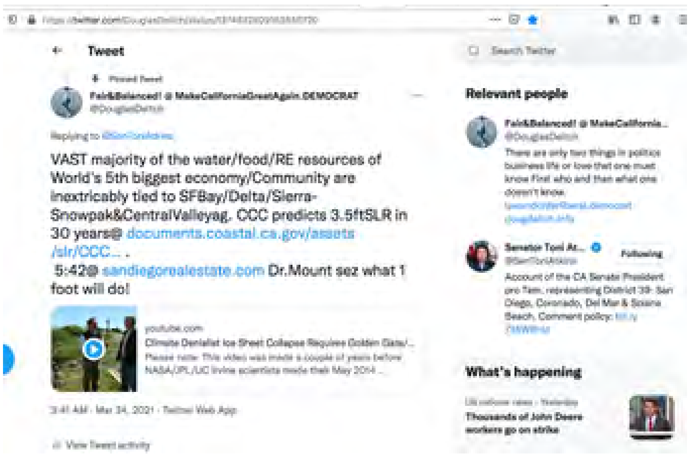
Replying to @SenToniAtkins
VAST majority of the water/food/RE resources of World's 5th biggest economy/Community are inextricably tied to SFBay/Delta/Sierra-Snowpak&CentralValleyag. CCC predicts 3.5ftSLR in 30 years@ documents.coastal.ca.gov/assets/slr/CCC... .
5:42@ sandiegorealestate.com Dr.Mount sez what 1 foot will do!

QueryGMDonnaM:Have you people accounted for the 5400+/- acre feet of new ag well pumping in this area on 1800 acres run down in MC Weekly in 2018@ montereycountyweekly.com/news/local_new... which will cancel out and use the entire 5k+ a/f/yr of the Pure Monterey project expansion? Didn't think so..



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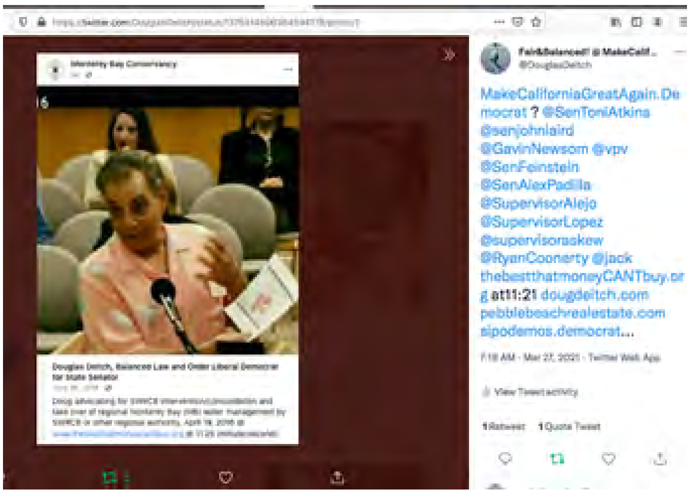
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Monterey Bay Conservancy
August 6 ·

Please watch my most recent and 5th request for SWRCB INTERVENTION IN THE ENTIRE MONTEREY BAY water management and "control" just on August 3, 2021 @ 9:48 @ https://www.youtube.com/watch?v=A9KTIa0RDu8&t=919s and @ https://twitter.com/DouglasDeitch/status/1422889479061196803, my first request @ 11:21 @ www.thebestthatmoneycantbuy.org pictured below from April/2015, over SIX years ago, and please REVIEW the documents I am holding in my hand I presented and went through w/ SWRCB 4/16/15 during my presentation and first request for SWRCB INTERVENTION then @ www.dougforassembly.com , which only ONE current SWRCB board MEMBER then, Ms. Doreen D'Adamo, was present for?

Monterey Bay Conservancy
August 27, 2018 ·

"It's past time for the State Water Resources Control Board to take control of our now predominantly below sea level Monterey Bay ground water commons..." https://www.linkedin.com/.../its-

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STATE OF CALIFORNIA - NATURAL RESOURCES AGENCY GAVIN NEWSOM, Governor

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE (415) 904-5200
FAX (415) 904-5400

May 22, 2020

Dear Coastal Elected Officials and Other Interested Parties,

On May 13th the Coastal Commission adopted "Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action." Under the leadership of Secretary Crowfoot (California Natural Resources Agency) and Secretary Blumenfeld (CalEPA), the principles were co-developed and endorsed by 17 state agencies[1] with coastal climate resilience responsibilities. Together, the participating agencies recognized the critical importance that California's coastal areas play in supporting local and state economies and the integral role they play in Californians' way of life, as well as the critical threat these areas are facing due to sea level rise.

The participating agencies co-developed the sea level rise principles in order to improve effectiveness in addressing this extraordinary challenge. These principles are meant to support California's ongoing efforts related to climate change adaptation by creating consistent, efficient decision-making processes and improving collaboration across state, local, tribal, and federal partners. This alignment will support proactive adaptation planning and implementation that will save money, allow communities to test and leverage adaptation solutions, and improve resiliency of coastal areas and frontline communities.

The principles for aligned state action fall into the following six categories. The full set of principles are attached to the end of this letter.

1. Develop and utilize best available science
2. Build coastal resilience partnerships
3. Improve coastal resilience communications
4. Support local leadership and address local conditions
5. Strengthen alignment around coastal resilience
6. Implement and learn from coastal resilience projects

Among other important goals, the Principles include an ambitious target for the year 2050 of preparing for 3.5 feet of sea level rise. Although this is not a new sea level rise projection, this planning target will help encourage state agencies and others to begin now to proactively prepare for the sea level rise that is anticipated to occur over short-, medium-, and long-term time horizons.

MONTEREY COUNTY

WATER RESOURCES AGENCY

PO BOX 930
SALINAS, CA 93902
(P): 831-755-4860
(F): 831-424-7935

BRENT BUCHE
GENERAL MANAGER

STREET ADDRESS
1441 SCHILLING PLACE, NORTH BUILDING
SALINAS, CA 93901

October 15, 2021

Donna Meyers, General Manager
Salinas Valley Basin Groundwater Sustainability Agency
1441 Schilling Place
Salinas, CA 93901

Re: Draft Monterey Subbasin Aquifer Groundwater Sustainability Plan

Dear Ms. Meyers:

Monterey County Water Resources Agency (Agency) appreciates the opportunity to comment on the draft Monterey Aquifer Subbasin Groundwater Sustainability Plan (GSP). As you know, Agency staff has been involved in reviewing this GSP in a technical role to assure that the data collected and curated by the Agency is utilized and described in an accurate manner.

What the Agency has been unable to do is to review most of management actions and projects in this document for feasibility and to verify the claims of benefits to groundwater sustainability. The management actions and projects that involve modifying many of the Agency's operations, projects, programs and/or permits have not been vetted by the Agency to ensure that Agency's goals and objectives will continue to be met if implemented. This document does not contain enough detail for an in-depth review which would be required before the Agency could provide support for these activities. Therefore, the Agency considers most of these management actions and projects as conceptual ideas that provide the Salinas Valley Groundwater Basin Sustainability Agency (SVGBSA) with a menu of options to move forward in this planning phase. What moves forward to implementation has yet to be decided. The Agency understands that feasibility studies will be conducted by the SVBGSA before any considerations for implementation of management actions or projects that utilize Agency facilities, operations or permits will proceed. Coordination and discussions between the Agency and SVBGSA are pertinent to this being successful.

SVGBSA staff has characterized this GSP as a starter document that will be revised in an iterative process and does not commit the Agency to any specific actions. The Agency looks forward to those revisions and updates that contain feasibility studies for the management actions and programs that include a complete project description that outlines specific tasks, identifies the benefits to the entire Salinas Valley Groundwater Basin and determines costs along with a sustainable funding mechanism for implementation.

MCWRA staff has reviewed the draft GSP, except for Chapter 9 – Projects & Management Actions, released by the SVGBSA on August 18, 2021 and provide the following comments for consideration:

Comments on Chapter 1 – Introduction

- **Section 1.3.3, page 9** – Still lists Keith Van Der Matten as a plan manager
- **Section 1.3.4.2, page 11** –First bullet point: Correct 180/400-Foot Aquifer Subbasin to Monterey Subbasin

Comments on Chapter 3 – Plan Area

- **Section 3.2.2.4, page 55** – Clarify date of Marina Coast Water District Urban Water Management Plan. Both 2020 and 2021 are used in this section.
- **Section 3.2.2.8, page 59** – Last bullet point: Clearly note that this ordinance has expired and is no longer in effect.
- **Section 3.5.4.3, page 74** – Correct expiration date of ordinance from March 2021 to May 2021. Consider adding text describing current CEQA role in ministerial vs. discretionary well permit application process.

Comments on Chapter 4 – Hydrogeologic Conceptual Model

- **Section 4.2.2, page 31** – Consider changing text to "The following set of principal aquifers [and aquitards] are defined…", as all the layers listed are not only aquifers.
- **Section 4.2.5.1, page 40** – Consider updating information of the "Study of the Deep Aquifers Underlying the 180/400-Foot Aquifer Subbasin in the Salinas Valley" as a RFQ has been released for bid and SVBGSA is now taking point on this study.

Comments on Chapter 5 – Groundwater Conditions

- **Section 5.1.3.1, page 21** – Information in the subsection **400-Foot Aquifer** seems to contain information on both the 400-Foot Aquifer and the Deep Aquifers. Consider clearly organizing this information into two subsections labeled **400-Foot Aquifer** and the **Deep Aquifers.**

MCWRA appreciates the opportunity to comment on the draft GSP for the Monterey Subbasin. If you have any questions regarding the enclosed comments, please contact MCWRA at 831-755-4860.

Sincerely,

Elizabeth Krafft
Deputy General Manager

Friday, October 15, 2021

SVBGSA Public Comments Form

Salinas Valley Basin Groundwater Sustainability Agency

Name Stephanie Hastings

Organization Brownstein Hyatt Farber Schreck, LLP

Email Address SHastings@bhfs.com

Subbasin Langley Eastside Forebay Upper Valley Monterey Whole Basin

Comments Please see the attached correspondence submitted on behalf of the Salinas Basin Water Alliance. The exhibits are available on our sharefile at:

https://bhfs.sharefile.com/d-scb50238ba04e4b4294bdf73ac89d25ee

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Brownstein Hyatt
Farber Schreck

Stephanie O. Hastings
Attorney at Law
805.882.1415 tel
shastings@bhfs.com

October 15, 2021

VIA E-MAIL – MEYERSD@SVBGSA.ORG; BOARD@SVBGSA.ORG; PRISO@MCWD.ORG; CITYCLERK@CI.GREENFIELD.CA.US

Donna Meyers
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Remleh Scherzinger
General Manager
c/o Paula Riso
Executive Assistant/Clerk to the Board
Marina Coast Water District Groundwater Sustainability Agency
11 Reservation Road
Marina, CA 93933-2099

Curtis Weeks
General Manager
c/o City Clerk
Arroyo Seco Groundwater Sustainability Agency
599 El Camino Real
Greenfield, CA 93927

RE: Draft Groundwater Sustainability Plans for the Upper Valley, Forebay, Eastside, Langley, and Monterey Subbasins of the Salinas Valley Groundwater Basin

Dear Ms. Meyers, Mr. Scherzinger, and Mr. Weeks:

This office represents the Salinas Basin Water Alliance (*Alliance*), a California nonprofit mutual benefit corporation formed to preserve the viability of agriculture and the agricultural community in the greater Salinas Valley. *Alliance* members include agricultural businesses and families that own and farm more than 80,000 acres within the Salinas Valley. Many *Alliance* members have been farming in the Salinas Valley for generations. As such, the *Alliance* has a significant interest in the long-term sustainability of the water supplies in the Salinas Valley. As mentioned in our preliminary comment letter on the draft Groundwater Sustainability Plans (GSP) for the Upper Valley, Forebay, Eastside, Langley, and Monterey Subbasins dated August 12, 2021, the *Alliance* greatly appreciates the Salinas Valley Basin Groundwater Sustainability

Agency (SVBGSA) staff and consultant team's efforts to implement the Sustainable Groundwater Management Act (SGMA) in the Salinas Valley Groundwater Basin (Basin) and in each of the six subbasins within the jurisdiction of the SVBGSA. The *Alliance* likewise appreciates the efforts undertaken by the Marina Coast Water District Groundwater Sustainability Agency (MCWDGSA) and the Arroyo Seco Groundwater Sustainability Agency (ASGSA) to implement SGMA in the Monterey and Forebay Subbasins, respectively.

The *Alliance* offers these comments, as well as the comments of aquilogic, Inc. attached hereto as **Exhibit A**, on the draft GSPs for the Upper Valley, Forebay, Eastside, Langley, and Monterey Subbasins.[1] These comments are submitted to the SVBGSA as the exclusive groundwater sustainability agency for the Upper, Eastside, and Langley Subbasins, and one of the groundwater sustainability agencies that will adopt the GSPs for the Forebay and Monterey Subbasins. These comments are also submitted to the MCWDGSA and the ASGSA as groundwater sustainability agencies that will adopt the GSPs for the Monterey Subbasin and Forebay Subbasin, respectively. Please include this letter, the aquilogic, Inc. memorandum ("aquilogic Memo"), and the other attachments hereto in the record of proceedings for the GSP of each of these subbasins.

I. <u>THE DRAFT GSPS MUST BE INTEGRATED TO SATISFY SGMA</u>

SGMA's goal is to provide for the sustainable management of priority groundwater basins throughout the State.[2] "Sustainable management" is defined as the "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results"—e.g., chronic lowering of groundwater levels, significant and unreasonable reduction of groundwater storage, significant and unreasonable seawater intrusion, and depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.[3] In order to achieve this goal, groundwater sustainability agencies must coordinate groundwater management within each basin[4] and with each adjacent basin.[5]

Coordination requires GSPs to maintain consistency or analyze inconsistencies in the data and modeling used to develop the GSPs, the minimum thresholds and measurable objectives set in the GSPs, and the

---

[1] The *Alliance* notes that several of the draft GSPs are being revised by the GSA during the public review process. An additional public comment period must be provided once the draft GSPs have been finalized for adoption. Informed public input cannot be provided on documents that are still subject to change.
[2] Wat. Code, § 10720.1.
[3] Wat. Code, § 10721(v), (x).
[4] SGMA defines "basin" as "a groundwater basin or subbasin identified and defined in Bulletin 118." (Wat. Code, § 10721(b); see also 23 Code Regs. ("GSP Regs."), § 341(g) ["The term 'basin' shall refer to an area specifically defined as a basin or 'groundwater basin' in Bulletin 118, and shall refer generally to 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, as further defined or characterized in Bulletin 118"; "The term 'subbasin' shall refer to an area specifically defined as a subbasin or 'groundwater subbasin' in Bulletin 118, and shall refer generally to any subdivision of a basin based on geologic and hydrologic barriers or institutional boundaries, as further described or defined in Bulletin 118."].)
[5] Wat. Code, §§ 10727, 10727.6.

projects and management actions proposed in the GSPs.[6] DWR will review each GSP to ensure it satisfies this requirement—i.e., that the GSP does not adversely affect the "ability of an adjacent basin to implement their groundwater sustainability plan or impedes achievement of sustainability goals in an adjacent basin."[7] Any GSP that cannot meet this standard will not satisfy SGMA.[8]

The consultant that prepared the draft GSPs for the Upper, Forebay, Eastside, and Langley Subbasins has acknowledged the importance of integrated management of surface water and groundwater throughout the Basin:

> It has long been acknowledged that the water resources of the Salinas Valley consist of an integrated surface water and groundwater system . . . This acknowledged surface water/groundwater integration underpins the approach the SVBGSA is taking to achieving groundwater sustainability throughout the Valley; the Salinas River is an integral part of groundwater management and managing groundwater cannot be divorced from the Salinas River's operations. Similarly, groundwater management plays an important role in maintaining Salinas River flows. Larger areas of low groundwater levels in the Salinas Valley will induce more leakage from the Salinas River – reducing Salinas River flows. Maintaining adequately high groundwater levels will help maintain Salinas River flows. These higher groundwater levels that help maintain Salinas River flows is one of the desired outcomes of our groundwater management and is a benefit to surface water users. Groundwater sustainability can lead to long-term reliability in surface water supplies . . .
>
> The Salinas River operations, Salinas River flows, and ability to use water from the River will be clearly influenced by the decisions made during GSP development and implementation. Balanced groundwater management that

[6] See e.g., Wat. Code, § 10727.6; GSP Regs., § 354.28(b) ("The description of minimum thresholds shall include the following: . . . (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."); see also *id.* at §§ 350.4(b), 354.28(b), 354.34(i), 354.38(e), 354.44(b)(6)-(7), 357.2; Department of Water Resources (DWR) Sustainable Management Criteria BMP, pp. 12-17 (Considerations when establishing minimum thresholds for each sustainability indicator includes the adjacent basin's minimum thresholds); DWR Modeling BMP, pp. 21-22; DWR Water Budget BMP, pp. 12, 16, 17, 36.
[7] Wat. Code, § 10733(c).
[8] *Ibid.*; GSP Regs., §§ 350.4, 354.8(d), 354.14, 354.18, 354.28(b)(3), 354.44(b)(6), 354.44(c), 355.4(b), 356.4(j), 357.2(b)(3); DWR Monitoring Networks and Identification of Data Gaps BMP, pp. 6, 8, 27; DWR Water Budget BMP, pp. 7, 12, 16, 17, 36; DWR Modeling BMP, pp. 21-22; DWR Sustainable Management Criteria BMP, pp. 9, 31.

> maintains consistent groundwater levels will provide surface water reliability for the Valley's surface water users.[9]

A Senior Hydrologist with the Monterey County Water Resources Agency (MCWRA) similarly commented:

> Additionally, as was experienced and monitored throughout the Basin during the most recent drought period, lowering of the groundwater table has a significant impact on the Agency's ability to operate the reservoirs to a controlled range of flows at the Salinas River Diversion Facility. As such, overdraft of the groundwater basin, resulting in a reduction in groundwater levels significantly impacted surface water flows, depleting the availability of surface water to riparian water uses.[10]

Close coordination of the draft GSPs for the subbasins is critical as each of the GSPs acknowledge a significant hydrologic and hydraulic connection with adjacent subbasins.[11] In other words, groundwater management in the Upper Valley impacts groundwater management in the Forebay Subbasin, which impacts groundwater management in the 180/400-Foot Aquifer, Eastside, Langley, and Monterey Subbasins, and there is a direct link between groundwater in the Basin and surface water in the Salinas River.

Given the integration of the Basin's surface and groundwater supplies (e.g., that pumping in one subbasin impacts surface and subsurface flows to an adjacent subbasin), SGMA mandates the coordination and integration of the GSPs for the subbasins within SVBGSA's jurisdiction—the GSPs must be integrated in their planning, development, and implementation to ensure the objectives of SGMA are satisfied, the interests of all beneficial users throughout the Basin are considered, and the burden of sustainability is equitably allocated across the Basin.[12] Indeed, the SVBGSA has acknowledged this obligation in its Joint Exercise of Powers Agreement[13] and, as the groundwater sustainability agency for the 180/400-Foot Aquifer, Monterey,

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[9] Feb. 26, 2019 Letter from Derrik Williams to Leslie Girard, attached hereto as **Exhibit B**.

[10] March 4, 2019 Memorandum from Howard Franklin to Leslie Girard and Gary Petersen, attached hereto as **Exhibit C**.

[11] Draft Upper Valley Subbasin GSP, § 4.3.1.1; Draft Forebay Subbasin GSP, § 4.3.1.1; Draft Eastside Subbasin GSP, § 4.3.1.1; Draft Langley Subbasin GSP, § 4.3.1.1; Draft Monterey Subbasin GSP, § 4.2.3; aquilogic Memo, pp. 2-3, attached hereto as **Exhibit A**.

[12] Wat. Code, § 10723.2; see also DWR Water Budget BMP, pp. 16-17 ("For many basins within the . . . Salinas Valley . . . not all lateral boundaries for contiguous basins serve as a barrier to groundwater or surface water flow . . . In situations where a basin is adjacent or contiguous to one or more additional basins, or when a stream or river serves as the lateral boundary between two basins, it is necessary to coordinate and share water budget data and assumptions. This is to ensure compatible sustainability goals and accounting of groundwater flows across basins, as described in § 357.2 (Interbasin Agreements) of the GSP Regulations."

[13] See Joint Exercise of Powers Agreement Establishing the Salinas Valley Basin GSA, § 2.2 ("The purpose of Agency is to . . . develop[], adopt[], and implement[] a GSP that achieves groundwater sustainability in the Basin."); § 4.1(c) (The JPA has the power to "develop, adopt and implement a GSP for the Basin."); *id.* at § 4.1(l) (The JPA has the power to "establish and administer projects and programs for the benefit of the Basin."); *id.* at § 4.3 ("As set forth in Water Code section 10723.3, 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

Eastside, Langley, Forebay, and Upper Subbasins, the SVBGSA is uniquely qualified to ensure coordination and integration among these subbasins. The SVBGSA previously proposed an integrated GSP that would incorporate the GSPs for each of the six subbasins, but appears to have abandoned or significantly delayed that commitment. As a result, the draft GSPs do not adequately coordinate and integrate their data, minimum thresholds and measurable objectives, and projects and management actions and do not analyze potential impacts on the adjacent subbasins. The draft GSPs must analyze and address these issues before they can be adopted, or delineate a plan for adding this information to the GSPs as soon as possible.

II. THE DRAFT GSPs DO NOT SUFFICIENTLY ANALYZE AND ADDRESS SUSTAINABLE GROUNDWATER MANAGEMENT THROUGHOUT THE BASIN

The *Alliance* supports integrated groundwater management throughout the Basin—such management is critical to the sustainable and equitable management of the integrated water resources throughout the Basin. In accordance with SGMA, this management should utilize consistent data and modeling, analyze impacts of groundwater production on adjacent subbasins, estimate sustainable yields and set minimum thresholds in consideration of impacts to adjacent subbasins, and coordinate projects and management actions throughout the Basin. As described further below, the draft GSPs as currently presented do not meet these thresholds dictated by SGMA.

A. Each Draft GSP Fails to Analyze Inconsistencies in the Data and Modeling Utilized By the Draft GSPs for Adjacent Subbasins

As an initial matter, the draft GSPs for the subbasins utilize differing modeling/estimation techniques that produce inconsistent data throughout the Basin and prevent integration of groundwater management absent additional analysis.

For example, the 180/400-Foot Aquifer Subbasin GSP's historical and current water budgets were created "by aggregating data and analyses from previous reports and publicly available sources" while the future

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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 . . . 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 ay provision of law that determines or grants surface water rights."); 180/400-Foot Aquifer Subbasin GSP, p. 9-10 ("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."); *id.* at 10-14 ("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 . . . The implementation schedule reflects the significant integration and coordination needed to implement all six GSPs in a unified manner."); see also Draft Upper Valley GSP, p. 10-16; Draft Eastside Subbasin GSP, pp. 9-1, 10-7, 10-8, 10-16; Draft Forebay Subbasin GSP, pp. 2-4, 9-2, 9-4, 10-7, 10-9, 10-17; Draft Langley Subbasin GSP, pp. 2-4, 9-1, 9-4, 10-8, 10-9, 10-16.

water budget was created using the Salinas Valley Integrated Hydrologic Model (SVIHM).[14] The draft GSPs for the Eastside, Langley, Forebay, and Upper Valley Subbasins take a different approach—the historical and current water budgets were developed using a "provisional version" of the SVIHM, while future water budgets were developed using "an evaluation version" of the Salinas Valley Operational Model (SVOM).[15] And the draft Monterey Subbasin GSP utilizes a third approach—employing the Monterey Subbasin Groundwater Flow Model for the historic, current, and projected water budgets.[16]

What is more, each of these approaches uses different time periods: (1) the 180/400-Foot Aquifer Subbasin GSP analyzes a historical period of 1995 to 2014 and a current period of 2015 to 2017[17]; (2) the draft GSPs for the Langley, Eastside, Forebay, and Upper Valley Subbasins analyze a historical period of 1980 through 2016 and a current period of 2016[18]; and, (3) the draft Monterey Subbasin GSP analyzes a historical period of 2004 to 2018 and a current period of 2015 to 2018.[19]

The inconsistency in the water-budget approaches for each subbasin must be addressed in the draft GSPs. Absent such an analysis, the draft GSPs cannot adequately analyze a subbasin's potential to impact an adjacent subbasin or foster integrated groundwater management throughout the Basin.[20] Further, this absence of analysis prevents informed input on the draft GSPs by interested parties.[21]

This issue is best exemplified in the inconsistencies between the 180/400-Foot Aquifer Subbasin GSP and the draft Forebay Subbasin GSP. The 180/400-Foot Aquifer Subbasin GSP estimates that the 180/400-Foot Aquifer Subbasin receives (historically and currently) 17,000 acre-feet per year (AFY) of subsurface flow from the Forebay Subbasin.[22] However, the draft Forebay Subbasin GSP estimates that this amount was 3,100 AFY historically and 2,900 AFY currently. These numbers in the draft Forebay GSP are likely

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[14] 180/400-Foot Aquifer Subbasin GSP, p. 6-1.
[15] See each referenced draft GSP, pp. 6-1-2. The GSA's use of the SVIHM and SVOM models for the draft GSPs does not satisfy the modeling requirements in the GSP Regulations. Section 352.4(f) of the GSP Regulations state that the models used to develop GSPs must "include publicly available supporting documentation" and "consist of public domain open-source software." The GSPs acknowledge that these requirements are not satisfied, and the draft GSPs state that "[d]etails regarding source data, model construction and calibration, and results for future budgets will be summarized in more detail once the model and associated documentation are available." (See, e.g., Draft Upper Valley Aquifer Subbasin GSP, pp. 6-1-2.) Interested parties cannot provide informed comments and input on the draft GSPs until the GSAs incorporate use of models that satisfy the GSP Regulations.
[16] Draft Monterey Subbasin GSP, p. 6-7.
[17] 180/400-Foot Aquifer Subbasin GSP, p. 6-1.
[18] See each referenced draft GSP, pp. 6-7-8.
[19] Draft Monterey Subbasin GSP, p. 6-5.
[20] See DWR, Water Budget BMP, p. 9 ("Building a coordinated understanding of the interrelationship between changing water budget components and aquifer response will allow local water resource managers to effectively identify future management actions and projects most likely to achieve and maintain the sustainability goal for the basin.").
[21] The draft GSPs also do not explain why different years are used to set minimum thresholds and measurable objectives in each subbasin, or how those inconsistencies impact sustainable groundwater management. (See aguilogic, Inc. Memo, p. 3, attached hereto as **Exhibit A**.)
[22] 180/400-Foot Aquifer Subbasin GSP, p. 6-16.

overestimates (i.e., the 180/400-Foot Aquifer is estimated to receive less subsurface flow from the Forebay Subbasin than the stated numbers) as the SVIHM utilized to provide the estimates in the draft Forebay Subbasin GSP only accounted for approximately 65% of the groundwater pumping in the Forebay Subbasin.[23] The discrepancy in interbasin flow needs to be addressed in the draft Forebay Subbasin GSP, or identified as a data gap that will be addressed through additional modeling as soon as possible. Without such information, the draft GSP cannot analyze how its implementation will impact the implementation of the 180/400-Foot Aquifer Subbasin GSP.

In sum, the draft GSPs must identify and analyze the inconsistencies in the modeling simulations and the time periods used for the water budgets in each of the GSPs in order to satisfy SGMA.[24] The *Alliance* identified a potential solution to this issue in its correspondence to the SVBGSA dated August 12, 2021, wherein the *Alliance* requested that the GSA conduct additional simulations with the SVIHM that are specifically focused on the issue of interbasin groundwater flows in order to understand the amount of Basin-wide groundwater discharge that is and has been captured by pumping. After adjusting the modelling simulations with GEMS data, the SVBGSA could integrate the data into the draft GSPs and provide an informed analysis of how each draft GSP will impact adjacent subbasins. Based upon the text of the draft GSPs, it appears that this modelling has already been completed in some capacity. In each of the draft GSPs for the Langley, Eastside, Forebay, and Upper Valley Subbasins, the GSPs state a "model simulation without any groundwater pumping in the model . . . was compared to the model simulation with groundwater pumping" to understand depletion of interconnected surface water.[25] However, the draft GSPs do not extrapolate this data to analyze impacts on surface or subsurface interbasin flows or adjacent subbasins. The *Alliance* understands that the SVBGSA is undertaking additional modeling for an update to the draft GSPs and strongly recommends that the SVBGSA incorporate the *Alliance's* requested modeling simulations into the update. If not, the *Alliance* urges the SVBGSA to commit to adding this information prior to adoption of the draft GSPs or committing to a timeline in which it will be added shortly thereafter. Without this information, the GSPs cannot not analyze each of the issues required to be addressed by SGMA.

B. The Draft GSPs Do Not Adequately Analyze Impacts to Adjacent Subbasins

As discussed above, a GSP must not adversely affect "the ability of an adjacent basin to implement their [GSP] or impede[] achievement of sustainability goals in an adjacent basin."[26] The GSP Regulations specify that minimum thresholds should be selected to "avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals."[27] And the GSP Regulations require DWR to evaluate a GSP to ensure it satisfies these objectives.[28] The draft GSPs as currently presented do not satisfy these requirements.

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[23] Draft Forebay Subbasin GSP, pp. 6-19, 21.
[24] See, e.g., DWR Water Budget BMP, pp. 16-17.
[25] See, e.g., Draft Forebay Subbasin GSP, p. 5-30.
[26] Wat. Code, § 10733.
[27] GSP Regs., § 354.28(b)(3).
[28] GSP Regs., § 355.4(b)(7).

1. <u>The Draft Eastside Subbasin and Langley Subbasin GSPs</u>

The Eastside Subbasin and Langley Subbasin GSPs largely require similar analysis and information to satisfy SGMA. The GSPs do not account for impacts to adjacent subbasins in defining sustainable yields or setting minimum thresholds and measurable objectives. Each of these issues is addressed in detail below.

a. *The GSPs do not account for impacts to adjacent subbasins in defining sustainable yields*

SGMA 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."[29] Further, the sustainable yield must be defined in a manner that will not result in undesirable results in adjacent subbasins.[30] Here, the sustainable yields in the draft GSPs for both the Eastside and Langley Subbasins do not account for impacts on interbasin flow to the 180/400-Foot Aquifer Subbasin.

For example, the draft Eastside Subbasin GSP states that a pumping depression east of the City of Salinas creates a hydraulic gradient towards the depression, with groundwater flowing towards the pumping depression and away from the boundary with the 180/400-Foot Aquifer Subbasin.[31] This depression has reversed the natural downgradient groundwater flow from the Eastside Subbasin to the 180/400-Foot Aquifer Subbasin, drawing 3,600 AFY historically and 5,400 AFY currently of groundwater from the 180/400-Foot Aquifer Subbasin.[32] This amount is likely substantially underestimated as the SVIHM only accounts for 81% of groundwater pumping in the Subbasin.[33] Despite this unnatural hydraulic gradient and the pull of groundwater from the 180/400-Foot Aquifer Subbasin, the draft Eastside Subbasin GSP includes this interbasin flow in its calculation of sustainable yield,[34] but the draft GSP does not analyze how estimated sustainable yield will impact groundwater management in the 180/400-Foot Aquifer Subbasin.

Similarly, the draft Langley Subbasin GSP states that a pumping depression has formed in the center of the Langley Subbasin as a result of a pumping trough.[35] Groundwater is drawn towards the pumping depression and away from the 180/400-Foot Aquifer Subbasin despite the natural downward gradient flow towards the 180/400-Foot Aquifer and Eastside Subbasins.[36] The draft Langley Subbasin GSP then estimates that,

[29] Wat. Code, § 10721(w).
[30] See Wat. Code, § 10733.
[31] Draft Eastside Subbasin GSP, p. 5-11.
[32] *Id.* at pp. 6-19-20 ("Groundwater pumping near the [C]ity of Salinas has created a cone of depression . . . that draws in groundwater into the Eastside Aquifer Subbasin from the 180/400-Foot Aquifer Subbasin, which is naturally slightly downgradient in the Salinas area. Estimated groundwater inflows from the 180/400-Foot Aquifer Subbasin have slightly increased since 1980.").
[33] *Id.* at p. 6-17. The 180/400-Foot Aquifer Subbasin GSP estimates the outflow to the Eastside and Langley Subbasins amounts to 8,000 AFY. (*Id.* at p. 6-19.)
[34] *Id.* at pp. 6-22-24, Table 6-10.
[35] Draft Langley Subbasin GSP, p. 5-7.
[36] *Id.* at p. 5-18, Figure 5-11.

despite this reversal in groundwater elevations, the 180/400-Foot Aquifer Subbasin has historically received 3,700 AFY and currently receives 2,900 AFY in interbasin flow from the Langley Subbasin, while the Eastside Subbasin has historically received 1,100 AFY and currently receives 1,700 AFY in interbasin flow from the Langley Subbasin.[37] However, the draft Langley Subbasin GSP fails to analyze how the pumping depression in the Langley Subbasin has impacted and will continue to impact these interbasin flows—e.g., what are the outflows to the 180/400-Foot Aquifer and Eastside Subbasins if the pumping depression were ameliorated? Again, the draft GSP includes these unnatural interbasin flows in its calculation of the sustainable yield without analyzing the impacts on adjacent subbasins.[38]

Without understanding how groundwater production impacts interbasin flows, the draft GSPs cannot accurately estimate the sustainable yield of the subbasins and their impact on adjacent subbasins.[39] As discussed above, this issue can be addressed by undertaking the additional modeling simulations requested by the *Alliance* and revising the draft GSPs accordingly. This additional information should be added prior to the adoption of the draft GSPs, or the draft GSPs should commit to a timeline under which this information will be added as soon as possible after adoption of the draft GSPs.

b. *The GSPs do not analyze how their minimum thresholds and measurable objectives will impact adjacent subbasins*

The draft GSPs also do not consider impacts to adjacent subbasins in their setting of minimum thresholds and measurable objectives, as required by SGMA.[40]

For example, the draft Eastside Subbasin GSP sets the minimum threshold for groundwater elevations at 2015 levels.[41] As shown in Figure 8-1, these levels are only nominally above historic lows (approximately 6 feet higher) and barely above the lowest elevation since the introduction of the CSIP and Salinas Valley Water Project.[42] Consequently, these groundwater elevations will still produce a significant pumping

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[37] *Id.* at p. 6-19.
[38] *Id.* at pp. 6-21-23.
[39] See DWR Water Budget BMP, p. 17 (To evaluate the impact on adjacent basin, "this will necessitate GSA coordination and sharing of water budget data, methodologies, and assumptions between contiguous basins including: • Accurate accounting and forecasting of surface water and groundwater flows across the basin boundaries.").
[40] GSP Regs., § 354.28(b)(3) ("The description of minimum thresholds shall include the following: . . . (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."); see also GSP Regs., § 355.4(b)(7); DWR Sustainable Management Criteria BMP, p. 9; DWR Sustainable Management Criteria BMP, p. 10 ("The purpose of the specific requirements is to ensure consistency within groundwater basins and between adjacent groundwater basins.").
[41] Draft Eastside Subbasin GSP, p. 8-7.
[42] *Id.* at p. 8-13.

depression east of the City of Salinas that will draw water away from the boundary with the 180/400-Foot Aquifer Subbasin.[43]

Similarly, the draft Langley Subbasin GSP sets the minimum threshold for groundwater elevations at 2019 levels—the lowest elevations since the introduction of the CSIP and Salinas Valley Water Project and only nominally above the historic lows in the Subbasin.[44] These levels will continue to produce a significant pumping depression east of the City of Salinas that will draw water away from the boundary with the 180/400-Foot Aquifer Subbasin.[45] Despite the maintenance of these unnatural gradients, neither draft GSP analyzes how these minimum thresholds will impact adjacent subbasins (e.g., the 180/400-Foot Aquifer Subbasin).

The draft GSPs for the Eastside and Langley Subbasins merely include the statement that: "Minimum thresholds for the [subbasins] will be reviewed relative to information developed for the neighboring subbasins' GSPs to ensure that these minimum thresholds will not prevent the neighboring subbasins from achieving sustainability."[46] This statement is not evidence and it does not ensure the management of the subbasins will avoid impacts to adjacent subbasins.[47] As discussed above, this issue can be addressed by undertaking the additional modeling simulations requested by the *Alliance* and revising the draft GSPs accordingly.

The lack of analysis is concerning as both draft GSPs acknowledge that low groundwater elevations within the Langley and Eastside Subbasins may exacerbate seawater intrusion in the 180/400-Foot Aquifer Subbasin.[48] But the draft GSPs only mention this issue in concluding: "The chronic lowering of groundwater

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[43] *Id.* at p. 8-10, Figure 8-3. The same issue applies to the draft Eastside Subbasin GSP's measurable objective for groundwater elevations—it maintains a pumping depression that reverses the natural hydraulic gradient towards the 180/400-Foot Aquifer Subbasin but fails to explain how the measurable objective will not impact the 180/400-Foot Aquifer Subbasin. (See e.g., Draft Eastside Subbasin GSP, p. 8-19.)
[44] Draft Langley Subbasin GSP, pp. 8-8, 8-13.
[45] *Id.* at p. 8-10. Again, the same issue applies to the draft Langley Subbasin GSP's measurable objective for groundwater elevations—it maintains a pumping depression that reverses the natural hydraulic gradient towards the 180/400-Foot Aquifer Subbasin but fails to explain how the measurable objective will not impact the 180/400-Foot Aquifer Subbasin. (See e.g., Draft Langley Subbasin GSP, p. 8-19.)
[46] *Id.* at p. 8-6; Draft Eastside Subbasin GSP, p. 8-16.
[47] See Joint Exercise of Powers Agreement Establishing the SVBGSA, § 4.3 ("As set forth in Water Code section 10723.3, 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 . . . 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 ay provision of law that determines or grants surface water rights.").
[48] See Draft Langley Subbasin GSP, pp. 3-18, 4-32, 5-18 (Figure 5-11 "shows the groundwater elevations that are persistently below sea levels that, when paired with a pathway, enable seawater intrusion. The groundwater elevation contours show that groundwater is drawn toward the depression at the northern end of the Eastside Aquifer Subbasin. If the magnitude of this depression increases, it could potentially draw seawater intrusion into the Langley Subbasin."), 5-20 (Figure 5-11); Draft Eastside Subbasin GSP, pp. 3-17,

level minimum thresholds are set above historic lows. Therefore, the groundwater elevation minimum thresholds are intended to not exacerbate, and may help control, the rate of seawater intrusion."[49] That statement must be revised to acknowledge that the pumping depressions in the Langley and Eastside Subbasins will remain even if the groundwater elevation minimum thresholds and measurable objectives are achieved, and the seawater minimum thresholds set by the draft Langley and Eastside Subbasin GSPs only protect against seawater intrusion in their respective subbasins, not against seawater intrusion in adjacent subbasins like the 18/400-Foot Aquifer Subbasin.[50]

In sum, the draft Langley and Eastside Subbasin GSPs in their current form do not account for potential impacts to adjacent subbasins in setting their minimum thresholds and measurable objectives. As a result, the draft GSPs cannot provide any evidence that their implementation will not impair implementation of a GSP in an adjacent subbasin—e.g., the 180/400-Foot Aquifer Subbasin GSP's seawater intrusion minimum threshold, which requires seawater intrusion to be maintained at 2017 levels, and measurable objective, which requires the seawater intrusion isocontour to be pushed back to Highway 1.[51] This analysis should be added to the draft GSPs prior to adoption by the SVBGSA, or the draft GSPs should provide a commitment to incorporating this information within a time certain.[52]

c. *There is no support for using groundwater elevations as a proxy for groundwater storage minimum thresholds*

As mentioned above, the sustainable yield of the basin is the amount of water that can be withdrawn annually without causing an undesirable result, such as the "significant and unreasonable reduction of groundwater storage."[53] The GSP Regulations permit a minimum threshold for groundwater elevations to be used as the minimum threshold for other sustainability indicators, "where the Agency can demonstrate that the representative value is a reasonably proxy . . . as supported by adequate evidence."[54] Here, both the draft Eastside Subbasin GSP and the Langley Subbasin GSP utilize groundwater elevation minimum thresholds

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4-35 ("the groundwater elevations in the northwestern portion of the Eastside Subbasin (near the City of Salinas) are below sea level, creating a groundwater gradient away from the coast and towards the Eastside Subbasin"), 5-26-29 .

[49] Draft Langley Subbasin GSP, p. 8-15; Draft Eastside Subbasin GSP, p. 8-15.

[50] Draft Langley Subbasin GSP, p. 8-28; Draft Eastside Subbasin GSP, p. 8-29.

[51] See 180/400-Foot Aquifer Subbasin GSP, pp. 8-32-37.

[52] A report prepared for MCWRA has highlighted the significant impact pumping in the Eastside and Langley Subbasins has on seawater intrusion in the 180/400-Foot Aquifer Subbasin. (See November 19, 2013, Technical Memorandum, Protective Elevations to Control Sea Water Intrusion in the Salinas Valley, attached hereto as **Exhibit D**.) The report states: "At one time (before excessive pumping), the East Side Subarea was one of the natural sources of recharge to the adjacent Pressure Subarea with ground water flowing from the northeast to the southwest. However, historical groundwater level declines have resulted in a reversal of the gradient." (*Id.* at p. 3.) The report then states that: "Artificial recharge in the East Side Subarea would reduce subsurface inflow from the Pressure Subarea and eventually restore the historical northeast to southwest recharge. Both northwest underflow from the Forebay Subarea as well as southwest recharge from the East Side Subarea would help control seawater intrusion." (*Id.* at pp. 6-7.) See also aquilogic Memo, pp. 8-12, attached hereto as **Exhibit A**.

[53] Wat. Code, § 10721(w), (x).

[54] GSP Regs., § 354.28(d); DWR Sustainable Management Criteria BMP, pp. 17-18.

as proxies for groundwater storage minimum thresholds.[55] However, there is insufficient evidence to support that approach.

In particular, each of the draft GSPs sets groundwater elevations at near historic lows, and show a substantial trend in declining groundwater storage over the historic period.[56] The minimum threshold groundwater elevations, in other words, have resulted in overdraft of the subbasins.[57] And by setting the minimum thresholds at historic low groundwater elevations, the draft GSPs will facilitate continued decline in groundwater storage.[58] In fact, because there is no commitment to pump at the sustainable yield of the subbasins, it is possible that production in the subbasins could increase over historic and current amounts so long as the subbasins do not experience another significant drought and still comply with the groundwater elevation minimum thresholds. The SVBGSA's prior actions seem to imply that utilizing groundwater elevations as a proxy in this scenario is improper—the 180/400-Foot Aquifer Subbasin GSP set the groundwater storage minimum threshold to production at the projected sustainable yield.[59] The draft GSP must explain why this different approach will suffice now.

2. <u>The Draft Forebay and Upper Valley Subbasin GSPs</u>

The draft Forebay and Upper Valley Subbasin GSPs lack the same analysis as the draft GSPs for the Eastside and Langley Subbasins—they do not adequately consider impacts to adjacent subbasins. These issues begin with the draft GSPs' water budget and estimate of sustainable yield, and cascade through the minimum thresholds, measurable objectives, and projects and management actions.

As discussed above, SGMA requires GSPs to define a sustainable yield for each basin that will avoid undesirable results and impacts to adjacent basins. The sustainable yields defined in the draft GSPs for the Forebay and Upper Valley Subbasins do not meet this threshold. Both draft GSPs conclude that the subbasins have not been in overdraft historically, but they do not analyze how groundwater pumping within the subbasins (151,100 to 174,500 AFY in the Forebay Subbasin and 108,500 to 129,600 AFY in the Upper Valley) impacts surface and subsurface flows to adjacent subbasins.[60]

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[55] Draft Eastside Subbasin GSP, p. 8-23; Draft Langley Subbasin GSP, p. 8-22.
[56] See discussion *supra;* Draft Eastside Subbasin GSP, p. 5-21; Draft Langley Subbasin GSP, p. 5-16.
[57] *Ibid*.
[58] See, e.g., Wat. Code, § 10721(x)(1) ("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.").
[59] 180/400-Foot Aquifer Subbasin GSP, p. 8-25 ("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."); see also DWR GSP Assessment Staff Report, p. 25 ("The Plan describes how setting the minimum threshold as the long-term sustainable yield for the Subbasin is a reasonable, protective approach against overdraft and the long-term reduction of groundwater storage.").
[60] Draft Forebay Subbasin GSP, pp. 6-45-46; Draft Upper Valley Subbasin GSP, pp. 6-22-23.

For example, the draft Forebay Subbasin GSP states that the SVIHM, which undercounts groundwater pumping by 35%, estimates the Forebay Subbasin received 90,300 AFY historically through stream exchange, currently receives 77,800 AFY, and 31,800 AFY of that stream exchange on average is caused by groundwater pumping.[61] Similarly, the draft Upper Valley Subbasin GSP states that the SVIHM, which under counts groundwater pumping by 24%, estimates the Upper Valley Subbasin received 89,100 AFY historically through stream exchange, currently receives 65,500 AFY, and 1,100 AFY of that stream exchange on average is caused by groundwater pumping.[62] This recharge is substantially induced by the operation of the Nacimiento and San Antonio Reservoirs; prior to that time groundwater storage was significantly decreasing in the subbasins.[63] However, neither draft GSP analyzes: (a) how streamflow recharges the subbasins during drought years, offering instead averages over the historical period, and (b) how groundwater pumping impacts natural surface or subsurface flows to adjacent subbasins—i.e., without pumping, how much groundwater would flow to the downgradient subbasin? Instead, the draft GSPs use the average stream exchange amounts to facilitate a "finding" that the subbasins are presently managed within their sustainable yield. Without understanding how pumping impacts streamflow during drought years and interbasin surface and subsurface flow, the draft GSPs cannot reasonably estimate sustainable yield in the subbasins or analyze how implementation of the draft GSPs will impact adjacent subbasins' GSPs.

The failure to analyze impacts to adjacent subbasins becomes more apparent in the draft GSPs' discussion of minimum thresholds. The draft Forebay Subbasin GSP sets the minimum threshold for groundwater elevations at 2015 groundwater levels, only a few feet above the historic low, while the draft Upper Valley Subbasin GSP sets the minimum threshold for groundwater elevations at "5 feet <u>below</u> the lowest ground elevation between 2012 and 2016," significantly below the historic low.[64] These minimum thresholds are not reasonable—set at levels experienced at the bottom of a historic drought, or even lower—and cannot be qualified as sustainable groundwater management.[65] The draft Upper Valley GSP admits as much, stating: "The groundwater elevations during the 2012 to 2016 drought in the Upper Valley Aquifer Subbasin are the lowest groundwater elevations seen in the Subbasin and are considered <u>significant and unreasonable</u>."[66]

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[61] Draft Forebay Subbasin GSP, pp. 5-30, 6-23. Note that the draft GSPs may also underestimate streamflow depletion by only analyzing stream cells that are connected to groundwater more than 50% of the time. (See aquilogic Memo, p. 5, attached hereto as **Exhibit A**.)
[62] Draft Upper Valley Subbasin GSP, pp. 5-31, 6-22.
[63] Draft Upper Valley Subbasin GSP, p. 5-18; Draft Forebay Subbasin GSP, p. 5-17; see also Hydrogeology and Water Supply of Salinas Valley, pp. 15-16, attached hereto as **Exhibit D**.
[64] Draft Forebay Subbasin GSP, pp. 8-8, 8-14; Draft Upper Valley Subbasin GSP, pp. 8-7, 8-12 (emphasis added).
[65] Wat. Code, § 10720.1 ("In enacting this part, it is the intent of the Legislature to do all of the following: (a) To provide for the sustainable management of groundwater basins. . . . (c) To establish minimum standards for sustainable groundwater management."]; GSP Regs., § 355.4(b) ("When evaluating whether a Plan is likely to achieve the sustainability goal for the basin, the Department shall consider the following: (1) Whether the assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are reasonable and supported by the best available information and best available science. . . .").
[66] Draft Upper Valley Subbasin GSP, p. 8-10 (emphasis added).

Moreover, the draft GSPs do not analyze how the minimum thresholds will impact flows in the Salinas River or adjacent subbasins. Rather, this analysis appears to be deferred to the future. The draft GSPs state that: "Minimum thresholds . . . will be reviewed relative to information developed for neighboring subbasins' GSPs to ensure that these minimum thresholds will not prevent the neighboring subbasin from achieving sustainability."[67] As discussed above, this issue can be addressed by undertaking the additional modeling simulations requested by the *Alliance* and revising the draft GSPs accordingly. This additional information should be added prior to the adoption of the draft GSPs, or the draft GSPs should commit to a timeline under which this information will be added as soon as possible after adoption of the draft GSPs.

These same concerns are raised with respect to the groundwater storage minimum thresholds. The draft Upper Valley Subbasin GSP uses the groundwater elevation minimum threshold as a proxy, which is permitted, as discussed above, as long as it is supported by adequate evidence.[68] However, there is no evidence supporting that approach as the groundwater elevation minimum threshold suffers the flaws discussed above, and evidence in the draft GSP relating groundwater elevations to groundwater storage shows groundwater storage at historic lows by a wide margin when groundwater levels were 5 feet above the groundwater elevation minimum threshold in 2016.[69] Similarly, the draft Forebay Subbasin GSP sets the minimum threshold for groundwater storage based upon the groundwater elevation minimum threshold: "The minimum threshold groundwater elevation contours . . . were used to estimate the amount of groundwater in storage when groundwater elevations are held at the minimum threshold levels."[70] Again, there is no evidence supporting that approach as the groundwater elevation minimum threshold is flawed as discussed above, and evidence in the draft GSP shows the groundwater elevation minimum threshold results in historic lows in groundwater storage.[71] In fact, the groundwater elevation minimum thresholds allow for additional production in the subbasins over historic and current amounts so long as the subbasins do not experience another significant drought. There is no commitment in the draft GSPs that the production in the subbasins will be restricted to the estimated sustainable yield in the subbasins, and there is no model simulation showing the minimum threshold for groundwater elevations will prevent continued decline in groundwater storage.

Finally, the draft GSPs also utilize groundwater elevations as proxies to set the minimum thresholds for depletion of interconnected surface water.[72] But again, there is no evidence supporting this approach. These groundwater elevation proxies are at or near historic lows, and there is no evidence proving these elevations will prevent the depletion of interconnected surface water that would have a significant and unreasonable impact on beneficial uses. Rather, the draft GSPs merely state that these levels will not impact beneficial uses because there is not currently any litigation over surface water uses, and due to the operation of the Nacimiento Reservoir.[73] However, this statement does not acknowledge that decreased groundwater

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[67] Draft Upper Valley Subbasin GSP, p. 8-14; Draft Forebay Subbasin GSP, p. 8-17.
[68] Draft Upper Valley Subbasin GSP, p. 8-20.
[69] Draft Upper Valley Subbasin GSP, pp. 5-13, 5-18.
[70] Draft Forebay Subbasin GSP, p. 8-24.
[71] Draft Forebay Subbasin GSP, p. 5-17.
[72] See Draft Upper Valley Subbasin GSP, p. 8-39; Draft Forebay Subbasin GSP 8-42.
[73] Draft Forebay Subbasin GSP, pp. 8-44-45; Draft Upper Valley Subbasin GSP, pp. 8-41-42.

elevations will increase depletion of the Salinas River, and reduce flow to downstream uses, including those uses in adjacent subbasins.[74] Lastly, the draft GSPs do not analyze how these minimum thresholds for depletion of interconnected surface water will impact adjacent subbasins.

In sum, the draft Forebay and Upper Valley GSPs require additional data and analysis to satisfy SGMA. These issues must be addressed before the GSPs are adopted, or the draft GSPs must be provide for their provision by a date certain.[75]

3. The Inadequacies in the Draft GSPs Addressed Above Threaten to Impinge Upon Water Rights

As stated previously, each of the groundwater sustainability agencies has an obligation to consider the interests of all beneficial users of the Basin[76] when implementing SGMA. Moreover, SGMA does not "determine[] or alter[] surface water rights or groundwater rights under common law or any provision of law that determines or grants surface water rights."[77]

By not analyzing potential impacts to adjacent subbasins in each draft GSP, the groundwater sustainability agencies disproportionately allocate the burden of sustainability across the Basin and threaten to impair groundwater users' rights in and to the Basin. This approach violates SGMA and must be addressed before the groundwater sustainability agencies adopt the draft GSPs or, as discussed above, through a commitment in the draft GSPs to modify or update their contents within a time certain.

III. THE DRAFT GSPS MUST INCORPORATE PROJECTS AND MANAGEMENT ACTIONS TO ACHIEVE SUSTAINABILITY

The GSP Regulations require each GSP to "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."[78] Because the draft GSPs are lacking the data and analysis described in Section II above, the draft GSPs cannot meet this requirement (e.g., the draft GSPs' lack of analysis of impacts to adjacent basins prevents an adequate proposal of projects and management actions to achieve sustainability). Further, without understanding impacts on interbasin surface and subsurface flow and how implementation of the draft GSPs will impact adjacent subbasins, the groundwater sustainability agencies will be unable to properly assess the benefits associated with any future projects or management actions—e.g., if they propose projects involving dam operations, how can the groundwater sustainability agencies assess the benefits of those projects to the Lower Valley? Accordingly,

[74] aquilogic Memo, pp. 3-8, attached hereto as **Exhibit A**; DWR Water Budget BMP, pp. 4-5.
[75] See also aquilogic Memo, pp. 3-8, attached hereto as **Exhibit A**.
[76] Wat. Code, § 10723.2
[77] Wat. Code, § 10720.5(b); see also Wat. Code, § 10720.1(a) and (b).
[78] GSP Regs., § 354.44(a).

the *Alliance* reserves the right to comment on the draft GSPs' proposed projects and management actions once the issues described above have been addressed.

However, as a preliminary note, the draft GSPs as currently presented do not include sufficient projects or management actions to achieve sustainable groundwater management Basin-wide. Rather, the draft GSPs appear to foist the burden of sustainable groundwater management on the Eastside, Langley, 180/400-Foot Aquifer, and Monterey Subbasins, while avoiding consequential projects and management actions in the Forebay and Upper Valley Subbasins. Indeed, the draft GSPs for the Eastside, Langley, and Monterey Subbasins each include a management action for pumping allocations and controls, but no such management action is included in the draft Forebay Subbasin or Upper Valley Subbasin GSPs.[79] Instead, the draft Forebay Subbasin and Upper Valley Subbasin GSPs include management actions that only superficially impact the subbasins—e.g., the proposed Subbasin "Sustainable Management Criteria Technical Advisory Committees," which require the formation of a "TAC for each Subbasin" that will "develop recommendations to correct negative trends in groundwater conditions and continue to meet the measurable objectives."[80] This issue must be addressed in the next draft of the GSPs.

The *Alliance* also notes that the draft GSPs do not mention the project proposed in the Hydrogeology and Water Supply of Salinas Valley White Paper prepared by the Salinas Valley Groundwater Basin Hydrology Conference for MCWRA in 1995 ("Salinas Valley White Paper"), which is attached hereto as **Exhibit E**. The "Conference" was a "panel of 10 geologists, hydrogeologists, and engineers familiar with Salinas Valley ground water basin" that was convened to "reach agreement on the basic physical characteristics of the basin, and the surface and ground water flow within the basin."[81] The Conference had a "remarkable unanimity of opinion" on the understanding of the "physical characteristics of the basin, the hydrologic system, the interaction between surface water and ground water, and definition of the specific ground water problems in the basin."[82] The Conference agreed that this understanding pointed "compellingly toward an already identified *regional* solution to the Valley's groundwater water resources problem" and recommended pursuing that solution.[83]

> The need for conjunctive operation of surface water and ground water storage was recognized as early as 1946. In 1946, the California Department of Water Resources published a report on Salinas Valley that described the occurrence of seawater intrusion and declining ground water levels. The report recommended a project to eliminate these problems that included development of surface water and ground water storage. Surface water storage was to be accomplished by the construction of dams on tributaries to Salinas River, and ground water storage was to be accomplished by ground water transfers from the Forebay Area to the Pressure Area and East [S]ide Area. The Department

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[79] See Draft Eastside Subbasin GSP, § 9.4.12; Draft Langley Subbasin GSP, § 9.4.5; Draft Monterey Subbasin GSP, § 9.4.8; see also 180/400-Foot Aquifer Subbasin GSP, § 9.2 [water charges framework].
[80] Draft Upper Valley Subbasin GSP, § 9.4.1; Draft Forebay Subbasin GSP, § 9.4.1.
[81] *Id.* at p. 5.
[82] *Ibid.*
[83] *Ibid.*

> recommended transfer facilities that include wells in the Forebay Area, conveyance facilities from the Forebay Area to the Pressure and East Side Areas, and distribution facilities within the Pressure and East Side Areas. In such a conjunctive operation, the increased extraction in the Forebay Area and conveyance of water to the Pressure and East Side Areas would vacate ground water storage in the Forebay Area. This empty storage space would be refilled by additional infiltration from Salinas River . . . Part of the recommended facilities for surface water and ground water storage have been completed by the construction of the dams for San Antonio and Nacimiento reservoirs, but the facilities for the effective use of groundwater storage have not been completed. The operation of San Antonio and Nacimiento reservoirs has produced benefits to [S]alinas Valley, but the ultimate benefits that would result from the construction and operation of transfer facilities have not been realized. **The panel concluded that the facilities recommended in 1946 by the California Department of Water Resources should be completed immediately** . . . The result of partially completing the project has been an uneven distribution of benefits throughout the Valley. The Forebay Area and Upper Valley Areas have enjoyed relatively large benefits from San Antonio and Nacimiento reservoirs that would have been shared equally with the Pressure and East Side Areas if the intended transfer facilities had been built. In the absence of the transfer facilities, seawater intrusion into the Pressure Area and water-level declines within the East Side Area have not been mitigated.[84]

The Conference noted that this solution is practical as the "water resources problem in Salinas Valley is not a water supply problem. It is a water distribution problem. The basin has enough surface and ground water to meet existing and projected future average annual agricultural, and municipal and industrial water demand through the year 2030. The problem lies in managing those supplies to meet water demands at all locations in the Valley at all times."[85] This project is an example of integrated groundwater management for the Basin as a whole and should be included in the list of projects and management actions in each of the draft GSPs.[86]

IV. CONCLUSION

The *Alliance* appreciates the opportunity to provide these comments on the draft GSPs, as well as the groundwater sustainability agencies' consideration of the *Alliance*'s input. At present, the draft GSPs do not provide a sufficient basis for integrated management of the Basin given their inconsistent analytical approaches and inadequate analysis of impacts on adjacent subbasins. The *Alliance* makes these comments with the hope that these issues can be addressed through additional engagement prior to the adoption of the GSPs. It is critical that the groundwater sustainability agencies lay the foundation now for the integrated sustainable management of the Basin; without such a foundation, the agencies will not be able to satisfy their obligations under SGMA.

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[84] Salinas Valley White Paper, pp. 15-16, attached hereto as **Exhibit E (**emphasis added).
[85] *Id.* at p. 7.
[86] See aquilogic Memo, pp. 12-13, attached hereto as **Exhibit A**.

Respectfully submitted,

Stephanie Osler Hastings
Christopher R. Guillen

Exhibits:

A. October 15, 2021 aquilogic, inc. memorandum
B. February 26, 2019 Letter from Derrik Williams to Les Girard
C. March 4, 2019 Memorandum from Howard Franklin to Gary Petersen & Les Girard
D. November 19, 2013 Technical Memorandum re Protective Elevations to Control Sea Water Intrusion in the Salinas Valley
E. June 1995 Salinas Valley Ground Water Basin Hydrology Conference White Paper re Hydrogeology and Water Supply of Salinas Valley

cc: Emily Gardner, Senior Advisor / Deputy General Manager (gardnere@svbgsa.org)
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23184613

October 15, 2021

Salinas Valley Basin GSA
P.O. Box 1350
Carmel Valley, CA 93924

Submitted via web: *https://form.jotform.com/201537036733047*

Re: Public Comment Letter for the Langley Aquifer Subbasin Draft GSP

Dear Donna Meyers,

On behalf of the above-listed organizations, we appreciate the opportunity to comment on the Draft Groundwater Sustainability Plan (GSP) for the Langley Aquifer Subbasin being prepared under the Sustainable Groundwater Management Act (SGMA). Our organizations are deeply engaged in and committed to the successful implementation of SGMA because we understand that groundwater is critical for the resilience of California's water portfolio, particularly in light of changing climate. Under the requirements of SGMA, Groundwater Sustainability Agencies (GSAs) must consider the interests of all beneficial uses and users of groundwater, such as domestic well owners, environmental users, surface water users, federal government, California Native American tribes and disadvantaged communities (Water Code 10723.2).

As stakeholder representatives for beneficial users of groundwater, our GSP review focuses on how well disadvantaged communities, drinking water users, tribes, climate change, and the environment were addressed in the GSP. While we appreciate that some basins have consulted us directly via focus groups, workshops, and working groups, we are providing public comment letters to all GSAs as a means to engage in the development of 2022 GSPs across the state. Recognizing that GSPs are complicated and resource intensive to develop, the intention of this letter is to provide constructive stakeholder feedback that can improve the GSP prior to submission to the State.

Based on our review, we have significant concerns regarding the treatment of key beneficial users in the Draft GSP and consider the GSP to be **insufficient** under SGMA. We highlight the following findings:

1. Beneficial uses and users **are not sufficiently** considered in GSP development.
    a. Human Right to Water considerations **are not sufficiently** incorporated.
    b. Public trust resources **are not sufficiently** considered.
    c. Impacts of Minimum Thresholds, Measurable Objectives and Undesirable Results on beneficial uses and users **are not sufficiently** analyzed.
2. Climate change **is not sufficiently** considered.
3. Data gaps **are not sufficiently** identified and the GSP **needs additional plans** to eliminate them.
4. Projects and Management Actions **do not sufficiently consider** potential impacts or benefits to beneficial uses and users.

Our specific comments related to the deficiencies of the Langley Aquifer Subbasin Draft GSP along with recommendations on how to reconcile them, are provided in detail in **Attachment A.**

Please refer to the enclosed list of attachments for additional technical recommendations:

Attachment A	GSP Specific Comments
Attachment B	SGMA Tools to address DAC, drinking water, and environmental beneficial uses and users
Attachment C	Freshwater species located in the basin
Attachment D	The Nature Conservancy's "Identifying GDEs under SGMA: Best Practices for using the NC Dataset"
Attachment E	Maps of representative monitoring sites in relation to key beneficial users

Thank you for fully considering our comments as you finalize your GSP.

Best Regards,

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Water Policy Analyst
Clean Water Action/Clean Water Fund

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Western States Climate and Water Scientist
Union of Concerned Scientists

Samantha Arthur
Working Lands Program Director
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Attachment A

Specific Comments on the Langley Aquifer Subbasin Draft Groundwater Sustainability Plan

1. Consideration of Beneficial Uses and Users in GSP development

Consideration of beneficial uses and users in GSP development is contingent upon adequate identification and engagement of the appropriate stakeholders. The (A) identification, (B) engagement, and (C) consideration of disadvantaged communities, drinking water users, tribes, groundwater dependent ecosystems, streams, wetlands, and freshwater species are essential for ensuring the GSP integrates existing state policies on the Human Right to Water and the Public Trust Doctrine.

A. Identification of Key Beneficial Uses and Users

Disadvantaged Communities and Drinking Water Users

The identification of Disadvantaged Communities (DACs) and drinking water users is **incomplete**. The GSP provides information on DACs, including identification by name and location on a map (Figure 2-3), and identifying the water source for DAC members. However, the GSP fails to identify the population of each identified DAC.

The GSP provides a density map of domestic wells in the subbasin. However, the GSP fails to provide depth of these wells (such as minimum well depth, average well depth, or depth range) within the subbasin.

These missing elements are required for the GSA to fully understand the specific interests and water demands of these beneficial users, and to support the development of sustainable management criteria and projects and management actions that are protective of these users.

RECOMMENDATIONS
● Include a map showing domestic well locations and average well depth across the subbasin. ● Provide the population of each identified DAC.

Interconnected Surface Waters

The identification of Interconnected Surface Waters (ISW) is **insufficient**, due to lack of supporting information provided for the ISW analysis. To assess ISWs, the GSP used the Salinas Valley Integrated Hydrologic Model (SVIHM). The GSP states (p. 4-22): *"Although seepage along the ISW reaches is based on assumed channel and aquifer parameters as model inputs, the preliminary SVIHM is the best available tool to estimate ISW locations. The model construction and uncertainty are described in Chapter 6 of this GSP."* However, Chapter 6 of the GSP, the water budget chapter, presents very little information on the model. No further information in the GSP was presented providing description of the location of groundwater wells or stream gauges used in the analysis, or description of temporal (seasonal and interannual) variability of the data used to calibrate the model.

The GSP states (p. 4-22): *"The blue cells [in Figure 4-9] indicate areas where surface water is connected to groundwater for more than 50 percent of the number of months in the model period and are designated as areas of ISW. The clear cells represent areas that have interconnection less than 50 percent of the model period and require further evaluation to determine whether the SMC, discussed in Chapter 8, apply."* Note the regulations [23 CCR §351(o)] define ISW 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". "At any point" has both a spatial and temporal component. Even short durations of interconnections of groundwater and surface water can be crucial for surface water flow and supporting environmental users of groundwater and surface water. The GSP states (p. 4-22): "Interconnection between surface water and groundwater can vary both in time and space. A seasonal analysis is included in Appendix 4A." The appendix was not included in the public draft copy of the GSP, however.

RECOMMENDATIONS
● Describe available groundwater elevation data and stream flow data in the subbasin. ISWs are best analyzed using depth-to-groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought), to determine the range of depth and capture the variability in environmental conditions inherent in California's climate. ● Overlay the stream reaches shown on Figure 4-9 with depth-to-groundwater contour maps to illustrate groundwater depths and the groundwater gradient near the stream reaches. Show the location of groundwater wells in the subbasin used to create the contour maps. ● For the depth-to-groundwater contour maps, use the best practices presented in Attachment D. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a Digital Elevation Model (DEM) to estimate depth-to-groundwater contours across the landscape. This will provide accurate contours of depth to groundwater along streams and other land surface depressions where GDEs are commonly found. ● On Figure 4-9 (Locations of Interconnected Surface Water), consider any modelled stream grid cells with >0% connection to groundwater as potential ISWs until more data is available. In other words, consider any stream cell with connection to groundwater for any length of time as a potential ISW. ● Describe data gaps for the ISW analysis. Reconcile these data gaps with specific measures (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP.

Groundwater Dependent Ecosystems

The identification of Groundwater Dependent Ecosystems (GDEs) is **insufficient**, due to a lack of comprehensive, systematic analysis of the subbasin's GDEs.

The GSP took initial steps to identify and map GDEs using the Natural Communities Commonly Associated with Groundwater dataset (NC dataset) and other sources. The GSP does not discuss how the NC dataset was verified with the use of groundwater data, however. The GSP states (p. 4-26): "*The SVBGSA reviewed the NCCAG dataset and assessed each GDE's potential* *connection to groundwater by determining if the GDE was underlain by shallow groundwater that has been delineated as being part of a Bulletin 118 principal aquifer, and if depth to groundwater is less than 30 feet."* However, no further details are provided in the GSP. Based on the description provided in the GSP, it is unclear if Figure 4-10 (Groundwater Dependent Ecosystems) presents the entire NC dataset, or further analysis based on the 30 feet threshold as described in the text. Without an analysis of groundwater data to verify the NC dataset polygons, it will be difficult or impossible to adequately monitor and manage the subbasin's GDEs throughout GSP implementation.

We commend the GSA for listing the threatened and endangered species likely to depend on groundwater, as determined from several sources including the US Fish and Wildlife Service (USFWS) website, California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB), and TNC Critical Species LookBook (Table 4-1). Vegetation species present in the subbasin's potential GDEs were not included in the GSP, however.

RECOMMENDATIONS

- Develop and describe a systematic approach for analyzing the subbasin's GDEs. For example, provide a map of the NC Dataset. On the map, label polygons retained, removed, or added to/from the NC dataset (include the removal reason if polygons are not considered potential GDEs, or include the data source if polygons are added). Discuss how local groundwater data was used to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer. 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.

- Use 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. We recommend that a baseline period (10 years from 2005 to 2015) be established to characterize groundwater conditions over multiple water year types. 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.

- Refer to Attachment B for more information on TNC's plant rooting depth database. Deeper thresholds are necessary for plants that have reported maximum root depths that exceed the averaged 30-ft threshold, such as valley oak (*Quercus lobata*). We recommend that the reported max rooting depth for these deeper-rooted plants be used. For example, a depth-to-groundwater threshold of 80 feet should be used instead of the 30-ft threshold, when verifying whether valley oak polygons from the NC Dataset are connected to groundwater. It is important to re-emphasize that actual rooting depth data are limited and will depend on the plant species and site-specific conditions such as soil and aquifer types, and availability to other water sources.

- Provide depth-to-groundwater contour maps, noting the best practices presented in Attachment D. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a digital elevation model (DEM) to estimate depth-to-groundwater contours across the landscape.

- If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons as "Potential GDEs" in the GSP until data gaps are reconciled in the monitoring network.
- Please provide a complete inventory, map, or description of fauna (e.g., birds, fish, amphibian) and flora (e.g., plants) species in the subbasin (see Attachment C of this letter for a list of freshwater species located in the Langley Subbasin).

Native Vegetation and Managed Wetlands

Native vegetation and managed wetlands are water use sectors that are required[1,2] to be included in the water budget. The integration of native vegetation into the water budget is **insufficient**. The water budget includes a separate item for evapotranspiration, but based on the text it is unclear whether the values shown in the budget tables apply to riparian evapotranspiration only or contain crop evapotranspiration as well. The omission of explicit water demands for native vegetation is problematic because key environmental uses of groundwater are not being accounted for as water supply decisions are made using this budget, nor will they likely be considered in project and management actions. The GSP states that managed wetlands are not present in the subbasin.

RECOMMENDATION

- Quantify and present all water use sector demands in the historical, current, and projected water budgets with individual line items for each water use sector, including native vegetation.

B. Engaging Stakeholders

Stakeholder Engagement during GSP development

Stakeholder engagement during GSP development is **incomplete**. SGMA's requirement for public notice and engagement of stakeholders[3] is not fully met by the description in the Communication and Public Engagement section of the GSP (Chapter 2).

The GSA's outreach activities include conducting interviews with DAC community leaders to identify strategies to work together during GSP planning and implementation; conducting workshops with partners on water and groundwater sustainability; identifying concerns from DACs and underrepresented communities; planning listening sessions around GSA milestones; developing a resource hub with partner organizations; identifying community allies to partner with

[1] "'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." [23 CCR §351(al)]

[2] "The water budget shall quantify the following, either through direct measurements or estimates based on data: (3) Outflows from the groundwater system by water use sector, including evapotranspiration, groundwater extraction, groundwater discharge to surface water sources, and subsurface groundwater outflow." [23 CCR §354.18]

[3] "A communication section of the Plan shall include a requirement that the GSP identify how it encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin." [23 CCR §354.10(d)(3)]

in reducing barriers to participation from DACs; and planning to convene a working group on domestic water that includes DACs and underrepresented communities. However, there is no specific pathway for feedback from DAC residents and representatives to be considered and included in the GSP and its implementation.

We note additional deficiencies with the overall stakeholder engagement process. While environmental organizations have a representative serving on the board of directors and are listed as stakeholders and as members of the GSP Advisory Committee, there is no specific outreach described that is directly targeted to environmental stakeholders during the GSP development and implementation processes.

RECOMMENDATIONS
● In the Communication and Public Engagement Plan, describe active and targeted outreach to engage environmental stakeholders during the remainder of the GSP development process and throughout the GSP implementation phase. Refer to Attachment B for specific recommendations on how to actively engage stakeholders during all phases of the GSP process. ● DAC and environmental stakeholder engagement should be improved by incorporating feedback and recommendations from DAC and environmental stakeholders engaged in the GSP process.

C. Considering Beneficial Uses and Users When Establishing Sustainable Management Criteria and Analyzing Impacts on Beneficial Uses and Users

The consideration of beneficial uses and users when establishing sustainable management criteria (SMC) is **insufficient**. The consideration of potential impacts on all beneficial users of groundwater in the basin are required when defining undesirable results[4] and establishing minimum thresholds.[5,6]

Disadvantaged Communities and Drinking Water Users

For chronic lowering of groundwater levels, the GSP discusses minimum thresholds impact on domestic wells (Section 8.6.2.2). The GSP states (p. 8-14): *"In the Langley Subbasin, 85% of the domestic wells will have at least 25 feet of water in them as long as groundwater elevations remain above minimum thresholds and measurable objectives. These percentages were considered reasonable despite the limitations of this analysis."* The GSP states (p. 8-8): *"The minimum thresholds for chronic lowering of groundwater levels are set to 2019 groundwater elevations, adjusted based on well-specific elevation assessments."* The GSP does not explain the rationale behind using 2019 groundwater elevation data instead of data from the period before the SGMA benchmark date of 2015.

[4] "The description of undesirable results shall include [...] 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." [23 CCR §354.26(b)(3)]

[5] "The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]

[6] "The description of minimum thresholds shall include [...] how state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the agency shall explain the nature of and the basis for the difference." [23 CCR §354.28(b)(5)]

Section 8.6.4 defines undesirable results for the chronic lowering of groundwater level SMC. The GSP states (p. 8-20): *"The chronic lowering of groundwater levels undesirable result is: more than 15% of the groundwater elevation minimum thresholds are exceeded."* However, undesirable results should inform the development of minimum thresholds, not the other way around. The GSP should establish minimum thresholds at the representative monitoring wells that account for the specific undesirable results the GSA has determined for the subbasin. The current analysis, which only considers 41 out of 823 wells, is insufficient and does not use best available information, for example including Public Land Survey System (PLSS) section location data, as was used in the 180/400 Foot Aquifer GSP.

For degraded water quality, the GSP identifies constituents of concern (COCs) within the subbasin. The GSP states (p. 5-21): *"The SVBGSA does not have regulatory authority over groundwater quality and is not charged with improving groundwater quality in the Salinas Valley Groundwater Basin."* Table 8-4 provides a list of constituents and number of wells that must exceed regulatory standards in order to trigger minimum thresholds but fails to provide justification for how those numbers were selected. The GSP also sets measurable objectives identical to minimum thresholds; the exceedance of minimum thresholds is supposed to trigger additional actions but since minimum thresholds in this plan are identified as measurable objectives, it is unclear what action is triggered. Furthermore, the regulatory standards are not explicitly provided in the GSP.

RECOMMENDATIONS

Chronic Lowering of Groundwater Levels

- Describe direct and indirect impacts on DACs and drinking water users when defining undesirable results for chronic lowering of groundwater levels. For the analysis of minimum threshold impact on domestic wells, use best available information such as Public Land Survey System (PLSS) section location data.

- Establish minimum thresholds at the representative monitoring wells that account for the specific undesirable results the GSA would like to avoid. Use groundwater level data from the period before the SGMA benchmark date of 2015 for the analysis.

Degraded Water Quality

- Describe direct and indirect impacts on DACs and drinking water users when defining undesirable results for degraded water quality. For specific guidance on how to consider these users, refer to "Guide to Protecting Water Quality Under the Sustainable Groundwater Management Act."[7]

- Set measurable objectives at lower levels than minimum thresholds (i.e., indicative of better water quality).

[7] Guide to Protecting 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.

- Set concentration-based minimum thresholds and measurable objectives for COCs in the subbasin that are impacted by groundwater use and/or management. Ensure they align with drinking water standards[8].
- Evaluate the cumulative or indirect impacts of proposed minimum thresholds for degraded water quality on DACs and drinking water users.

Groundwater Dependent Ecosystems and Interconnected Surface Waters

Sustainable management criteria for chronic lowering of groundwater levels provided in the GSP do not consider potential impacts to environmental beneficial users. The GSP neither describes nor analyzes direct or indirect impacts on environmental users of groundwater when defining undesirable results. This is problematic because without identifying potential impacts to GDEs, minimum thresholds may compromise, or even destroy, these environmental beneficial users. Since GDEs are present in the subbasin, they must be considered when developing SMC.

Sustainable management criteria for depletion of interconnected surface water are established by proxy using shallow groundwater elevations observed in 2019 near locations of interconnected surface water. To describe impacts to ecological surface water users, the GSP states (p. 8-49): *"There are no known flow prescriptions on any surface water bodies in the Subbasin. Therefore, the current level of depletion has not violated any ecological flow requirements. This is not meant to imply that depletions do not impact potential species living in or near surface water bodies in the Subbasin. However, any impacts that may be occurring have not risen to the level that triggers regulatory intervention. Therefore, the impacts from current rates of depletion on ecological surface water users is not unreasonable."* The GSP makes no attempt to evaluate the impacts of the proposed minimum threshold on environmental beneficial users of surface water. The GSP does not explain how the chosen minimum thresholds and measurable objectives avoid significant and unreasonable effects on surface water beneficial users in the subbasin, such as increased mortality and inability to perform key life processes (e.g., reproduction, migration).

RECOMMENDATIONS

- When defining undesirable results for chronic lowering of groundwater levels, provide specifics on what biological responses (e.g., extent of habitat, growth, recruitment rates) would best characterize a significant and unreasonable impact to GDEs. Undesirable results to environmental users occur when 'significant and unreasonable' effects on beneficial users are caused by one of the sustainability indicators (i.e., chronic lowering of groundwater levels, degraded water quality, or depletion of interconnected surface water). Thus, potential impacts on environmental beneficial uses and users need to be considered when defining undesirable results[9] in the subbasin. Defining undesirable results is the crucial first step before the minimum thresholds[10] can be determined.

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[8] "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." [23 CCR §354.34(c)(4)]

[9] "The description of undesirable results shall include [...] 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". [23 CCR §354.26(b)(3)]

[10] The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]

- When defining undesirable results for depletion of interconnected surface water, include a description of potential impacts on instream habitats within ISWs when minimum thresholds in the subbasin are reached[11]. The GSP should confirm that minimum thresholds for ISWs avoid adverse impacts to environmental beneficial users of interconnected surface waters as these environmental users could be left unprotected by the GSP. These recommendations apply especially to environmental beneficial users that are already protected under pre-existing state or federal law[6,12].

2. Climate Change

The SGMA statute identifies climate change as a significant threat to groundwater resources and one that must be examined and incorporated in the GSPs. The GSP Regulations[13] require integration of climate change into the projected water budget to ensure that projects and management actions sufficiently account for the range of potential climate futures.

The integration of climate change into the projected water budget is **insufficient**. The GSP does incorporate climate change into the projected water budget using DWR change factors for 2030 and 2070. However, the GSP does not consider multiple climate scenarios (e.g., the 2070 extremely wet and extremely dry climate scenarios) in the projected water budget. The GSP should clearly and transparently incorporate the extremely wet and dry scenarios provided by DWR into projected water budgets or select more appropriate extreme scenarios for their basins. While these extreme scenarios may have a lower likelihood of occurring, their consequences could be significant, therefore they should be included in groundwater planning.

We acknowledge and commend the inclusion of climate change into key inputs (e.g., precipitation, evapotranspiration, surface water flow, and sea level) of the projected water budget. However, the GSP does not calculate a sustainable yield based on the projected water budget with climate change incorporated. If the water budgets are incomplete, including the omission of extremely wet and dry scenarios, and sustainable yield is not calculated based on climate change projections, then there is increased uncertainty in virtually every subsequent calculation used to plan for projects, derive measurable objectives, and set minimum thresholds. Plans that do not adequately include climate change projections may underestimate future impacts on vulnerable beneficial users of groundwater such as ecosystems, DACs, and domestic well owners.

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[11] “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.” [23 CCR §354.28(c)(6)]

[12] Rohde MM, Seapy B, Rogers R, Castañeda X, editors. 2019. Critical Species LookBook: A compendium of California’s threatened and endangered species for sustainable groundwater management. The Nature Conservancy, San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/Critical_Species_LookBook_91819.pdf

[13] “Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow.” [23 CCR §354.18(e)]

RECOMMENDATIONS

- Integrate climate change, including extremely wet and dry scenarios, into all elements of the projected water budget to form the basis for development of sustainable management criteria and projects and management actions.

- Calculate sustainable yield based on the projected water budget with climate change incorporated.

- Incorporate climate change scenarios into projects and management actions.

3. Data Gaps

The consideration of beneficial users when establishing monitoring networks is **insufficient**, due to lack of specific plans to increase the Representative Monitoring Sites (RMSs) in the monitoring network that represent shallow groundwater elevations around DACs and domestic wells in the subbasin. The monitoring network that represents water quality conditions around DACs and domestic wells in the subbasin is sufficient in terms of spatial distribution but is insufficient in terms of depth representation.

Figure 7-1 (Langley Area Representative Monitoring Network for Groundwater Levels) shows that no monitoring wells are located across portions of the subbasin near DACs and domestic wells. Beneficial users of groundwater may remain unprotected by the GSP without adequate monitoring and identification of data gaps in the shallow aquifer. The Plan therefore fails to meet SGMA's requirements for the monitoring network[14].

The GSP provides discussion of data gaps for GDEs and ISWs in Section 7.7 (Interconnected Surface Water Monitoring Network) of the GSP. The GSP could be improved by describing biological monitoring that could be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the subbasin.

RECOMMENDATIONS

- Provide maps that overlay monitoring well locations with the locations of DACs and domestic wells to clearly identify potentially impacted areas. Increase the number of representative monitoring sites (RMSs) in the shallow aquifer across the subbasin for the groundwater elevation and groundwater quality condition indicators. Prioritize proximity to DACs and drinking water users when identifying new RMSs.

- Describe biological monitoring that can be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the subbasin.

- Ensure groundwater elevation and water quality RMSs are tracking groundwater conditions spatially and at the correct depth for *all* beneficial users - especially DACs, domestic wells, GDEs, and ISWs. Groundwater elevation and quality RMS data gaps

[14] "The monitoring network objectives shall be implemented to accomplish the following: [...] (2) Monitor impacts to the beneficial uses or users of groundwater." [23 CCR §354.34(b)(2)]

(spatial and depth) in relation to key beneficial users in the subbasin are provided in Attachment E.

4. Addressing Beneficial Users in Projects and Management Actions

The consideration of beneficial users when developing projects and management actions is **insufficient**, due to the failure to completely identify benefits or impacts of identified projects and management actions to key beneficial users of groundwater such as GDEs, aquatic habitats, surface water users, DACs, and drinking water users. Therefore, potential project and management actions may not protect these beneficial users. Groundwater sustainability under SGMA is defined not just by sustainable yield, but by the avoidance of undesirable results for *all* beneficial users.

The GSP states (p. 8-14): *"In the Langley Subbasin, 85% of the domestic wells will have at least 25 feet of water in them as long as groundwater elevations remain above minimum thresholds and measurable objectives."* Therefore, up to 15% of domestic wells could be impacted when water levels drop below measurable objectives, and even more could be impacted when water levels reach minimum thresholds. In Section 9.5.3 (Implementation Action D3: Dry Well Notification System), the GSP states (p. 9-46): *"The GSA could develop or support the development of a program to assist well owners (domestic or state small and local small water systems) whose wells go dry due to declining groundwater elevations."* The GSP states that the program could involve a notification system, monitoring triggered by lowered groundwater elevations, public outreach, *"...referral to assistance with short-term supply solutions, technical assistance to assess why it went dry, and/or long-term supply solutions."* No further specifics on a drinking water well impact mitigation program are provided, however.

RECOMMENDATIONS

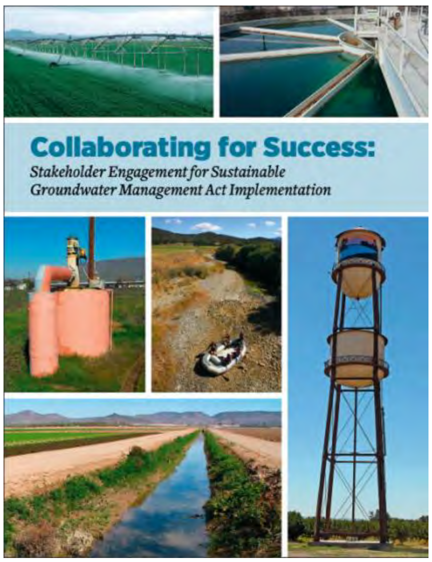
- For DACs and domestic well owners, provide specific plans for implementation of a drinking water well impact mitigation program to proactively monitor and protect drinking water wells through GSP implementation. Refer to Attachment B for specific recommendations on how to implement a drinking water well mitigation program.
- For DACs and domestic well owners, include a discussion of whether potential impacts to water quality from projects and management actions could occur and how the GSA plans to mitigate such impacts.
- Recharge ponds, reservoirs, and facilities for managed stormwater recharge can be designed as multiple-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. For guidance on how to integrate multi-benefit recharge projects into your GSP, refer to the "Multi-Benefit Recharge Project Methodology Guidance Document"[15].
- Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.

[15] The Nature Conservancy. 2021. Multi-Benefit Recharge Project Methodology for Inclusion in Groundwater Sustainability Plans. Sacramento. Available at: https://groundwaterresourcehub.org/sgma-tools/multi-benefit-recharge-project-methodology-guidance/

Attachment B

SGMA Tools to address DAC, drinking water, and environmental beneficial uses and users

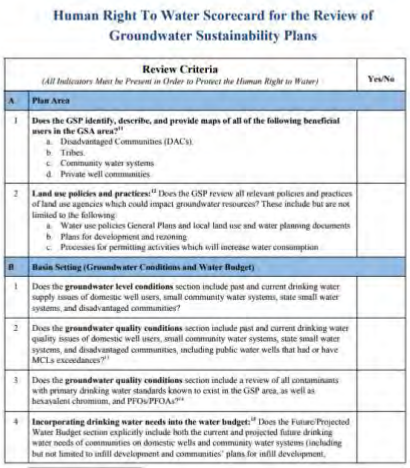
Stakeholder Engagement and Outreach



Clean Water Action, Community Water Center and Union of Concerned Scientists developed a guidance document called Collaborating for success: Stakeholder engagement for Sustainable Groundwater Management Act Implementation. It provides details on how to conduct targeted and broad outreach and engagement during Groundwater Sustainability Plan (GSP) development and implementation. Conducting a targeted outreach involves:

- Developing a robust Stakeholder Communication and Engagement plan that includes outreach at frequented locations (schools, farmers markets, religious settings, events) across the plan area to increase the involvement and participation of disadvantaged communities, drinking water users and the environmental stakeholders.
- Providing translation services during meetings and technical assistance to enable easy participation for non-English speaking stakeholders.
- GSP should adequately describe the process for requesting input from beneficial users and provide details on how input is incorporated into the GSP.

The Human Right to Water

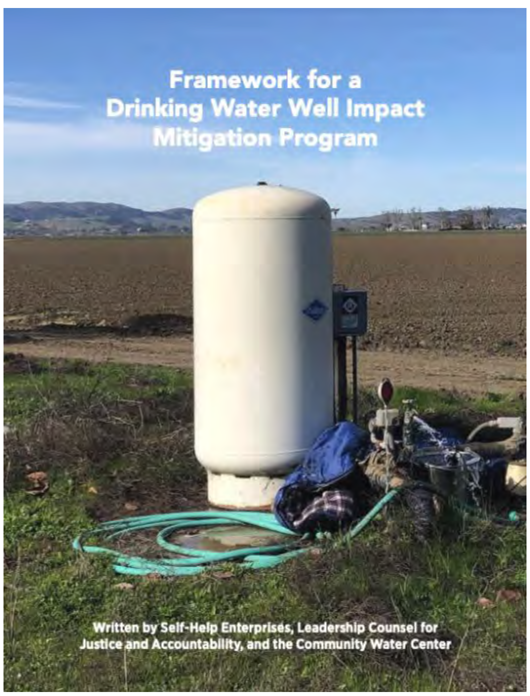


Human Right To Water Scorecard for the Review of Groundwater Sustainability Plans

	Review Criteria *(All Indicators Must be Present in Order to Protect the Human Right to Water)*	**Yes/No**
A	**Plan Area**	
1	**Does the GSP identify, describe, and provide maps of all of the following beneficial users in the GSA area?**[11] a. Disadvantaged Communities (DACs). b. Tribes. c. Community water systems d. Private well communities	
2	**Land use policies and practices:**[12] Does the GSP review all relevant policies and practices of land use agencies which could impact groundwater resources? These include but are not limited to the following: a. Water use policies General Plans and local land use and water planning documents b. Plans for development and rezoning c. Processes for permitting activities which will increase water consumption	
B	**Basin Setting (Groundwater Conditions and Water Budget)**	
1	Does the **groundwater level conditions** section include past and current drinking water supply issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities?	
2	Does the **groundwater quality conditions** section include past and current drinking water quality issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities, including public water wells that had or have MCLs exceedances?[13]	
3	Does the **groundwater quality conditions** section include a review of all contaminants with primary drinking water standards known to exist in the GSP area, as well as hexavalent chromium, and PFOs/PFOAs?[14]	
4	**Incorporating drinking water needs into the water budget:**[15] Does the Future/Projected Water Budget section explicitly include both the current and projected future drinking water needs of communities on domestic wells and community water systems (including but not limited to infill development and communities' plans for infill development,	

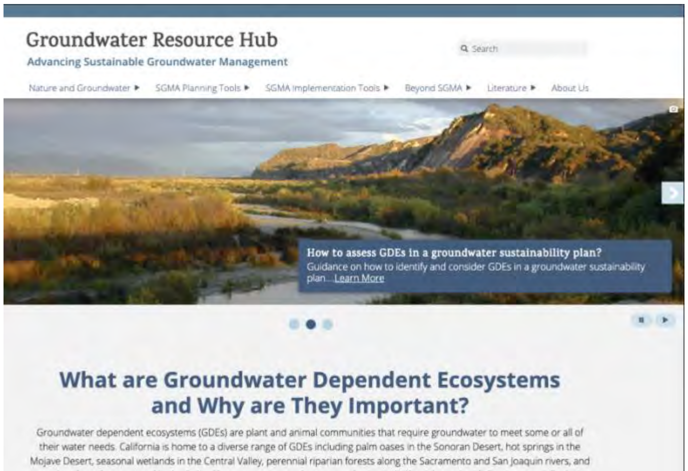
The [Human Right to Water Scorecard](#) was developed by Community Water Center, Leadership Counsel for Justice and Accountability and Self Help Enterprises to aid Groundwater Sustainability Agencies (GSAs) in prioritizing drinking water needs in SGMA. The scorecard identifies elements that must exist in GSPs to adequately protect the Human Right to Drinking water.

Drinking Water Well Impact Mitigation Framework



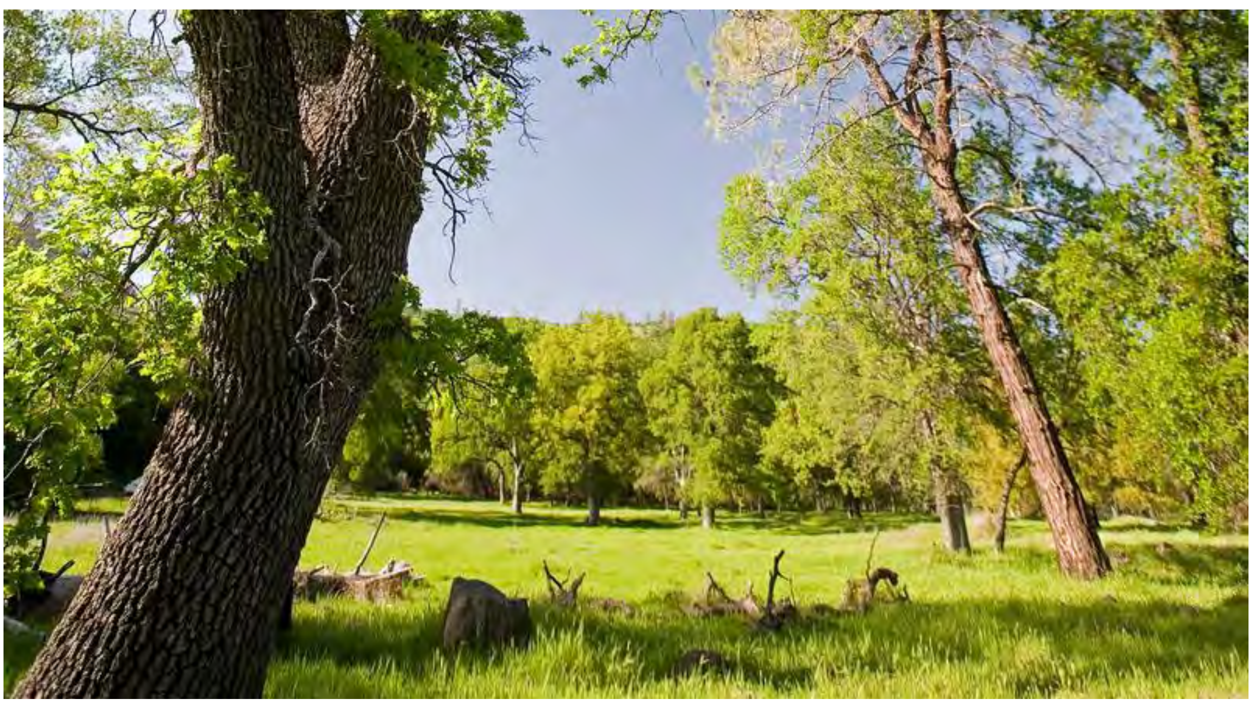
The Drinking Water Well Impact Mitigation Framework was developed by Community Water Center, Leadership Counsel for Justice and Accountability and Self Help Enterprises to aid GSAs in the development and implementation of their GSPs. The framework provides a clear roadmap for how a GSA can best structure its data gathering, monitoring network and management actions to proactively monitor and protect drinking water wells and mitigate impacts should they occur.

Groundwater Resource Hub



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.

Rooting Depth Database



The Plant Rooting Depth Database provides information that can help assess whether groundwater-dependent vegetation are accessing groundwater. Actual rooting depths will depend on the plant species and site-specific conditions, such as soil type and availability of other water sources. Site-specific knowledge of depth to groundwater combined with rooting depths will help provide an understanding of the potential groundwater levels are needed to sustain GDEs.

How to use the database

The maximum rooting depth information in the Plant Rooting Depth Database is useful when verifying whether vegetation in the Natural Communities Commonly Associated with Groundwater (NC Dataset) are connected to groundwater. A 30 ft depth-to-groundwater threshold, which is based on averaged global rooting depth data for phreatophytes[1], is relevant for most plants identified in the NC Dataset since most plants have a max rooting depth of less than 30 feet. However, it is important to note that deeper thresholds are necessary for other plants that have reported maximum root depths that exceed the averaged 30 feet threshold, such as valley oak (*Quercus lobata*), Euphrates poplar (*Populus euphratica*), salt cedar (*Tamarix spp.*), and shadescale (*Atriplex confertifolia*). The Nature Conservancy advises that the reported max rooting depth for these deeper-rooted plants be used. For example, a depth-to groundwater threshold of 80 feet should be used instead of the 30 ft threshold, when verifying whether valley oak polygons from the NC Dataset are connected to groundwater. It is important to re-emphasize that actual rooting depth data are limited and will depend on the plant species and site-specific conditions such as soil and aquifer types, and availability to other water sources.

The Plant Rooting Depth Database is an Excel workbook composed of four worksheets:

1. California phreatophyte rooting depth data (included in the NC Dataset)
2. Global phreatophyte rooting depth data
3. Metadata
4. References

How the database was compiled

The Plant Rooting Depth Database is a compilation of rooting depth information for the groundwater-dependent plant species identified in the NC Dataset. Rooting depth data were compiled from published scientific literature and expert opinion through a crowdsourcing campaign. As more information becomes available, the database of rooting depths will be updated. Please Contact Us if you have additional rooting depth data for California phreatophytes.

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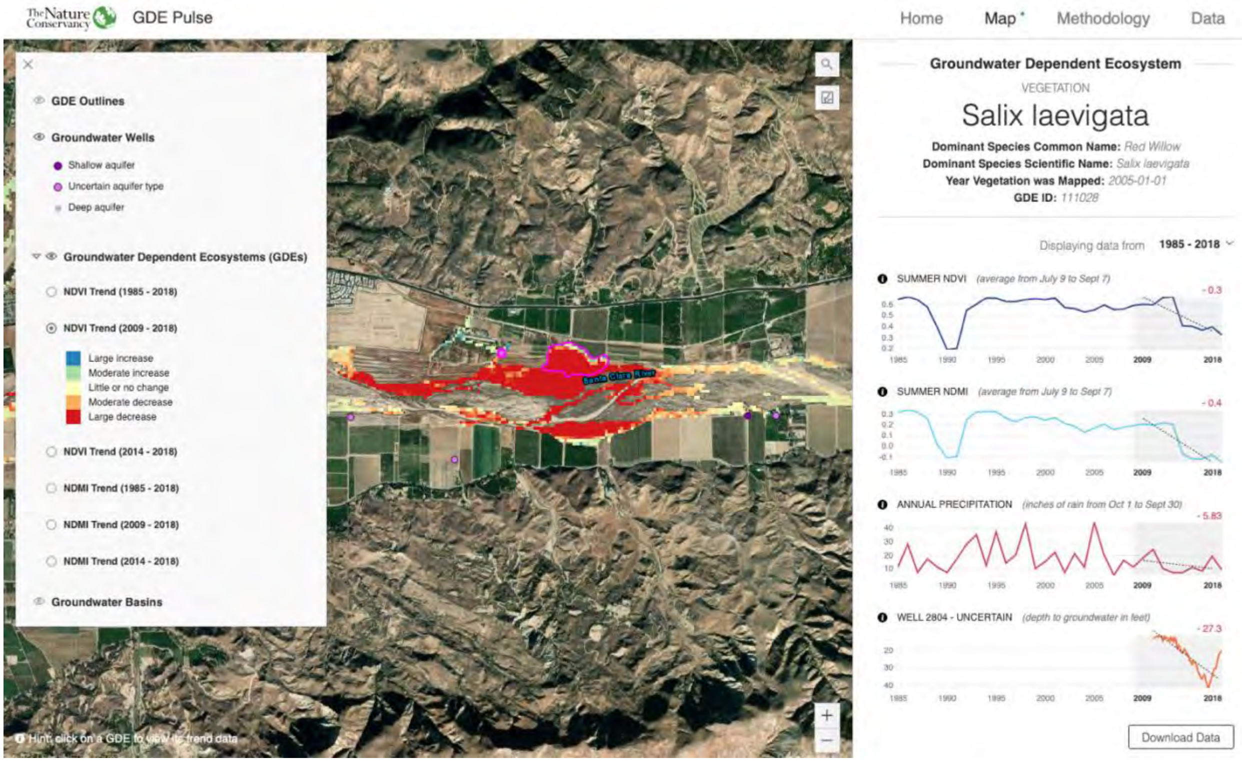
[1] Canadell, J., Jackson, R.B., Ehleringer, J.B. et al. 1996. Maximum rooting depth of vegetation types at the global scale. Oecologia 108, 583–595. https://doi.org/10.1007/BF00329030

GDE Pulse



GDE Pulse is a free online tool that allows Groundwater Sustainability Agencies to assess changes in groundwater dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data. 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. The following datasets are available for downloading:

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.

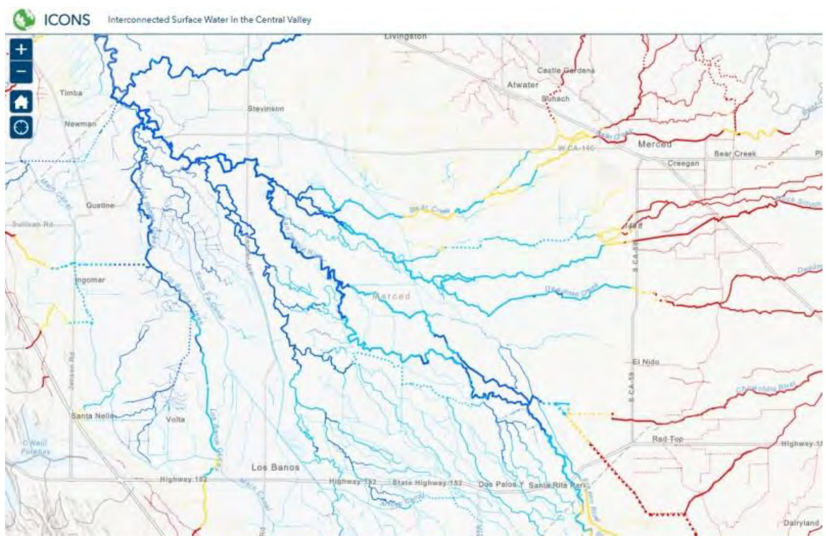
Normalized Difference Moisture Index (NDMI) is a satellite-derived index that represents water content in vegetation. NDMI is derived from the Near-Infrared (NIR) and Short-Wave Infrared (SWIR) channels. Vegetation with adequate access to water tends to have higher NDMI, while vegetation that is water 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. 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.

ICONOS Mapper

Interconnected Surface Water in the Central Valley



ICONS maps the likely presence of interconnected surface water (ISW) in the Central Valley using depth to groundwater data. Using data from 2011-2018, the ISW dataset represents the likely connection between surface water and groundwater for rivers and streams in California's Central Valley. It includes information on the mean, maximum, and minimum depth to groundwater for each stream segment over the years with available data, as well as the likely presence of ISW based on the minimum depth to groundwater. The Nature Conservancy developed this database, with guidance and input from expert academics, consultants, and state agencies.

We developed this dataset using groundwater elevation data available online from the California Department of Water Resources (DWR). DWR only provides this data for the Central Valley. For GSAs outside of the valley, who have groundwater well measurements, we recommend following our methods to determine likely ISW in your region. The Nature Conservancy's ISW dataset should be used as a first step in reviewing ISW and should be supplemented with local or more recent groundwater depth data.

Attachment C

Freshwater Species Located in the Langley Area Basin

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 Langley Area Basin. To produce the freshwater species list, we used ArcGIS to select features within the California Freshwater Species Database version 2.0.9 within the 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[1]. 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[2] as well as on The Nature Conservancy's science website[3].

Scientific Name	Common Name	Legal Protected Status		
		Federal	State	Other
BIRDS				
Agelaius tricolor	Tricolored Blackbird	Bird of Conservation Concern	Special Concern	BSSC - First priority
Anas cyanoptera	Cinnamon Teal			
Anas discors	Blue-winged Teal			
Anas platyrhynchos	Mallard			
Anser albifrons	Greater White-fronted Goose			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Aythya affinis	Lesser Scaup			
Aythya valisineria	Canvasback		Special	
Bucephala clangula	Common Goldeneye			
Butorides virescens	Green Heron			
Chen caerulescens	Snow Goose			
Egretta thula	Snowy Egret			
Fulica americana	American Coot			
Gallinago delicata	Wilson's Snipe			
Phalacrocorax auritus	Double-crested Cormorant			
Podilymbus podiceps	Pied-billed Grebe			

[1] 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

[2] California Department of Fish and Wildlife BIOS: https://www.wildlife.ca.gov/data/BIOS

[3] Science for Conservation: https://www.scienceforconservation.org/products/california-freshwater-species-database

Setophaga petechia	Yellow Warbler			BSSC - Second priority
Tachycineta bicolor	Tree Swallow			
FISH				
Oncorhynchus mykiss - SCCC	South Central California coast steelhead	Threatened	Special Concern	Vulnerable - Moyle 2013
HERPS				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Ambystoma californiense californiense	California Tiger Salamander	Threatened	Threatened	ARSSC
Anaxyrus boreas boreas	Boreal Toad			
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 hammondii hammondii	Two-striped Gartersnake		Special Concern	ARSSC
Thamnophis sirtalis sirtalis	Common Gartersnake			
Anaxyrus boreas halophilus	California Toad			ARSSC
Pseudacris regilla	Northern Pacific Chorus Frog			
INSECTS & OTHER INVERTS				
Pantala flavescens	Wandering Glider			
Plathemis lydia	Common Whitetail			
MAMMALS				
Lontra canadensis canadensis	North American River Otter			Not on any status lists
PLANTS				
Carex harfordii	Harford's Sedge			
Cotula coronopifolia	NA			
Euthamia occidentalis	Western Fragrant Goldenrod			
Hypericum anagalloides	Tinker's-penny			
Perideridia gairdneri gairdneri	Gairdner's Yampah		Special	CRPR - 4.2
Populus trichocarpa	NA			Not on any status lists
Psilocarphus tenellus	NA			

Salix laevigata	Polished Willow			
Salix lasiolepis lasiolepis	Arroyo Willow			

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[1] 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)[2]. This document highlights six best practices for using local groundwater data to confirm whether mapped features in the NC dataset are supported by groundwater.

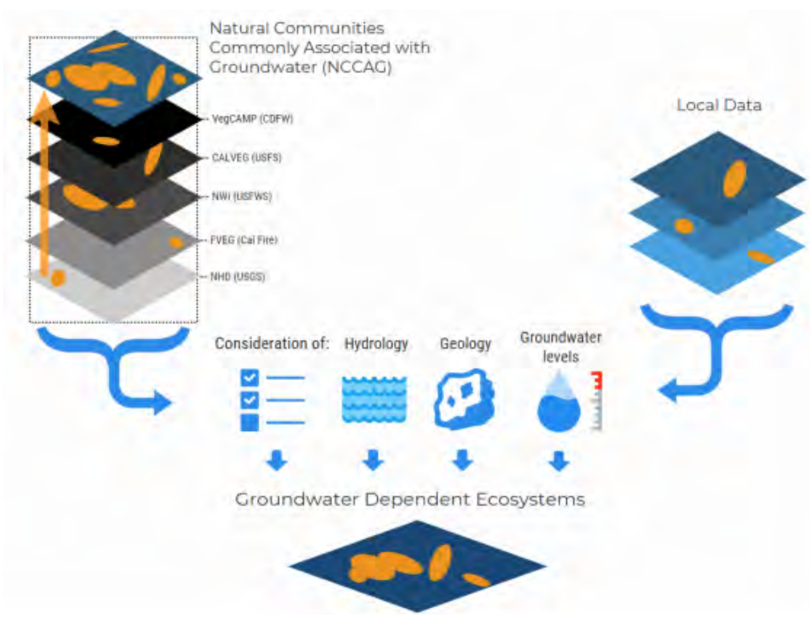


Figure 1. Considerations for GDE identification.
Source: DWR[2]

[1] NC Dataset Online Viewer: https://gis.water.ca.gov/app/NCDatasetViewer/
[2] 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[3]. 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[4] on the Groundwater Resource Hub[5], 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*.

[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/
[5] The Groundwater Resource Hub: www.GroundwaterResourceHub.org

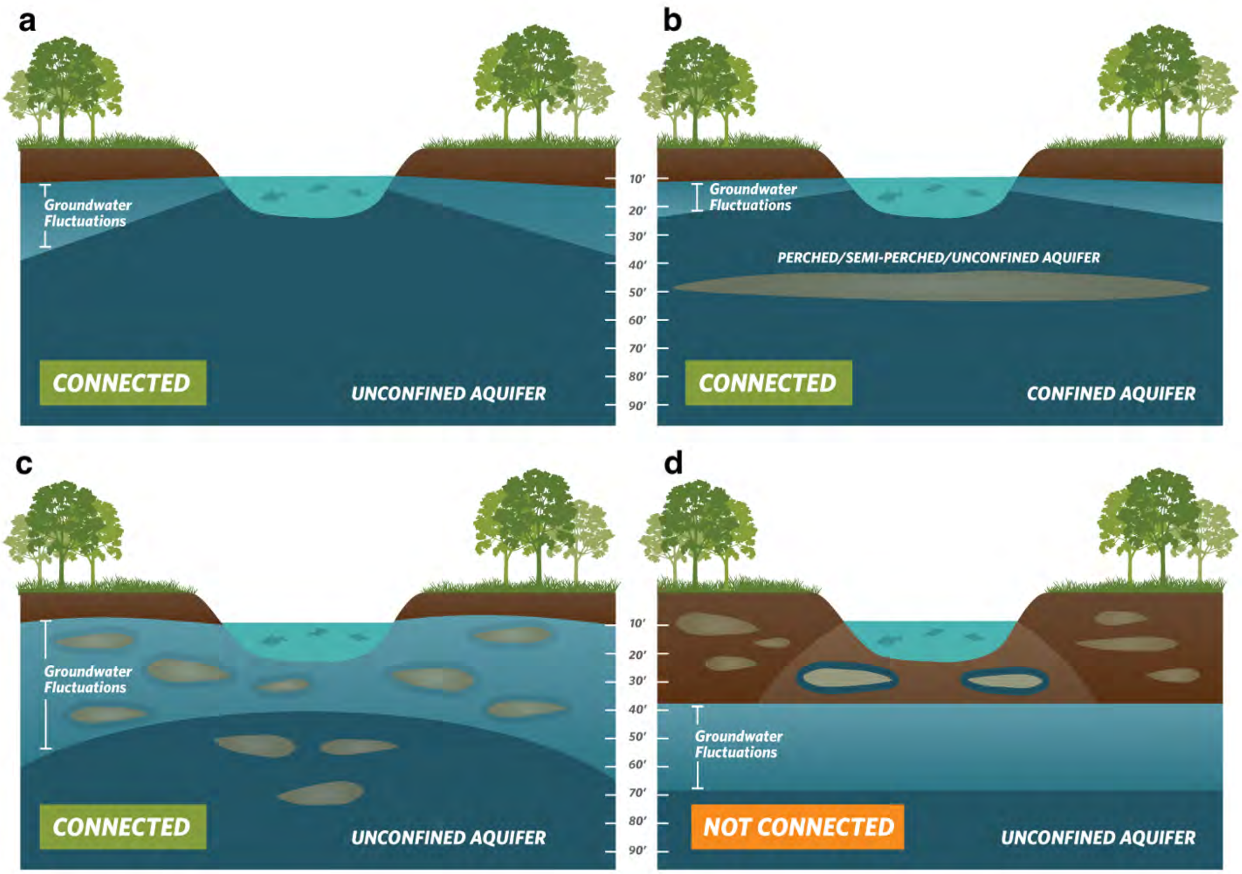


Figure 2. Confirming whether an ecosystem is connected to groundwater. Top: (a) Under the ecosystem is an unconfined aquifer with depth-to-groundwater fluctuating seasonally and interannually within 30 feet from land surface. (b) Depth-to-groundwater in the shallow aquifer is connected to overlying ecosystem. 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[6] 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[7] 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[8] 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[9]. 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).

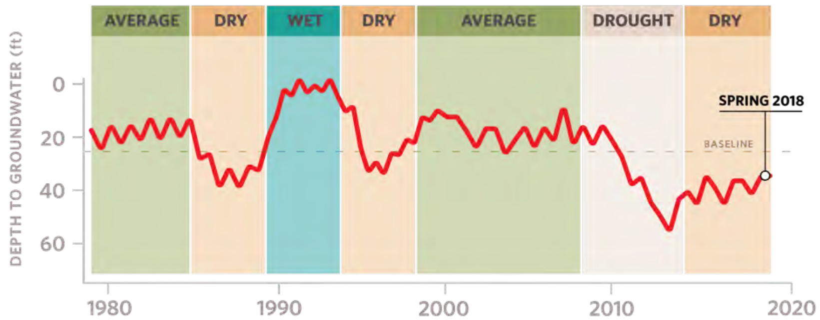


Figure 3. Example seasonality and interannual variability in depth-to-groundwater over time. Selecting one point in time, such as Spring 2018, to characterize groundwater conditions in GDEs fails to capture what groundwater conditions are necessary to maintain the ecosystem status into the future so adverse impacts are avoided.

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[6] 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

[7] 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)]

[8] 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]).

[9] 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[10], 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).

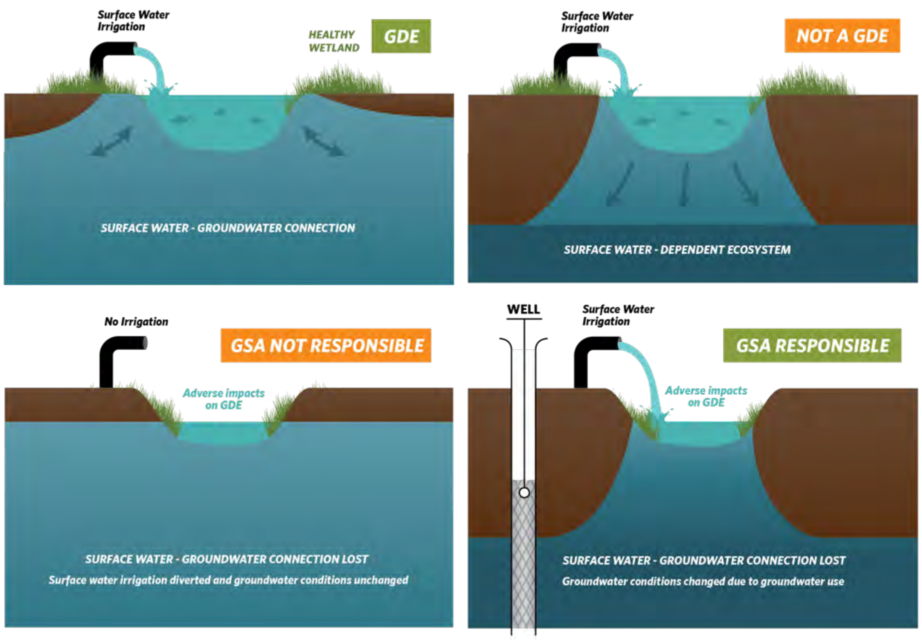


Figure 4. Ecosystems often depend on multiple sources of water. Top: (Left) Surface water and groundwater are interconnected, meaning that the GDE is supported by both groundwater and surface water. (Right) Ecosystems that are only reliant on non-groundwater sources are not groundwater-dependent. Bottom: (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.

[10] 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.

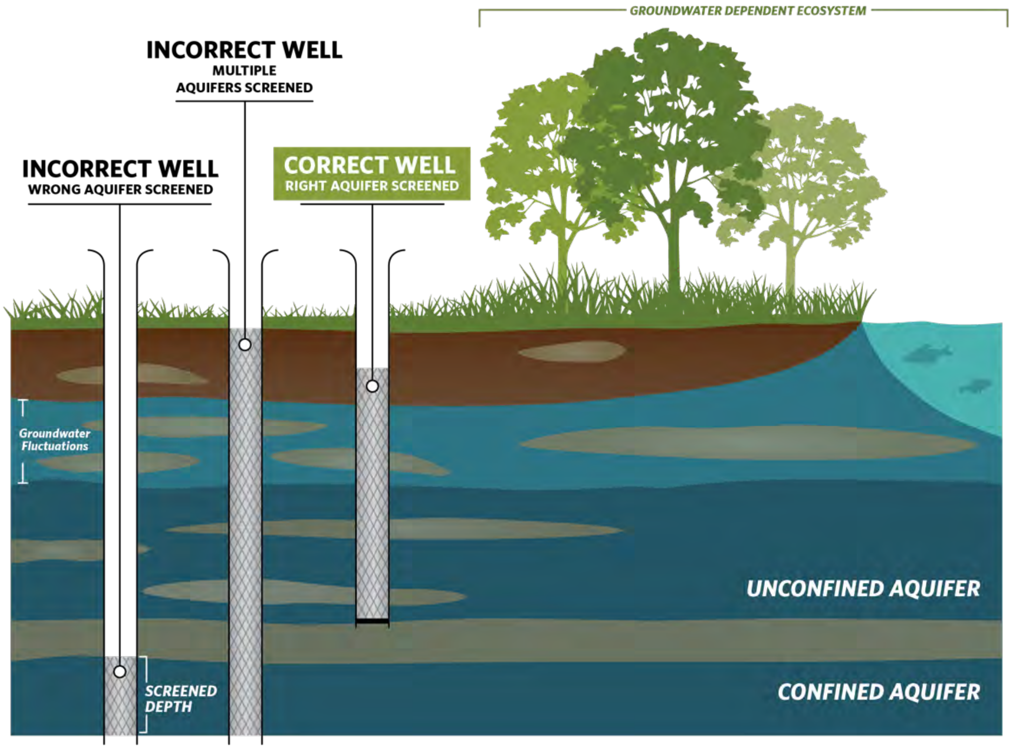


Figure 5. Selecting representative wells to characterize groundwater conditions near GDEs.

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)[11] 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.

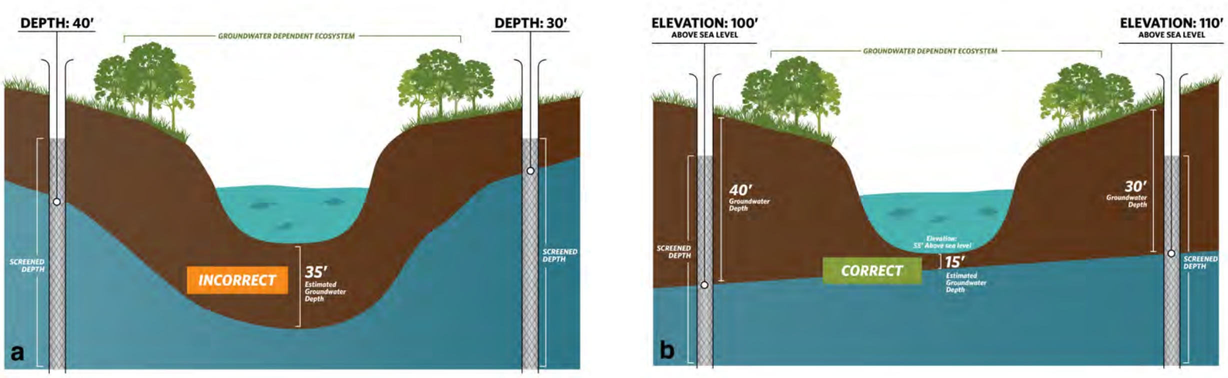


Figure 6. Contouring depth-to-groundwater around surface water features and GDEs. (a) Groundwater level interpolation using depth-to-groundwater data from monitoring wells. (b) Groundwater level interpolation using groundwater elevation data from monitoring wells and DEM data.

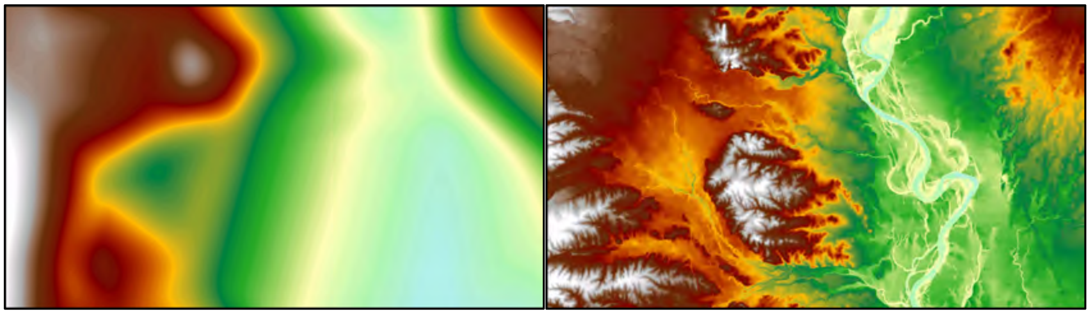


Figure 7. Depth-to-groundwater contours in Northern California. (Left) Contours were interpolated using depth-to-groundwater measurements determined at each well. (Right) Contours were determined by interpolating groundwater elevation measurements at each well and superimposing ground surface elevation 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.

[11] 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

Maps of representative monitoring sites in relation to key beneficial users

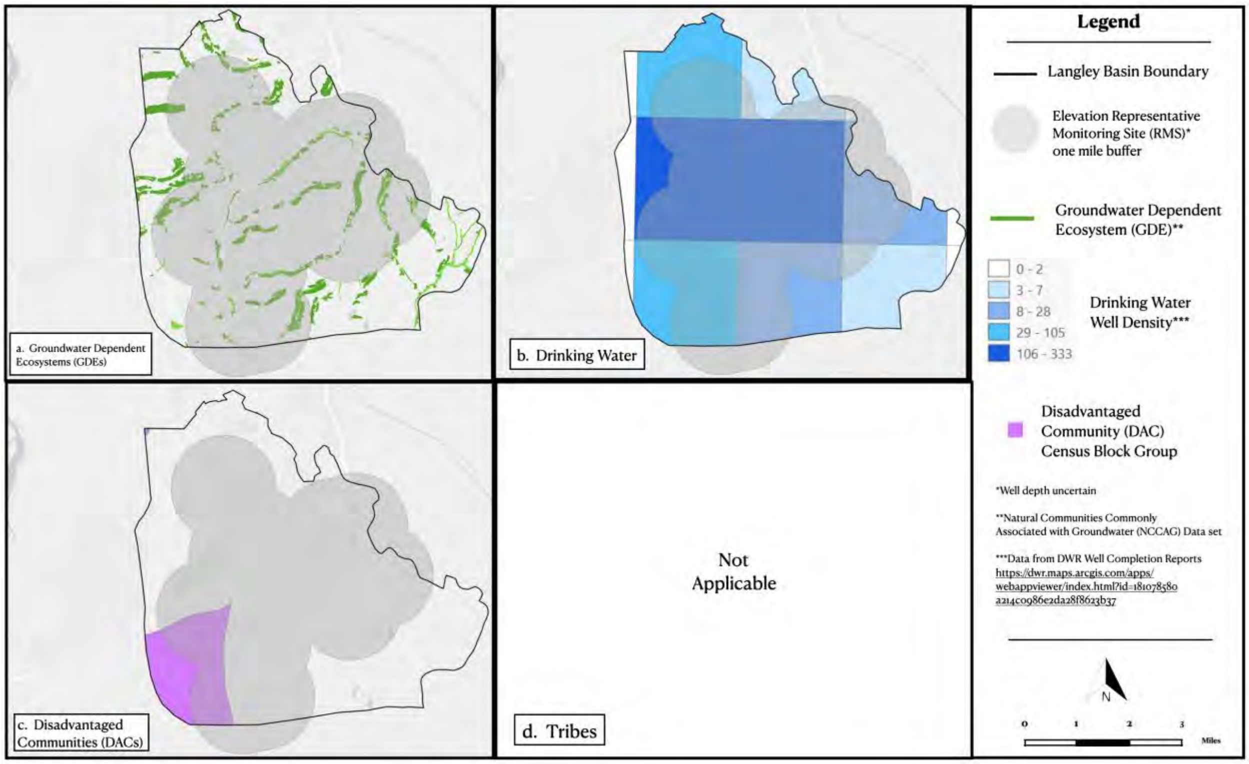


Figure 1. Groundwater elevation representative monitoring sites in relation to key beneficial users: a) Groundwater Dependent Ecosystems (GDEs), b) Drinking Water users, c) Disadvantaged Communities (DACs), and d) Tribes.

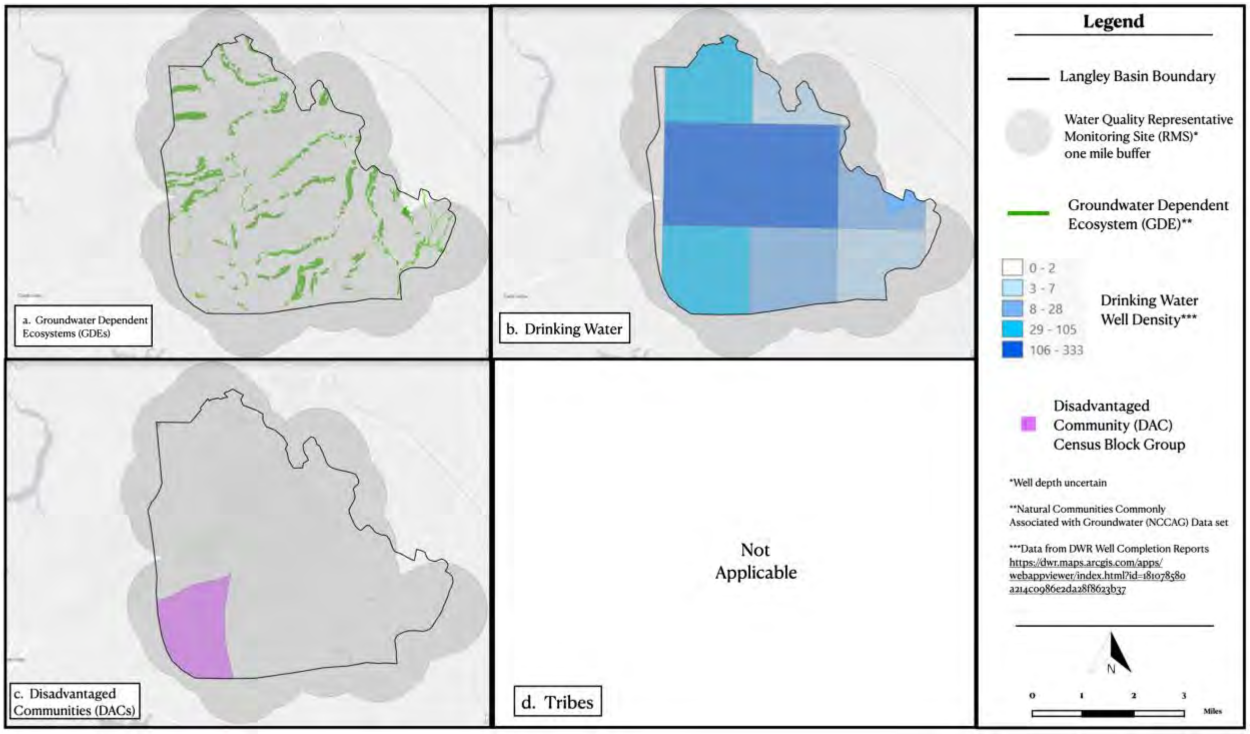


Figure 2. Groundwater quality representative monitoring sites in relation to key beneficial users: a) Groundwater Dependent Ecosystems (GDEs), b) Drinking Water users, c) Disadvantaged Communities (DACs), and d) Tribes.

PAGE NO./SECTION NO.	SUGGESTED WORDING TO BE ADDED (NEW WORDING SHOWN IN RED, EXISTING WORDING IS IN BLACK)
6-10/6.1	Transient boundary conditions tied to historical water level observations (within the 180/400 Foot Aquifer Subbasin), simulated water levels from existing groundwater flow models (within the Seaside Area Subbasin this refers to the Watermaster's Seaside Basin Groundwater Flow Model developed by HydroMetrics/Montgomery & Associates), and freshwater equivalent sea levels (along the Monterey Coast);
6-15/6.2.2	Subsurface exchanges with the Seaside Area Subbasin are calculated by the MBGWFM using a general head boundary condition. The MBGWFM calculates subsurface flow based on modeled groundwater head outputs at the Seaside boundary from the historical Seaside Basin Groundwater Flow Model (Hydrometrics 2009 & 2018) and lateral hydraulic conductivities at boundary cells. Translating modeled boundary conditions from the Seaside Subbasin to the Monterey Subbasin is not completely accurate because the MBGWFM has a single model layer representing the Paso Robles and Santa Margarita aquifers, whereas the Seaside Basin model has each aquifer as a separate model layer. Early GSP implementation will include improving the MBGWFM boundary conditions so that the two models have more closely aligned hydrogeologic conditions at their shared boundary.
6-23/6.4.1.1.3	918 AFY of net annual inflows from the Seaside Subbasin into the Monterey Subbasin. These flows are represented as positive in Table 6-1 because even though there are both inflows and outflows from Seaside basin to the Monterey Subbasin, overall there is net inflow from the Seaside Subbasin to the Monterey Subbasin. Estimates of the magnitude of these inflows is ~~generally~~ not consistent with those estimated by the Seaside Basin Groundwater Flow Model (Hydrometrics 2009 & 2018). The probable reason for this is discussed in Section 6.2.2, which also identifies the modeling limitations to be addressed within the first five years of GSP implementation.
6-28/6.4.2.1.3	1,310 AFY of net annual inflows from the Seaside Subbasin into the Marina-Ord Area WBZ.
6-33/6.4.3.1.3	392 AFY of net annual outflows from the Corral de Tierra Area WBZ into the Seaside Subbasin.
6-36/6.5.1	Seaside Basin Groundwater Flow Model. Final (September 2018) historical groundwater elevations output from the Seaside model (Hydrometrics 2009 & 2018) were used to develop projected groundwater elevations at the Seaside Area Subbasin boundary. As discussed in Section 6.2.2, the model boundary condition heads output from the Seaside Basin Groundwater Flow Model represent the Paso Robles and Santa Margarita aquifers separately, while the MBGWFM combines those into one model layer. It is recognized the translation of heads is inaccurate because of the model layer differences between the two models. The MBGWFM's boundary condition assumptions will be improved to address the issue within this first five years of GSP implementation

6-38/6.5.1.3	Each of these boundary condition scenarios are predicated on the assumption that (a) the 180/400 Foot Aquifer subbasin will be managed to its SMCs over the 50-year projected model period and (b) Seaside subbasin, which is an adjudicated subbasin, will be managed sustainably such that groundwater levels remain stable into the future. However, the Seaside Basin Watermaster's modeling (using the Seaside Basin Groundwater Flow Model) found that it would be impossible for the Laguna Seca subarea of the Seaside subbasin to be managed such that groundwater levels would remain stable in that subarea in the future. The reason for this is that even if all pumping within the Laguna Seca Subarea were to be discontinued (an infeasible undertaking) groundwater would flow in an easterly direction out of the Laguna Seca subarea and into the Corral de Tierra subarea. This would be caused by low groundwater levels in the Corral de Tierra subarea compared to groundwater levels in the easterly portion of the Laguna Seca subarea. This highlights the importance of raising groundwater levels within the Corral de Tierra in order to not impede the ability of the Seaside subbasin to be sustainably managed.
6-39/6.5.1.3	The Seaside basin is subject to adjudication requirements that require that rates of groundwater extraction within the Subbasin not exceed the estimated basin safe yield. As such, in all three boundary conditions scenarios, groundwater levels in the adjudicated Seaside basin are assumed to remain stable into the future. However, as noted in Section 6.7, and contrary to the language in Section 6.5.1.3, the Seaside Basin Watermaster predictive modeling of the Laguna Seca subarea of the Seaside subbasin found that groundwater levels in the eastern portion of the Laguna Seca subarea could not be managed such that groundwater levels would remain stable, even if all pumping in the Laguna Seca subarea stopped, because of the effects of pumping in the Corral de Tierra Subarea. This boundary condition assumption discrepancy will be addressed and resolved during the early stage of implementation of the GSP. Water levels along the Seaside Subbasin boundary have been set to model predicted values at the end of the Historical Period (i.e., September 2018) in the Marina-Ord Area or at the established MTs (i.e. based on ~~2015~~ 2008 water levels) in the Corral de Tierra Area wherever they were below MTs at the end of the Historical Period.
6-49/6.5.4.1.3	However, inflows from the Seaside Basin will also be significantly influenced by groundwater levels in the Seaside basin, which have been assumed to stay constant at 2018 levels[10]. However, as noted in Section 6.7, and contrary to the language in Section 6.5.1.3, the Seaside Basin Watermaster's predictive modeling found that it would be impossible for the Laguna Seca subarea of the Seaside subbasin to be managed such that groundwater levels would remain stable in that subarea. Further analysis of potential inflows and outflows along the Seaside subbasin boundary is proposed as part of proposed future modeling efforts identified in implementation action Future Modeling of Seawater Intrusion and Projects, Section 9.5.6.
6-63/6.7	*Incomplete conceptualization of Principal Aquifer units in the Seaside Basin Groundwater Flow Model.* The Seaside model does not explicitly simulate groundwater flow from each principal aquifer unit defined in the Monterey

	Subbasin GSP, but rather uses a unique conceptualization of aquifer units that is primarily based on the main geologic formations encountered in the Seaside Area Subbasin (i.e., the Aromas Sands, Paso Robles Formation, and Santa Margarita/Purisima Formations). As such, there is considerable uncertainty surrounding the assumptions employed to link outputs from the Seaside model to individual layers of the MBGWFM[15], which may impact resulting calculations of Seaside Area Subbasin exchanges within the water budget. Further analysis of potential inflows and outflows along the Seaside subbasin boundary is proposed as part of proposed future modeling efforts identified in implementation action Future Modeling of Seawater Intrusion and Projects, Section 9.5.6.

To: Teo Espero <tespero@mcwd.org>
Subject: Re: Groundwater Sustainability Planning - Erika Marx

Groundwater Sustainability Planning

Name	Erika Marx
Organization	US Army Presidio of Monterey
Email Address	erika.r.marx.civ@mail.mil
Chapter	9
Section	Table 9-1 (M2)
Page Number(s)	395
Comments	The US Army Garrison Presidio of Monterey (USAG POM) is currently developing plans to decommission a 66-inch diameter stormwater outfall located within the Fort Ord Dunes State Park. The outfall, owned by USAG POM, currently discharges stormwater collected from approximately 4,657 acres that span multiple jurisdictions, including USAG POM (Ord Military Community), City of Seaside, State Parks, and Bureau of Land Management. Cumulative discharge volumes range from 21 AF (85th percentile storm event) up to 364 AF (100-year storm event). USAG POM (Ord Military Community) contributes approximately 7% of the total runoff volume. USAG POM is planning to install a percolation pond to manage the runoff from the Ord Military Community only (excluding privatized military housing areas); all other jurisdictions that discharge stormwater to the outfall will be required to implement their own stormwater management alternatives. The outfall decommissioning and construction of the percolation pond is anticipated to occur in FY25. USAG POM is interested in discussing with the GSA whether this percolation pond could be beneficial to the GSP. Depending on the location, the percolation pond could potentially contribute to subbasin recharge.

From:	Tina Wang
To:	Qiwen Zhang
Subject:	Fw: Review on Monterey-subasin
Date:	Tuesday, November 23, 2021 8:52:25 AM

Tina Wang, P.E.
EKI Environment & Water, Inc.
2001 Junipero Serra Boulevard, Suite 300
Daly City, California 94014
T: (650) 292-9100 | D: (650) 292-9050
twang@ekiconsult.com | www.ekiconsult.com

From: Emily Gardner <gardnere@svbgsa.org>
Sent: Monday, November 1, 2021 10:02 AM
To: Tina Wang <twang@ekiconsult.com>; Patrick Breen (pbreen@mcwd.org) <pbreen@mcwd.org>
Cc: Abby Ostovar <aostovar@elmontgomery.com>
Subject: Fwd: Review on Monterey-subasin

Comment for Monterey Subbasin.

Thanks,

Emily

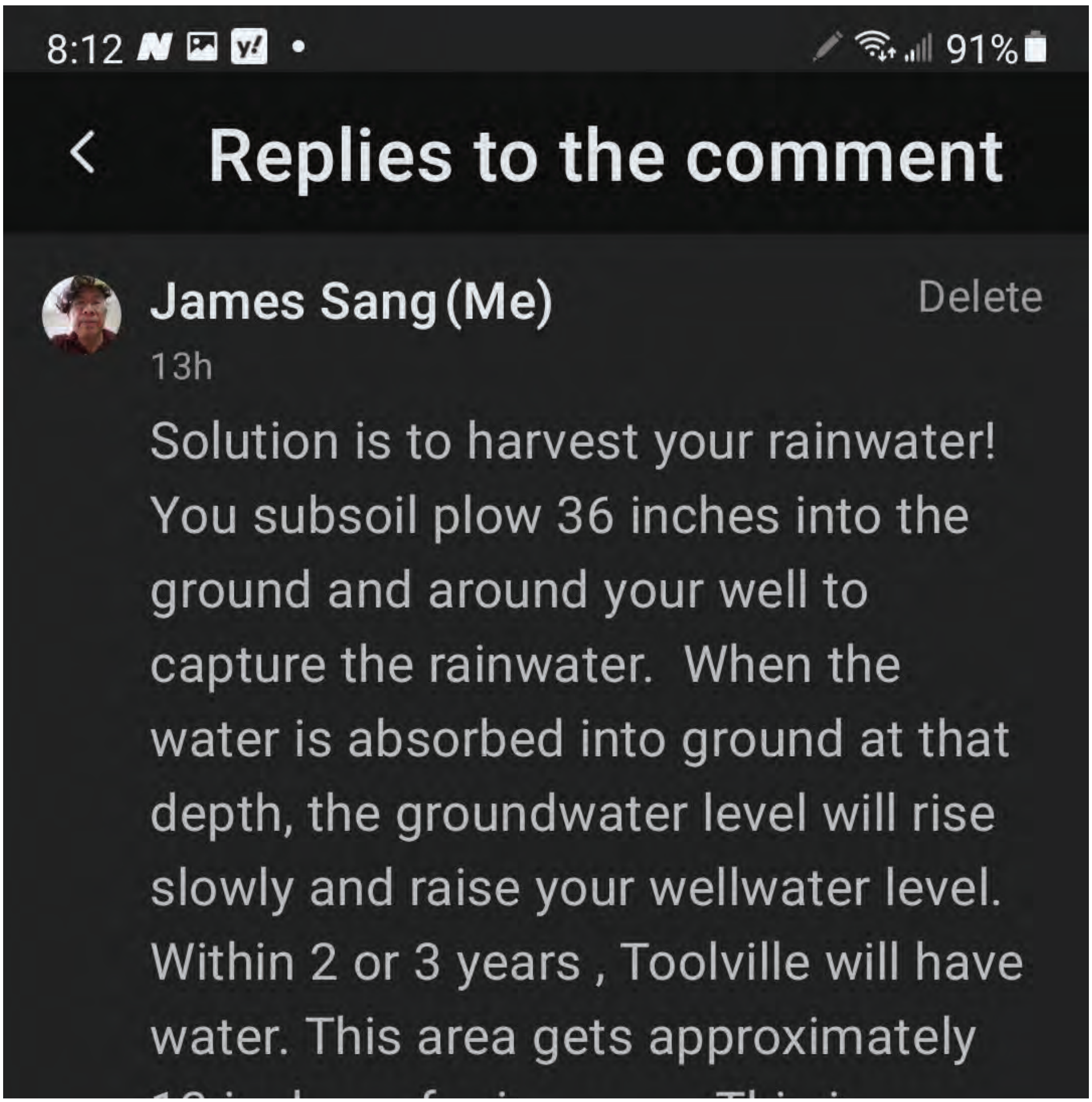
---------- Forwarded message ---------
From: **Yahoo Mail** <sangjames@yahoo.com>
Date: Sun, Oct 31, 2021 at 10:26 PM
Subject: Review on Monterey-subasin
To: Donna Meyers <meyersd@svbgsa.org>, Emily Gardner <gardnere@svbgsa.org>, Gary Petersen <peterseng@svbgsa.org>, svgbsa clerk <clerk@svbgsa.org>, Derrik Williams <dwilliams@elmontgomery.com>, Abby Ostovar <aostovar@elmontgomery.com>, BoardSVBGSA <board@svbgsa.org>
Cc: john phillips <district2@co.monterey.ca.us>, Chris Lopez <district3@co.monterey.ca.us>, wendy askew <district4@co.monterey.ca.us>, mary adams <district5@co.monterey.ca.us>, luis alejo <district1@co.monterey.ca.us>, Tony Barrera <tonyb@ci.salinas.ca.us>, Carla Gonzalez <carlag@ci.salinas.ca.us>, Anthony Rocha <anthonyr@ci.salinas.ca.us>, Kimberly Craig <kimbleyc@ci.salinas.ca.us>, Orlando Osernio <orlandoo@ci.salinas.ca.us>, Steve McShane <stevem@ci.salinas.ca.us>, james sang <sangjames@yahoo.com>, david jacobs <davidj@ci.salinas.ca.us>, Robert Rivas <robert.rivas@asm.ca.gov>, Anna Caballero <senator.caballero@senate.a.gov>, Melissa Hurtado <senator.hurtado@senate.ca.gov>, Marisa Hernandez <marisa.hernandez@sen.ca.gov>, Andrew Fisher <afisher@ucsc.edu>, Andrew Millison <millisan@hort.oregonstate.edu>, Bruce Taylor <btaylor@taylorfarms.com>, Kia Vang <kia.vang@sen.ca.gov>, Sarah <hardgraves@co.monterey.ca.us>, christine cromenes <district5@ci.salinas.ca.us>, Christopher Neely <chris@mcweekly.com>, California dept of water resources . groundwater <sgmps@water.ca.gov>, Diane Kennedy <dianeckennedy@prodigy.net>, diana.marcum@latimes.com <diana.marcum@latimes.com>, Gary Tanimura

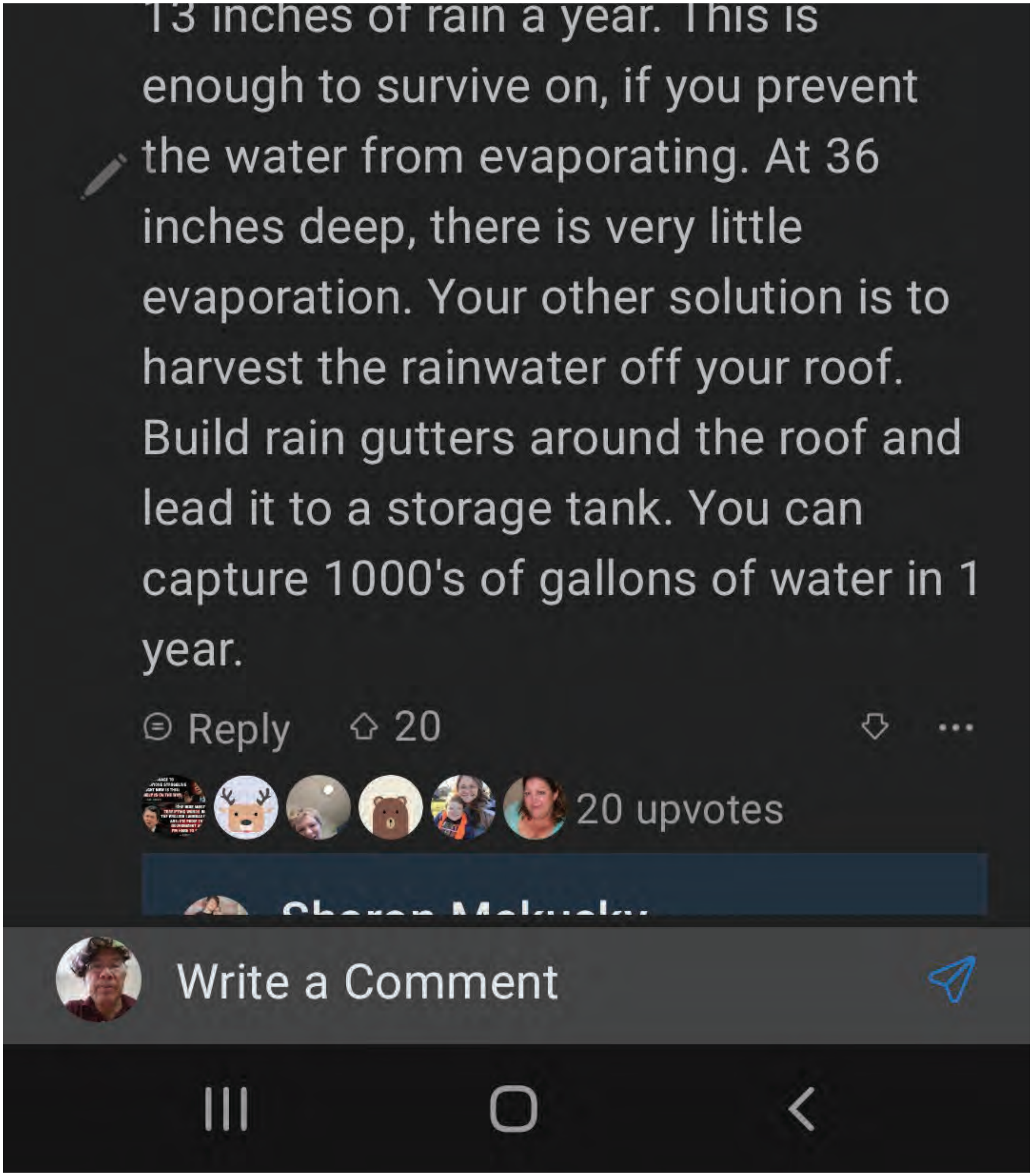
<garytanimura@comcast.net>, John Abatzoglou <jabatzoglou@ucmerced.edu>, Jimmy Panetta <ca20jpima@mail.house.gov>, Keith Van Der Maaten <kvandermaaten@mcwd.org>, Lois Henry <sjvwater@sjvwater.org>

These my thoughts about the Monterey Subbasin. Please forward this to all the Subcommittee heads and members.

First, the below is a comment that I typed on how I would solve the drought problem in Tooleville, California. This is a response to an article written in the LA Times.

----- Forwarded Message -----
From: Yahoo Mail <sangjames@yahoo.com>
To: james sang <sangjames@yahoo.com>
Sent: Saturday, October 30, 2021, 08:13:02 PM PDT
Subject:





Hello All,

These are the solutions that have been proposed to make the Monterey Sub-basin sustainable
1. They have proposed limiting pumping , fallowing land, buying property owners land. This is a terrible idea. This means less agricultural sales, lay off of employees, reducing the sales of all businesses in Monterey County. 2. Waste water recycling. This means upgrading existing CUS waster treatment plant. I like this idea even though it is super expensive. The capital cost is $28,635,000 and will only give us 232 acre feet of water per year. We should be able to recycle at least 70 percent of the water, which should help reduce the amount of groundwater pumping. This should help future growth in this area. A problem

that may be happening is that Cal Am may be forced to not take any more water from the Carmel River and they are a major supplier of water in this area. This has not been discussed. 3. Check dams are proposed on the tributaries in the Coral de Tierra area. These little dams are supposed to slow down the flow of stream water and allow it to be absorbed in the ground. The cost is $5,143,000 and give us 150 acre feet of water. I wonder if the designers of this project have considered that if the drought continues, we will get less and less rainfall and that even this small 150 acre feet of water will not be attainable, if climate change is real. With the increased CO2 production and the burning of our forest, which produces the water vapor to help precipitation. I would think that our rainfall will decrease. At least that has been what has been happening the last ten years or more. 4.They are proposing de-salination at a cost of $395,000,000 for an impressive addition of 15,000 acre feet water per year. Will we be able to afford this? I would like to know the arguments for and against this project. 5. They want to increase groundwater production from Upper Corral to the lower Corral at a cost of $13,275,000 for a benefit of 160 acre feet of water a year. Is this possible with the current lowering of our groundwater levels and will this source of water be for the long term? This project has not been discussed. 6. They want to introduce roof top rainwater capture and graywater reuse. The cost will be $100,000 for the classes and the benefit will be 5 acre feet of water per year for 75 households. I like roof top rain capture. If it rains 12 inches per year and you have a 1000 square foot area of roof, you can store 7,440 gallons a year. Currently our average rainfall is about 16 inches per year. In the Toro area, 39 percent of the wells have above average arsenic levels. Monterey County should notify these people and ask them to add a water filtration system to filter out the arsenic or go to roof top water harvesting and filter this water out for potable use. 7. Storm water recharge is a good idea. This diverts water off the streets, sidewalks, nonagricultural water and into swales. The cost is $200,000 to educate the people and can recharge 182 acre feet of water a year into swales, if it rains enough. Best practices require that this water be run over vegetation in order to detoxify it. If this is not done, you will be introducing street toxins into your groundwater and aquifers. There are other projects but they don't effect the Monterey sub basin.

The data on sustainable yield(amount of water coming in versus going out) for the Marina District(half of the Monterey sub-basin) and the Corral de Tierra(half of the Monterey sub-basin) area is not precise. An estimate is Marina District is minus 4000 acre feet of water a year and the Corral de Tierra is minus 3000 acre feet of water a year. None of these projects come close to bringing the Monterey sub-basin to sustainability except for maybe the de salination project and the benefits of that project will be spread to maybe the 180-400 sub-basin and the Eastside sub-basin . The completion of a de-salination project is years away and millions of dollars away. By that time we will all be THIRSTY!!

As I have mentioned before, the DWR's goal of water sustainability in the basins is incorrect! The goal should be to recharge and raise the water levels of each well. This is where the growers and the domestic users need to have their water. Do you really expect the growers and domestic users to drive their trucks to the area where the water is and fill their trucks and drive back?!! If we reach sustainability (water in equals water out) and some wells are still going dry, what will you do?? Build a pipe line here and build another pipeline there. This would be an endless project!!

We have a better chance of solving the water problems by using my idea of either subsoil plowing 2 or 3 feet or to build swales and trenches around the well heads in order to capture the rainwater every year. With the rainwater capture near the well head, we have a good chance of raising the well water levels, raising the groundwater levels and raising the water aquifer levels. These projects may only last the rainiest months (November, December, January) or last the full rainy season(October, November, January, February, March). After this they can plow over this area and grow their produce. This subsoil plowing and trenching can be done on any land to make it more water sustainable . Domestic well users can also implement this project, but on a smaller scale. Remember 1 acre of subsoiled or trenched land at 12 inches of rainfall a year will capture 350,000 gallons of water!

Other issues: 1. The Marina District area has a lot of toxins in the old Fort Ord area. These should be remediated as soon as possible before any recharge can be done. Maybe Assemblyman Richard Rivas or Senator Anna Caballero can help. There are approximately 15 areas that have to be cleaned. 2. There is over 9,000 acre feet of water going into 180-400 sub-basin yearly from the Monterey sub-basin. This might be caused by severe pumping by growers in the 180-400 subbasin. 3. Any further construction in this area should have their rooftop water go into recycling. 4. $7,000,000 has been awarded to the 180-

400 sub-basin. I would like see some of that monies go to using the technique of subsoil plowing and swale building in the Salinas Valley 5. About arsenic poisoning, this is a class 1 carcinogen . If you have to much arsenic in your blood increase your folic acid intake to 400 mcg and you will urinate it out [Folic acid supplementation lowers blood arsenic by Gamble, etc.]

Thanks for reading, any questions , please ask

James Sang sangjames@yahoo.com

--

Luhdorff & Scalmanini
Consulting Engineers

November 1, 2021

Marina Coast Water District Groundwater Sustainability Agency
11 Reservation Road
Marina, CA 93933
Attn: Patrick Breen, Water Resources Manager
Email: pbreen@mcwd.org

Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Attn: Emily Gardner, Deputy General Manager and Derrik Williams, GSP Project Manager
Email: gardnere@svbgsa.org; dwilliams@elmontgomery.com

SUBJECT: Comments on Monterey Subbasin Public Draft GSP Chapter 6

Dear Mr. Breen, Ms. Gardner, and Mr. Williams:

This letter is submitted on behalf of California American Water and provides comments on Chapter 6 (Water Budget) for the Public Draft Monterey Subbasin GSP Chapter 6 released on September 3, 2021. It also includes a brief review of how previous comments by the Hydrogeologic Working Group (HWG) on Monterey Subbasin GSP Chapters 4 (HCM) and 5 (Groundwater Conditions), which are attached to this comment letter, were not addressed in the recently released Public Review Draft versions of these chapters. Detailed comments are provided along with a summary of the main comments.

DETAILED COMMENTS

Specific comments are organized by subsection with page numbers referenced below.

Section 6.1 (Water Budget Method)

- The GSP states that the water budget information is based on use of a groundwater flow model developed for the subbasin (p. 6-8). **Comment: The model documentation (Appendix 6B) was not provided for review; thus, it is not possible to provide complete comments on the water balance without being able to review documentation for the model used to produce the water balance. Without the supporting documentation, stakeholders and the public are not able to adequately comment on the relevant issues.**

- The GSP states that a soil moisture budget (SMB) accounting model is used to estimate groundwater recharge (p. 6-10). **Comment: While Appendix 6-A provides some tables with output data from the SMB, no model documentation is provided. Thus, it is not possible to provide complete comments on the water balance without being able to review documentation for the SMB model used to**

provide key input to the groundwater model and water balance. Without the supporting documentation, stakeholders and the public are not able to adequately comment on the relevant issues.

- The GSP states, "As discussed in Appendix 6B, the MBGWFM has been calibrated against 30,354 historical water level measurements to achieve normalized calibration error statistics of less than 2% and thus adequately represents the historical conditions of the Basin. Therefore, it is appropriate to use the MBGWFM to estimate water budgets for the Monterey Subbasin." (p. 6-10). **Comment: Appendix 6B was not provided for review. While good calibration to water levels is important, it does not in and of itself validate use of the model for producing a valid water balance. Other key considerations include the fact that simulated water levels and subsurface inflows/outflows can be highly variable depending on boundary conditions. Thus, various combinations of recharge, discharge, aquifer parameters, and boundary conditions can produce similarly good model calibrations to water levels (i.e., models are non-unique). For example, a groundwater model with less vertical recharge could produce a good calibration to groundwater levels with a different set of aquifer parameters and/or boundary conditions. Therefore, additional justification is needed for use of the model for water balance output, such as comparison to adjacent subbasin water balances and the amount of vertical recharge (e.g., precipitation recharge, excess irrigation recharge) per acre. For example, the 180/400-Foot Aquifer Subbasin historical water budget has vertical recharge amounting to 0.22 ft/acre compared to the Monterey Subbasin historical water budget with vertical recharge of 0.33 ft/acre, or 50% greater vertical recharge than the immediately adjacent 180/400-Foot Aquifer Subbasin.**

- The GSP states, "To quantify all required water budget components as specified in the GSP Emergency Regulations (CCR § 354.18(b)), this GSP presents results from both the SMB for the land surface system and the MBGWFM for the groundwater system." (p. 6-11). **Comment: The GSP Emergency Regulations (CCR § 354.18(b.1)) require, "Total surface water entering and leaving a basin by water source type." A surface water budget is not provided in Chapter 6; this would include total streamflow and any imported water entering and leaving the Monterey Subbasin.**

<u>Section 6.2 (Water Budget Components)</u>

- The GSP states that inter-basin cross-boundary flows (e.g., between the Monterey Subbasin and the 180/400 Aquifer Subbasin) are based on model general head boundary conditions (p. 6-15). **Comment: The details of the general head conditions used (i.e., heads, conductance) are not provided and cannot be reviewed. Presumably such details would be provided in the Model Documentation in Appendix 6B if it were made available for public review.**

<u>Section 6.4 (Historical and Current Water Budget)</u>

- GSP Table 6-1 provides historical and current groundwater water budget results (p. 6-20). **Comment: The historical and current Monterey Subbasin water budgets show net subsurface outflows of 12,265 to 12,565 AFY to the 180/400-Foot Aquifer Subbasin. Review of the DWR-approved GSP for the 180/400-Foot Aquifer Subbasin shows historical and current water balance net subsurface**

inflows from the Monterey Subbasin of 3,000 AFY. Thus, there is a large discrepancy between the two GSPs regarding subsurface cross-boundary flows. If the Monterey Subbasin GSP cross-boundary flows are correct, the difference between inflows and outflows for the historical groundwater budget for the 180/400-Foot Aquifer Subbasin GSP changes from -12,900 AFY to -3,635 AFY, which has significant implications for the 180/400-Foot Aquifer Subbasin GSP. In general, this uncertainty in cross-boundary flows also points out that subbasin sustainability should be based (primarily) on balancing the vertical components of recharge and discharge. This eliminates the uncertainty regarding cross-boundary flows (and associated dependency) in evaluating projects/management actions needed to achieve sustainability.

- A footnote to Table 6-1 states, "All seawater inflows from the ocean are presumed to leave the Monterey Subbasin across the 180/400 Foot Aquifer Subbasin boundary, as evidenced by no observed expansion of the seawater intrusion front in the Monterey Subbasin over the historical time period." (p. 6-20). This issue is also discussed in the first bullet at the top of page 6-23, and first bullet at the top of page 6-24. **Comment: Review of seawater intrusion maps prepared by MCWRA indicates this statement/conclusion is not correct – the seawater intrusion front in Monterey Subbasin has expanded over the historical time period.**

- GSP Figure 6-4 (p. 6-21) indicates subsurface flow occurs from the Corral de Tierra Area to the Marina Ord Area. **Comment: Review of topography and studies by others (e.g., Geosyntec, 2007) indicates essentially no flow between the two Areas, but rather subsurface flow from the Corral de Tierra Area strictly to the 180-400 Foot Aquifer Subbasin. The water balance for Marina-Ord Area assumes such subsurface inflow amounts to 1,544 AFY, but this is likely not the case.**

- The GSP states that outflows to the ocean occur from the Dune Sand Aquifer (p. 6-22). **Comment: The HCM and groundwater elevation contour maps indicate that the Dune Sand Aquifer and 180-Foot Aquifer merge inland of the coast where the FO-SVA aquitard pinches out and the combined groundwater flow moves inland. The GSP presents no evidence of outflow to the ocean.**

- The GSP notes that estimated net annual inflows/outflows between the Monterey Subbasin and the Seaside Subbasin are consistent with the estimates from the Seaside Basin Groundwater Flow Model. However, this same statement of consistency is not made by the GSP for estimated net annual inflows/outflows between the Monterey Subbasin and the 180/400 Foot Aquifer Subbasin. **Comment: As noted above, there is a major discrepancy between the 3,000 AFY of net inflow to the 180/400 Foot Aquifer Subbasin from the Monterey Subbasin estimated in the 180/400 Foot Aquifer Subbasin GSP versus the 12,365 AFY of net inflow to the 180/400 Foot Aquifer Subbasin estimated in the Monterey Subbasin GSP.**

- The GSP notes that the Dune Sand Aquifer has seaward gradients that result in 534 AFY of net outflow to the ocean (p. 6-23). **Comment: The groundwater elevation contour maps presented in Chapter 5 do not include data points near the coast and provide no evidence of outflow to the ocean. In fact, other data indicate there is no outflow to the ocean from the Dune Sand Aquifer as described above.**

- The GSP states that groundwater elevations in the 180/400 Foot Aquifer Subbasin are 40 feet below mean sea level (MSL) in the 180 and 400-Foot Aquifers and 100 feet below MSL in the Deep Aquifer

(p. 6-24). **Comment: It should also be noted here that groundwater elevations in the Monterey Subbasin are 20 to 30 feet below MSL in the 180 and 400-Foot Aquifers and 50 to 70 feet below MSL in the Deep Aquifer.**

- Figure 6-5 (p. 6-27) shows an area of seawater intrusion in Monterey Subbasin with arrows showing groundwater flow directions in this area. The text describes these arrows as, "…the general direction of presumed freshwater and seawater cross-boundary flows…" (p. 6-28). The GSP also states, "…it is difficult to predict if seawater inflows from the ocean will continue to pass through the Monterey Subbasin into the 180/400 Foot Aquifer subbasin as they did during the historical period." (p. 6-42). **Comment: The area of seawater intrusion does not match the sea water intrusion maps prepared by MCWRA and does not distinguish seawater intrusion in the 180-Foot Aquifer vs. 400-Foot Aquifer as done by MCWRA. In addition, the groundwater flow direction arrows within the zone of seawater intrusion are incorrect and do not correlate with the groundwater elevation contours included on the map, which indicate a portion of the groundwater within the seawater intrusion zone flowing towards the middle inland portion of Monterey Subbasin. It is not clear why the groundwater flow directions shown are based on "presumed" directions rather than the flow arrows that would be derived based on actual groundwater elevation contour lines shown on the figure.**

- The GSP states, "…pumping in the Corral de Tierra Area is estimated using the known data, and may be missing a significant amount of pumping." (p. 6-33). **Comment: If a significant amount of pumping is not accounted for in the Corral de Tierra Area, then subsurface outflow is significantly overestimated.**

<u>Section 6.5 (Projected Water Budget)</u>

- Projected water demands for the MCWD service area are estimated to increase from 3,367 to 8,314 AFY, and it is assumed that increased pumping would be divided evenly between the 180 and 400 Foot Aquifers and the Deep Aquifer based on historical MCWD operations (pp. 6-37 and 6-38). **Comment: Given the evolution of MCWD pumping distribution between the Deep Aquifer and shallower aquifers to the point where Deep Aquifer pumping has apparently increased to become more than two-thirds of total MCWD pumping in recent years, it is apparent that the 180 and 400 Foot Aquifers cannot accommodate the proposed future pumping increases stated in the GSP. The future model scenario should assign all future increases in pumping to the Deep Aquifer. This pumping distribution will likely have a major effect on future scenario model results.**

- The GSP states that model boundary conditions used in future scenarios include: minimum thresholds (MT), measurable objectives (MO), and seawater intrusion protective boundary conditions (p. 6-38). **Comment: The seawater intrusion protective boundary conditions are not defined in terms of what they are or how they were derived, or how likely they are to occur. Since they are not provided in GSPs for adjacent subbasins as likely to occur, they do not seem appropriate to use.**

- The GSP states that for the MT Boundary Conditions in the projected model scenario run, "Groundwater levels in RMS wells located near the Monterey Subbasin are raised from 2018 model predicted values to water level MTs established in the 180/400 Foot Aquifer GSP…" (p. 6-38). **Comment: Review of water level data from MCWRA indicates that 2015 to 2016 water levels**

were generally lower than 2018 water levels. The 180/400-Foot Aquifer Subbasin GSP set MTs one foot above 2015 water level elevations. Thus, it is not clear why model-predicted 2018 water levels in boundary condition areas would need to be raised to be at MT levels established in the 180/400-Foot Aquifer Subbasin unless model-predicted groundwater elevations for 2018 were substantially lower than observed values. If model-predicted values are substantially lower than observed values in boundary condition areas, the model would likely significantly overestimate groundwater outflow from the Monterey Subbasin to the 180/400-Foot Aquifer Subbasin.

- The GSP states that seawater intrusion protective elevations are, "…consistent with the MTs for seawater intrusion established in the 180/400 Foot Aquifer GSP." (p. 6-39). **Comment: Based on this statement, it is not clear how seawater intrusion protective elevations differ from MT elevations. Several figures in the GSP suggest seawater intrusion protective elevations are much higher than MT elevations.**

- The GSP Project Scenario calls for increased use of recycled water from 600 AFY in 2023 to 5,495 AFY in 2040, with total demand in 2040 and beyond of 10,955 AFY. **Comment: This Project scenario assumes that recycled water can provide 50% of total water demand for MCWD, which is likely unrealistic. In addition, other documents (MCWD Urban Water Master Plan, MCWD Water Supply Master Plan) indicate future recycled water use would be limited to no more than 1,500 AFY.**

- The GSP states, "…the projected water budget results indicate that the climate scenarios have a much smaller impact on changes in storage and groundwater levels within the subbasin than the identified boundary conditions." (p. 6-43). **Comment: While this statement may be true relative to horizontal groundwater flows, it is not true with regard to vertical groundwater recharge that increases substantially (about 10 to 20%) under future climate change scenarios. Additional projected model runs should be made using historical groundwater recharge amounts due to the significant uncertainty in future groundwater recharge increases.**

- GSP Table 6-5 (Comparison of Projected Water Budget Results Under "No Project" Scenarios with Variable Boundary Conditions and 2030 Climate Condition, Marina-Ord Area WBZ) shows 8,767 AFY of groundwater pumping versus 6,823 AFY of total groundwater recharge (p. 6-45). **Comment: Under these scenarios groundwater pumping exceeds groundwater recharge by approximately 2,000 AFY and is not sustainable.**

- The GSP states, "…ocean inflows into the basin also decrease as water levels at this boundary increase from MTs, to MOs, and to SWI protective elevations…However, there is little reduction in net ocean inflows between the historical water budget and the projected baseline water budgets under MT boundary conditions or MO boundary conditions." (p. 6-48). **Comment: This statement would seem to indicate that ocean inflows are driven by Monterey Subbasin groundwater elevations.**

- The GSP states, "…projected water budgets also indicate that substantial groundwater outflows from Monterey Subbasin continue to occur into the 180/400-Foot Aquifer Subbasin under MT and MO boundary condition scenarios." **Comment: It should be determined how much of this groundwater outflow across Subbasin boundaries is due to sea level rise.**

- With respect to the Marina-Ord Area, the GSP states, "…these projected water budget results indicate that this management area will not be in overdraft if adjacent basins are managed sustainably and SMCs are achieved." (p. 6-50). **Comment: Given that pumping exceeds recharge by 2,000 AFY in in the Marina-Ord Area per Table 6-5, it is not clear how this Area can be considered to not be in overdraft under projected future conditions.**

- The GSP states, "…it is difficult to predict if…changes in boundary conditions and increased extraction in the subbasin could cause saline groundwater from the 180/400 Foot Aquifer subbasin or ocean to flow further inland within the Monterey subbasin. It is noted that MCWD has significant operational flexibility regarding rates of extraction from its wells and could potentially modify the location and depth at which groundwater is extracted to limit such impacts." (p. 6-50 to 6-51). **Comment: The groundwater model should be able to provide some indication of the potential for saline water from the ocean to flow further inland within the Monterey Subbasin. As discussed in other comments, MCWD does not appear to have operational flexibility on depth of extraction and additional pumping is likely to occur from the Deep Aquifer.**

- In reference to Figure 6-8, the GSP states, "This figure indicates that variable climate conditions have limited impacts on projected water levels in RMS wells relative to boundary condition scenarios." (p. 6-51). **Comment: This figure and the associated statement here are misleading with regard to the impacts of variable climate conditions assumed in the future scenario. The future climate change assumptions result in an increase in groundwater recharge ranging from 10 to 20%, which is highly uncertain. A better approach would be to assume groundwater recharge in the future will be similar to historical groundwater recharge. The assumption of increased future groundwater recharge may exacerbate overdraft that is already predicted to occur even with the assumed increased in groundwater recharge (see Table 6-5 where groundwater pumping exceeds future groundwater recharge by approximately 2,000 AFY).**

- The GSP states, "…these results suggest that projects and/or management actions may be required to consistently maintain water levels above MTs and to achieve MOs within the Marina-Ord Area unless SWI protective boundary conditions are achieved in the adjacent subbasins." (p. 6-51). **Comment: The 180/400 Foot Aquifer Subbasin GSP is approved by DWR with the MO/MT included in the GSP. It is not reasonable to evaluate/assume boundary conditions could be at the apparently much higher "SWI protective boundary conditions". Thus, it should be assumed that projects/management actions will be required in Monterey Subbasin to maintain water levels above MTs and achieve MOs within the Marina-Ord Area.**

- GSP Figure 6-8 indicates that Monterey Subbasin does not meet its MT when using MT boundary conditions for adjacent basins and does not meet its MO when using MO boundary conditions for adjacent basins in future project model runs for "No Project" conditions (p. 6-52). **Comment: These results demonstrate that projects/management actions will be necessary to meet MT and MO in Monterey Subbasin. The GSP Project with water supply augmentation by recycled water of 5,500 AFY far exceeds any other current projections of available recycled water (less than 1,500 AFY in MCWD UWMP).**

Section 6.6 (Historical, Current, and Projected Overdraft and Sustainable Yield)

- The GSP presents three methods of calculating sustainable yield of the Marina-Ord Area (p. 6-59 to 6-60). **Comment: Two of the three methods are based on comparing historical and current overdraft to groundwater pumping during these time frames, with resulting sustainable yield ranging from 2,714 to 3,294 AFY, or an average of approximately 3,000 AFY. This estimate is likely reasonable given that historical and current pumping amounts ranging from 3,503 to 4,346 AFY have resulted in groundwater basin overdraft and seawater intrusion. The third method of calculating sustainable yield in the GSP erroneously concludes that the projected water budget results support an estimated sustainable yield of 9,870 AFY, which is three times the amount of groundwater pumping that has already resulted in overdraft and seawater intrusion. Furthermore, this sustainable yield estimate is on the order of 50% greater than total groundwater recharge. While the GSP claims a sustainable yield of up to 9,900 AFY, it is clear from historical and current data that the sustainable yield of the Marina-Ord Area is likely no greater than about 3,000 AFY.**

- The GSP states that under the "no project" scenario RMS well groundwater levels "…are generally higher than MTs during non-drought periods under all identified boundary conditions and climate scenarios…" and that RMS well groundwater levels "…reach MOs if SWI protective boundary conditions are achieved in adjacent subbasins." (p. 6-60). **Comment: Review of Figure 6-7 indicates that groundwater levels are below the MTs more than 50% of the time after 2040 under MT boundary conditions, which is contrary to statements in the GSP. In addition, the DWR-approved 180/400 Foot Aquifer Subbasin GSP does not propose to achieve SWI protective groundwater levels; therefore, Monterey Subbasin RMS wells will not achieve proposed MOs.**

- The GSP states that the future projected sustainable yield ranges between 4,400 and 9,900 AFY if adjacent subbasins are managed sustainably and the 180/400 Foot Aquifer Subbasin reaches its SMCs (p. 6-60). **Comment: While there is some interdependence between subbasins that may impact the sustainability of adjacent subbasins, each subbasin in the Salinas Valley needs to be managed sustainably on its own to make the entire Salinas Valley sustainable. The 180/400 Foot Aquifer Subbasin GSP has been approved by DWR as doing its part to achieve sustainability. Seaside Basin has been adjudicated and is doing its part to be sustainable. Monterey Subbasin cannot rely on inflows from other subbasins (e.g., from Seaside Basin) nor simply blame other subbasins (e.g., the 180/400 Foot Aquifer Subbasin) for its own inability to reach sustainability. The Monterey Subbasin should do its part to become sustainable by balancing its vertical inflows and outflows (i.e., do not include adjacent subbasin inflows and outflows), including a sufficient allowance for outflows to the ocean to avoid seawater intrusion. Alternatively, Monterey Subbasin GSAs may choose to work with the adjacent 180/400 Foot Aquifer Subbasin to develop other means of achieving sustainability such as by implementing a coordinated groundwater extraction barrier to address seawater intrusion.**

- The GSP states with regard to the projected sustainable yield range for the Marina-Ord Area of 4,400 to 9,900 AFY, that that ability to conduct this amount of pumping without inducing seawater intrusion needs to be verified (p. 6-60). **Comment: It is not clear why pumping amounts in excess of historical pumping amounts that induced seawater intrusion would be proposed in a GSP without first**

verifying that they would not be expected to induce seawater intrusion. The groundwater model developed for the GSP should be applied to address this issue.

OTHER GENERAL COMMENTS

- The HWG previously reviewed Draft GSP Chapters 4 and 5 for the Monterey Subbasin, and provided comments dated April 5, 2021 (attached to this letter). While the HWG comments were acknowledged as being received by the GSA, the Public Draft versions of Chapters 4 and 5 include no significant changes to the text or figures related to the HWG comments. Furthermore, unlike responses provided to other comments submitted on the draft GSP chapters, there have been no responses to the HWG comments. Given that GSP development is a public process that is required include substantial public and stakeholder participation, and given that GSPs must be based on the best available science, the GSP should be revised to address the HWG's comments and the comments set forth herein. If the GSAs disagree with any of the subject comments, the GSAs should at the very least provide responses to the comments as they did for other comments.

- Chapter 6 of the GSP makes several references to details of the groundwater model being described in Appendix 6B; however, Appendix 6B had not been provided for review as of October 29, 2021, and comments were due on November 1, 2021. Given that the entire Chapter 6 is essentially based on the groundwater model developed for the GSP, the GSAs' failure to provide this model documentation precludes stakeholders and the public from being able to adequately review and comment on a foundational element of the entire GSP. The GSP cannot undergo adequate review until a sufficient review period is provided for Appendix 6B Model Documentation, and additional time should be provided to comment on Appendix 6B once it is provided to the public.

SUMMARY OF COMMENTS

The Monterey Subbasin GSP emphasizes in several places that subbasin sustainability is dependent on adjacent subbasins becoming sustainable. While there is some interdependence between subbasins that may impact the sustainability of adjacent subbasins, the GSAs in the Monterey Subbasin should focus on their role in making the Subbasin sustainable. This is best achieved by comparing groundwater recharge (just the vertical components of flow from the soil moisture balance, not including subsurface inflows form adjacent subbasins) in the Marina-Ord Area to groundwater pumping in the Marina-Ord Area. In addition, there needs to be excess groundwater recharge over and above total pumping for significant outflow to the ocean to prevent seawater intrusion.

A summary of several other major Chapter 6 comments includes:

- Groundwater model documentation is key to understanding the water balance, but is not included in available Public Draft GSP documents made available for review;
- Soil moisture budget accounting model documentation is key to understanding the water balance, but is not included in available Public Draft GSP documents made available for review;
- The surface water system water budget required under SGMA is not provided;
- There is a major inconsistency in estimated net subsurface inflow between the Monterey Subbasin and the 180/400 Foot Aquifer Subbasin presented in the GSPs for the two subbasins (i.e., 12,500 AFY vs. 3,000 AFY);

- The extent of seawater intrusion within the Monterey Subbasin has expanded over the historical period covered by the GSP, which is in contrast to statements/assumptions in the GSP;
- Some of the boundary conditions used in the groundwater model for future project scenarios are not realistic and are inconsistent with the 180/400 Foot Aquifer Subbasin GSP;
- The GSP Marina-Ord Area water balance indicates that increases in groundwater pumping for the future project scenario are not realistic and are not sustainable, because they exceed Marina-Ord Area groundwater recharge and do not allow for outflow to combat seawater intrusion;
- Future project scenarios should be more conservative and should not assume groundwater recharge will increase in the future by 10 to 20% due to climate change;
- Groundwater model results indicate that MTs and MOs will likely not be achieved in the Monterey Subbasin if realistic boundary conditions are applied; and
- The sustainable yield estimate of 4,400 to 9,900 AFY for the Marina-Ord Area is significantly overestimated, and will likely have detrimental impacts on adjacent subbasins (i.e., the Seaside Basin and the 180/400 Foot Aquifer Subbasin).

Thank you for the opportunity to provide these comments.

Sincerely,

LUHDORFF AND SCALMANINI
CONSULTING ENGINEERS

Peter Leffler

Peter Leffler,
Principal Hydrogeologist

Attachment: HWG Comments on Draft Monterey Subbasin Groundwater Sustainability Plan, Chapters 4 and 5, dated April 5, 2021

April 5, 2021

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SUBJECT: HWG COMMENTS ON DRAFT MONTEREY SUBBASIN GROUNDWATER SUSTAINABILITY PLAN, CHAPTERS 4 AND 5

Dear Mr. Breen, Ms. Gardner, and Mr. Williams:

This letter provides the comments of the Hydrogeologic Working Group (HWG) on the Draft Monterey Subbasin Groundwater Sustainability Plan (GSP) Chapters 4 and 5. This letter provides both an Executive Summary highlighting some of our main comments, and a Detailed Comments section. It should be noted that the Executive Summary and Detailed Comments provided in this letter are not necessarily intended to be comprehensive, and additional comments may be provided at a later time.

EXECUTIVE SUMMARY

Our comments on the Draft Monterey Subbasin GSP Chapters 4 and 5 generally relate to the following items: description of geologic conditions, conclusions regarding groundwater conditions, preferential use of airborne electromagnetics (AEM) data over field data, and hydrogeologic interpretation of AEM data. Our high-level summary comments on Draft GSP chapters 4 and 5 are provided below, with a detailed comments section following this Executive Summary.

HWG summary comments on Chapters 4 and 5 are:

- The GSP presents a hydrogeologic conceptual model (HCM) with some inaccuracies based on invalid hydrogeologic interpretations of the AEM surface geophysics and other data that is not in agreement with available field data including boring logs, aquifer test, groundwater level, and groundwater quality data;
- The GSP does not utilize the most up-to-date hydrogeologic conceptual model for the northern Monterey Subbasin and southern 180/400 Aquifer Subbasin area in understanding the

hydrogeology of the area even the though the HWG conducted the most recent and extensive investigation of the hydrogeology specific to this area (e.g., HWG Technical Report, November 2017);

- Groundwater levels/quality and aquifer/aquitard continuity are mischaracterized in the northern Monterey Subbasin and southern 180/400 Aquifer Subbasin due to: inappropriate application of the Fort Ord Site Conceptual Model to this area; use of inaccurate hydrogeologic interpretations from AEM data; and lack of using all available field data and the most recent comprehensive hydrogeologic conceptual model of the area;
- The Dune Sand Aquifer (DSA) is not a Principal Aquifer and has been misclassified in the Monterey Subbasin GSP, and is in conflict with the 180/400 Foot Aquifer Subbasin GSP where the Dune Sand Aquifer is not classified as a Principal Aquifer;
- The inaccurate HCM analyses create conflicts with the 180/400-Foot Aquifer Subbasin GSP;
- While the HWG concur that achieving sustainability within the 180/400-Foot Aquifer Subbasin is important for achieving sustainability within Monterey Subbasin, the cause of depressed groundwater elevations and seawater intrusion in the Monterey Subbasin is mischaracterized as essentially being entirely due to pumping within the 180-/400-Foot Aquifer Subbasin and Seaside Subbasin; however, pumping from wells within Monterey Subbasin have played a major role in historical/current undesirable groundwater conditions and the Monterey Subbasin needs to do its part in achieving local and regional sustainability;
- The Monterey Subbasin GSP relies primarily on a study conducted by WRA Environmental (and by reference a study by Formation Environmental) in its discussion of groundwater dependent ecosystems (GDEs); however, there are many concerns about the methods/conclusions used in these studies to establish groundwater dependency of ecosystems that have been documented previously by HWG and supplemented by a recent study conducted by Geoscience/AECOM.

More specific and detailed comments on Monterey Subbasin Draft GSP chapters 4 and 5 are provided below.

DETAILED COMMENTS

Chapter 4 – Hydrogeologic Conceptual Model

1. The GSP states, "The geology described here is based on previously published scientific reports from investigations conducted by the USGS, State of California, other consulting firms, and academic institutions."(Section 4.1.1, Geological and Structural Setting, p. 64).

HWG Comment: *We note that extensive field work conducted by the HWG between 2013 and 2018, including test slant well installation/testing, drilling of several borings and installation of an extensive monitoring well network, extensive data analyses covering the coastal southern 180/400-Foot Aquifer Subbasin and coastal northern Monterey Subbasin are documented in publicly available reports prepared by the HWG and posted on the Monterey Peninsula Water Supply Project (MPWSP) website (e.g., HWG,* *November 2017). These HWG documents incorporated data from previous studies by others (many of which are cited in the Monterey Subbasin GSP), and allowed for improved hydrogeologic interpretations by incorporating both existing and new field data collected by HWG. The Monterey Subbasin GSP ignores these HWG documents and makes geologic interpretations that are inconsistent with the most recent data that has been collected. Some of the specific inconsistencies are noted in other comments in this letter.*

2. The GSP mischaracterizes the Dune Sand Aquifer in multiple instances in Chapter 4. One example is the attempt to label the Dune Sand Aquifer as a "Principal Aquifer" (Section 4.2.1, Hydrogeology in the Marina-Ord Area, Table 4-1, page 79).

HWG Comment: *The Dune Sand Aquifer is not a Principal Aquifer in the subbasin. The Draft GSP prepared by City of Marina (2019) stated the Dune Sand Aquifer, "…is not commonly used for drinking water or agricultural irrigation". The Monterey County Water Resources Agency (MCWRA), which has studied and characterized the groundwater basin for many decades, does not consider the Dune Sand Aquifer as a principal aquifer (e.g., no seawater intrusion maps are prepared for the Dune Sand Aquifer by MCWRA). The 180/400-Foot Aquifer Subbasin GSP, which the MCWD GSA adopted and submitted to DWR, also does not classify the Dune Sand Aquifer as a Principal Aquifer. The Dune Sand Aquifer is not a Principal Aquifer due in part to its lack of capability for use in groundwater production (e.g., thin saturation, groundwater quality issues related to sea water intrusion and nitrates, etc.). In addition, the Hydrogeology section for the Corral de Tierra Area in Monterey Subbasin GSP Chapter 4 states that following about the upper 120 feet of sediments, "Several small domestic wells draw groundwater from these local alluvial aquifers, but these volumes of groundwater are minimal…Since this volume of groundwater is neither economic or significant, these shallow sediments are not considered a principal aquifer…Groundwater in these sediments is hydraulically connected to the small streams found in the area…" (page 111 of Chapter 4). This conclusion for the Corral de Tierra Area is inconsistent with designating the Dune Sand Aquifer, which cannot even claim to be tapped by "several small domestic wells", as a Principal Aquifer. As noted above, designation of the Dune Sand Aquifer as a Principal Aquifer is inconsistent with the 180/400-Foot Aquifer Subbasin GSP (where the Dune Sand Aquifer also is present), which specifically did not designate the Dune Sand Aquifer as a Principal Aquifer. It is also important to point out that the Dune Sand Aquifer, as defined in the Monterey Subbasin GSP, consists of two distinct aquifers – the coastal Dune Sand Aquifer that directly overlies the 180-Foot Aquifer and the perched/mounded Dune Sand Aquifer (known as the A-Aquifer in Fort Ord studies) that overlies the Fort-Ord Salinas Valley Aquitard (FO-SVA) clay layer (incorrectly referred to as Salinas Valley Aquitard in the Monterey Subbasin GSP). The coastal Dune Sand Aquifer is intruded with sea water, while the perched/mounded Dune Sand Aquifer is perched in areas, has thin saturation, is impacted by nitrates, and is not developed with production wells for any significant water supply uses.*

3. The GSP relies on old geologic cross-sections from 2001 (Section 4.2.1.1, Cross-Sections, pages 80-85).

HWG Comment: *The cited geologic cross-section references and Figures 4-9 through 4-12 do not utilize best available science and most recent borehole and geophysical logs for wells drilled in the area, nor do* *they utilize the most recent geologic cross-sections developed based on these data (see HWG, November 2017). This results in mischaracterization of hydrogeologic conditions for the GSP Plan Area. Geologic cross-sections that use the latest available data and include areas within the Monterey Subbasin are provided in previously published HWG documents (HWG, November 2017; HWG et al., February 2020).*

4. With regard to the Dune Sand Aquifer, the GSP states, "The aquifer is perched further away from the coast in areas where the SVA exists… " (Section 4.2.12, Principal Aquifers, page 86).

HWG Comment: *The HWG agrees with this GSP statement about the Dune Sand Aquifer being perched in areas where it is underlain by the SVA (more correctly referred to as the FO-SVA). However, perched aquifers should not be designated as Principal Aquifers as is being done in the Monterey Subbasin GSP.*

5. The GSP refers to an average saturated thickness of the Dune Sand Aquifer being approximately 50 feet (Section 4.2.12, Principal Aquifers, page 86).

HWG Comment: *As described above, there are two distinct aquifers being referred to collectively in the GSP as the Dune Sand Aquifer. While the coastal DSA may have a saturated thickness of 50 feet or more in some areas, the perched/mounded DSA has a saturated thickness considerably less than 50 feet.*

6. The GSP does not distinguish and describe the differences between the Salinas Valley Aquitard (SVA) and Fort-Ord Salinas Valley Aquitard (FO-SVA) and its significance to the perched/mounded aquifer (underlain by FO-SVA) versus the Dune Sand Aquifer and its equivalents (not underlain by FO-SVA) in many places in the document (Chapter 4).

HWG Comment: *It should be noted that the SVA and FO-SVA are not the same aquitard and FO-SVA occurs at a higher elevation; therefore, they should not be referred to as the same aquitard.*

7. The GSP shows a Conceptual Site Model diagram that was developed from Fort Ord studies, and implies that the Fort Ord Conceptual Site Model diagram applies throughout the Monterey Subbasin (Section 4.2.1.2, Principal Aquifers, Figure 4-13, p.87).

HWG Comment: *Recent studies completed by the HWG demonstrate that the Fort Ord Conceptual Site Model does not apply in the southern portion of the 180/400 Foot Aquifer Subbasin or the northern portion of the Monterey Subbasin. In particular, the concepts of an Intermediate 180-Foot Aquitard and lack of a 180/400 Foot Aquitard do not apply outside of Fort Ord. Work completed by HWG demonstrates that the 180-Foot Aquifer is one vertically continuous aquifer and that the 180/400 Foot Aquitard is present (HWG, November 2017).*

8. The GSP states that horizontal hydraulic conductivity in the DSA ranges from 0.14 to 120 feet/day (Section 4.2.1.2, Principal Aquifers, p.87).

HWG Comment: *It is important to distinguish the two major portions of what is referred to in the GSP as the DSA – coastal and perched/mounded. While the coastal DSA does have K values on the higher end of the cited range, perched/mounded portion of the DSA only has K values at the lower end of the cited range.*

9. The GSP makes general statements on hydrogeologic interpretations of AEM data, including outside of the GSP Plan area (Section 4.2.1.2, Principal Aquifers, p. 88).

HWG Comment: *It is not clear why the GSP is speculating on aquifer conditions outside of the Monterey GSP Plan Area based solely on AEM data, and without consideration of geologic and well data. The GSP also provides no demonstration/evidence of how these conclusions were reached. The HWG has previously provided extensive documentation of erroneous hydrogeologic interpretations of the AEM data (HWG, November 2017, January 2018, August 2018, January 2019, March 2019, and April 2019). The HWG April 2019 document clearly demonstrates with field data that the hydrogeologic interpretations of aquitard gaps from the AEM study are invalid. Furthermore, as described above, MPWSP monitoring well borehole logs demonstrate that areas of uncertain aquitard continuity identified by MCWRA (who did not have MPWSP monitoring well borehole data available to them at the time of their study) near the northern Monterey Subbasin boundary are no longer uncertain and clearly have significant aquitard material present. Furthermore, review of water level and water quality data for the MPWSP clearly demonstrate the presence and continuity of the 180/400-Foot Aquitard in this area.*

The Monterey Subbasin GSP does not describe the applicability of the concept of a sea water wedge (i.e., where sea water intrusion occurs, less saline water often overlies more saline water in a given aquifer) to explain the expected presence of less saline water overlying more saline water in some areas of the vertically continuous 180-Foot Aquifer. The presence of less saline water in the upper portion of an aquifer does not demonstrate the aquifer is not sea water intruded. Furthermore, given the standard of 500 mg/L chloride applied by MCWRA for defining the area of seawater intrusion, the AEM data collected in the area are not capable of distinguishing between a chloride concentration below the standard (e.g., 200 mg/L) from a chloride concentration above the standard (e.g., 600 mg/L) given inherent uncertainties in AEM data interpretation and the complicating variable of lithologic influences on AEM data.

10. The GSP states, "South of the City of Marina, in a portion of the former Fort Ord, the 180-Foot Aquifer is separated into an "upper" zone of sandy deposits with some gravel and a "lower" zone of gravel with sand and clay lenses; the two zones are separated by a thin clay layer (Ahtna Engineering, 2013). Data collected within the former Fort Ord show that significant head differences exist between the upper and lower ones of the 180-Foot Aquifer." (Section 4.2.1.2, Principal Aquifers, p. 91).

HWG Comment: *The HWG agrees that the area where this conceptual model applies is in a portion of former Fort Ord to the south of the City of Marina. However, the GSP implies this conceptual model (illustrated in Figure 4-13) applies throughout the GSP Plan Area, including north of Reservation Road, which is not correct as documented in work by HWG that is not referenced in this GSP (e.g., HWG, November 2017).*

11. The GSP discussion of the "Middle (180/400) Aquitard" suggests it is not present beneath the majority of the Marina-Ord Area, and implies this conceptual model applies throughout the Monterey Subbasin as illustrated by Figure 4-13 (Section 4.2.1.2, Principal Aquifers, p. 91).

HWG Comment: *As noted above with other aspects of the conceptual model presented in Figure 4-13, the concept that the 180/400 Foot Aquitard is not present in northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin is erroneous (see recent work by HWG not referenced in the GSP, as well as MCWD well logs). For example, HWG work demonstrates similar groundwater elevations in the upper and lower 180 Foot Aquifer (MW-6), and significantly different groundwater elevations and fluctuations in the 180 and 400 Foot Aquifers (multiple MPWSP monitoring wells).*

12. The GSP states, "The Lower 180-Foot Aquifer zone and the 400-Foot Aquifer in the vicinity of the City of Marina are functionally the same due to the missing Middle (180/400-Foot) Aquitard in this area." (Section 4.2.1.2, Principal Aquifers, p. 94).

HWG Comment: *As discussed above with other aspects of the Site Conceptual Model (Figure 4-13), this characterization does not apply to Northern Monterey Subbasin, contrary to what is stated/implied in the GSP.*

13. The GSP states, "Near the Monterey-Seaside subbasin boundary, a depression exists in the groundwater potentiometric surface of the 400-Foot Aquifer…These data suggest that a potential connection may exist between the 400-Foot Aquifer and the Deep Aquifer in this area." (Section 4.2.1.2, Principal Aquifers, p. 94.)

HWG Comment: *There is no geologic evidence provided in the GSP to support this statement. Preliminary review of geologic data (lithologic logs and Elogs) by HWG for MPWMD FO-10 and FO-11 indicate presence of sufficient thicknesses of clay layers to serve as aquitard layers between the 400-Foot and Deep Aquifers at this location.*

14. The GSP states, "As shown in Section 6 below, groundwater flow direction in the 400-Foot Aquifer is strongly influenced by groundwater pumping in the Salinas Valley Groundwater Basin, inland of the Monterey Subbasin." (Section 4.2.1.2, Principal Aquifers, p. 94)

HWG Comment: *A primary theme of this GSP here and elsewhere is that pumping in the 180/400 Foot Aquifer Subbasin is essentially solely responsible for seawater intrusion in the 180-Foot Aquifer and 400-Foot Aquifer within Monterey Subbasin, and for depressed Deep Aquifer groundwater elevations in the within Monterey Subbasin. However, the history of groundwater development in the Monterey Subbasin demonstrates how groundwater production wells developed for MCWD and Fort Ord resulted in seawater intrusion in the 180-Foot Aquifer and 400-Foot Aquifers in Monterey Subbasin (for example, see quote below from Harding ESE, 2001). In addition, Deep Aquifer groundwater elevations were fluctuating around sea level prior to pumping of Deep Aquifer wells by MCWD that dropped Deep Aquifer groundwater elevations well below sea level. Thus, groundwater pumping from wells screened in the 180-Foot, 400-Foot, and Deep Aquifers within Monterey Subbasin have played a significant role in historical/current seawater intrusion and depressed groundwater elevations within Monterey Subbasin.*

Harding ESE (2001) states: "Seawater intrusion beneath the city of Marina was observed soon after installing several production wells in the 180-Foot Aquifer (MCWD-1, the first city well, was installed in

1956). Subsequent seawater intrusion into this area was closely related to ground water withdrawal by the city of Marina and former Fort Ord. Deteriorating water quality forced the city of Marina to discontinue pumping most of its 180-Foot Aquifer wells by the late 1970's and install water-supply wells in the 400-foot (MCWD-8, -8a, and -9) and Deep Aquifers (MCWD-10, -11, and-12)."

15. The GSP states with respect to the Deep Aquitard (otherwise known as 400 Foot/Deep Aquitard), "There is no analysis available for its spatial occurrence or geologic composition." (Section 4.2.1.2, Principal Aquifers, p. 95).

HWG Comment: *The GSP could have conducted the "missing" analysis of the aquitard for the Monterey Subbasin given that several MCWD production wells (e.g., MWCW 10, 11, 12) and other wells (e.g., USGS deep nested monitoring well, agricultural wells) have available lithologic and geophysical logs. Such an analysis would demonstrate the presence of a 200 to 300 foot thick clay layer (i.e., 400/Deep Aquitard) between the 400-Foot Aquifer and uppermost Deep Aquifer Zone. The lack of seawater intrusion in the Deep Aquifer, which has groundwater elevations on the order of 50 to 100 feet below sea level in the northern Monterey Subbasin area and a strong vertically downward gradient from the 400-Foot Aquifer, combined with high salinity in the 400-Foot Aquifer within and surrounding the northern Monterey Subbasin also shows the strong integrity of the aquitard between the 400-Foot Aquifer and Deep Aquifer. T*he large difference in water levels between the 400-Foot Aquifer and Deep Aquifers also provides evidence of a thick/tight aquitard separating these aquifer zones.

16. The GSP describes the Reliz Fault as displaced the Monterey Formation, which is the base of the Deep Aquifer, shifted downward on the northeast side by 1,000 feet. It then states the fault does not appear to impede groundwater flow within the Dune Sand Aquifer, 180-Foot Aquifer, or 400-Foot Aquifers (Section 4.2.1.3, Structural Restrictions to Flow, p. 98).

HWG Comment: *The GSP does not comment on the possibility of the Reliz Fault altering groundwater flow within the Deep Aquifer.*

17. This section of the GSP begins, "This Section presents a general discussion of the natural fresh groundwater quality in the Marina-Ord Area, focusing on general geochemistry (Section 4.2.1.4, General Water Quality, p. 98).

HWG Comment: *Given the significance of historical and ongoing seawater intrusion in the Dune Sand Aquifer, 180-Foot Aquifer, and 400-Foot Aquifer in the Marina-Ord Area, it is unclear why this section would only describe the fresh water within the Marina-Ord Area.*

18. With regard to the Dune Sand Aquifer, the GSP states, "Groundwater in this aquifer is primarily fresh; minimal seawater intrusion has occurred in this aquifer (Section 4.2.1.4, General Water Quality, p. 98).

HWG Comment: *The coastal Dune Sand Aquifer is intruded by seawater, as demonstrated by monitoring wells at the MCWD office on Reservation Road (Staal, Gardner & Dunne, 1991 and 1992; Fugro West, 1996, 2001) and in the vicinity of the CEMEX site (HWG, November 2017).*

19. The GSP states, "The Dune Sand Aquifer contributes recharge to the 180-Foot Aquifer…" (Section 4.2.1.4, General Water Quality, p. 98).

HWG Comment: *It should be noted that this recharge from the Dune Sand Aquifer to the 180-Foot Aquifer is minimal (likely on the order of a few hundred acre-feet per year). This recharge has not stopped seawater intrusion from occurring in this area.*

Chapter 5 – Groundwater Conditions

1. The GSP notes data sources used in the GSP, which includes documents/data for Monterey Peninsula Landfill (Section 5.1.1, Data Sources, p. 6).

HWG Comment: *We note that Monterey Peninsula Landfill (MPL) is not located within Monterey Subbasin. In addition, if data from Monterey Peninsula Landfill are being used, why are data from MPWSP monitoring network not being used. Notably, later in Chapter 5, the GSP uses AEM data outside of Monterey Subbasin and within the area of MPWSP monitoring network data, yet there is no use of MPWSP data that contradicts the hydrogeologic interpretation of AEM data provided in the GSP.*

2. The GSP states that the Dune Sand Aquifer is a Principal Aquifer and that the 180-Foot Aquifer contains two distinct layers, known as the upper- and lower- 180-Foot Aquifer (Section 5.1.2.1, Marina-Ord Area, p.7).

HWG Comment: *The Dune Sand Aquifer should not be designated as a Principal Aquifer, and is in conflict with the 180/400 Foot Aquifer Subbasin GSP in this regard. Furthermore, the splitting of the 180-Foot Aquifer into two distinct aquifers only applies in the Fort Ord area, and does not apply in northern Monterey Subbasin (HWG, November 2017). While the entire thickness of the 180-Foot Aquifer is intruded by seawater near the coast and for a significant distance inland, the presence of less saline water within the upper portion of the 180-Foot Aquifer further inland is merely a function of the nature of seawater intrusion wedges, and not a function of the presence of an intermediate aquitard within the 180-Foot Aquifer in northern Monterey Subbasin.*

3. The GSP describes groundwater flow conditions in the 180-Foot Aquifer, and states, "…inflow from the Dune Sand Aquifer protects the upper 180-Foot Aquifer from seawater intrusion." (Section 5.1.2.1, Marina-Ord Area, p.8).

HWG Comment: *Any groundwater flow that may occur from the Perched/Mounded portion of the inland Dune Sand Aquifer to the underlying 180-Foot Aquifer has historically not prevented seawater* *intrusion from occurring within the 180-Foot Aquifer, which has been and remains heavily intruded with seawater. Any claims to the contrary, such as in this referenced statement from the Monterey Subbasin GSP, are incorrect. As noted above, there are not geologically distinct Upper and Lower 180 Foot Aquifers in northern Monterey Subbasin. The amount of recharge from the Dune Sand Aquifer to the 180-Foot Aquifer is small, as can easily be demonstrated by calculation of the amount of precipitation recharge in the Dune Sand Aquifer within the area west of the groundwater divide that has potential to recharge the 180-Foot Aquifer (e.g., on the order of a few hundred AFY, before subtracting Ford Ord remedial pumping). Furthermore, in order to dilute incoming seawater to a fresh water concentration, there would need to be over 30 times more fresh water than seawater in the mixing zone to create a net fresh water condition. Thus, a few hundred AFY of fresh water can effectively only dilute about 10 to 20 AFY of incoming seawater.*

4. The GSP states, "…the lower 180-Foot Aquifer is hydraulically connected to the 400-Foot Aquifer in the Marina-Ord Area due to the discontinuous nature of the 180/400-Foot Aquitard within this region…As such, groundwater elevation and gradients in the lower 180-Foot Aquifer are similar to those in the 400-Foot Aquifer in the Marina Ord Area of the Subbasin…" (Section 5.1.2.1, Marina-Ord Area, p.8).

HWG Comment: *This characterization of the discontinuous nature of the 180-400 Aquitard is not applicable to the northern portion of the Monterey Subbasin. Groundwater levels in the 180-Foot Aquifer and 400-Foot Aquifer are clearly different and distinct in the northern half of Monterey Subbasin and in the adjacent 180/400-Foot Aquifer Subbasin (HWG, November 2017). The Monterey Subbasin GSP does not demonstrate the similarity or difference in groundwater elevations to justify its characterization.*

5. Figures 5-1 and 5-5 show the western extent of the FO-SVA north of Monterey Subbasin as extending to MPWSP MW-3.

HWG Comment: *The extent of FO-SVA shown on the maps is outdated and also does not incorporate more recent data and analyses based on the MPWSP borehole/well data. We also note that groundwater elevation figures for all units except the Dune Sand Aquifer extend northward across the Monterey Subbasin/180-400 Foot Aquifer Subbasin boundary, even though many Dune Sand Aquifer well locations are available and shown on the figures for the MPWSP and MPL monitoring networks. In addition, there are several monitoring wells located at the MCWD District office headquarters and treatment plant on Reservation Road near the coast (Staal, Gardner & Dunne, 1991 and 1992; Fugro West, 1996 and 2001).*

6. In describing groundwater elevations in the 400-Foot Aquifer the GSP states, "A local groundwater depression exists just north of the Monterey-Seaside Subbasin boundary where a potential connection between the 400-Foot Aquifer and the Deep Aquifers may be located ." (Section 5.1.2.1, Marina-Ord Area, p.8).

HWG Comment: *The GSP provides no geologic evidence for a potential connection at this location between the two aquifers. The GSP only cites to HLA (2001) for cross-sections in this area, but other geologic cross-sections are available to consider from previous reports (e.g., HWG, 2017; Yates et.al., 2005). The location of this depression, which is more centrally located within Monterey Subbasin than described in the GSP text, is only about 1.5 miles south of MCWD Deep wells where a thick (i.e., 200 to 300 feet) aquitard exists between the 400 Foot Aquifer and Deep Aquifer.*

7. GSP Figures 5-1 and 5-5 (Groundwater Level Contours in the Dune Sand Aquifer – Fall 2017 and Spring 2018) show locations of MPWSP and MPL wells, but do not use the data to prepare groundwater level contours.

HWG Comment: *It is not clear why the GSP maps would show these MPWSP/MPL well locations but not use the data. We also note that geologic and borehole geophysical data from these wells are not used in developing geologic cross-sections or to develop an understanding of the geologic conditions for the HCM. This is particularly noteworthy in that the GSP Chapter 5 later uses hydrogeologic interpretations from the AEM data in lieu of actual borehole/well data to derive different conclusions regarding the HCM that are not supported by borehole/well data.*

8. GSP Figures 5-2 and 5-5 (Groundwater Level Contours in the 180-Foot Aquifer – Fall 2017 and Spring 2018) show locations of only three of the MPWSP wells (MW-6, MW-8, and MW-9), and do not use data from MW-8 and MW-9.

HWG Comment: *It is not clear why the GSP maps only show selected MPWSP well locations and do not use most of the data from the selected wells that are shown on the maps. We also note that geologic and borehole geophysical data from these wells are not used in developing geologic cross-sections or in developing an understanding of the geologic conditions underlying the HCM. This is particularly noteworthy in that the GSP Chapter 5 later uses hydrogeologic interpretations from the AEM data in lieu of actual borehole/well data to derive different conclusions regarding the HCM that are not supported by borehole/well data. We also note that groundwater is indicated to flow inland from the ocean to a pumping center in the north central portion of Monterey Subbasin.*

9. Figures 5-3 and 5-7 (Groundwater level Contours in the 400-Foot Aquifer – Fall 2017 and Spring 2018) show a +10 feet MSL contour as the shoreline in Marina Subbasin.

HWG Comment: *There is no well control to support this +10 feet MSL contour line, or even the zero contour line. We note that groundwater elevations in the 400-Foot Aquifer for MPWSP MW-3 (very close to the shoreline) ranged from 0 to -15 feet NAVD88 during this time period. We also note that groundwater is indicated to flow inland from the ocean to a depressed area in the south central portion of Monterey Subbasin. The Fall 2017 groundwater levels show that the pumping depression in the southern central area of Monterey Subbasin contributes to a broader depression that extends to the 180/400 Foot Aquifer Subbasin. Spring 2018 groundwater levels appear to indicate occurrence of a temporal groundwater divide around the MCWD well field.*

10. The GSP states, "…water levels in the Dune Sand Aquifer increase and decrease during extended wet and dry periods." This statement is apparently in reference to Figure 5-11: Representative Groundwater Elevation Hydrographs in the Dune Sand Aquifer (Section 5.1.3.1, Long-Term Groundwater Elevation Trends, Marina-Ord Area, p. 21).

HWG Comment: *The seven hydrographs shown in Figure 5-11 do not appear to respond to wet and dry periods. The only short-term response observed is around the year 2000 in the hydrograph for MW-OU2-05-A. This apparent stability of groundwater levels in the Perched/Mounded portion of the Dune Sand Aquifer is quite unlike the seasonal fluctuations that occur in response to pumping in the underlying aquifers, and further confirms that the DSA is undeveloped and essentially undevelopable as a water supply and therefore not a Principal Aquifer.*

11. The GSP states, "Groundwater elevations in the Lower 180-Foot Aquifer are generally equivalent to those observed in the 400-Foot Aquifer…" (Section 5.1.3.1, Long-Term Groundwater elevation Trends, 180-Foot Aquifer, Lower 180-Foot Aquifer, p. 21).

HWG Comment: *The GSP provides no evidence that groundwater elevations in the Lower 180-Foot Aquifer are equivalent to those in the 400-Foot Aquifer. In addition, no geologic evidence is provided that defines distinct Upper and Lower 180-Foot Aquifers in terms of a continuous intermediate aquifer throughout the Monterey Subbasin. MPWSP monitoring well MW-6 is a nested well cluster with separate wells in the upper and lower 180-Foot Aquifer and shows essentially identical groundwater elevations and fluctuations – it is located along Blanco Road on the border of the Monterey Subbasin with the 180/400-Foot Aquifer Subbasin.*

12. The GSP states that groundwater elevation data for MPWMD#FO-10 and MPWMD#FO-11 suggest, "…(1) these wells are screened within sediments that connect directly to the Deep Aquifers; or (2) leakage is occurring from the 400-Foot Aquifer into the Deep Aquifers in the vicinity of these wells." (Long-Term Groundwater Elevation Trends, 400-Foot Aquifer, p. 22).

HWG Comment: *Insufficient evidence is provided to make the stated conclusions; for example, no geologic evidence is provided to support these claims. In addition, more groundwater elevation data are needed to evaluate the gradient and flow direction in this portion of the aquifer. Preliminary review of geologic data (lithologic logs and Elogs) by HWG for MPWMD FO-10 and FO-11 indicate presence of sufficient thicknesses of clay layers to serve as aquitard layers between the 400-Foot and Deep Aquifers at this location.*

13. GSP Figure 5-15 shows groundwater hydrographs for Deep Aquifer wells near the Monterey Subbasin and 180/400-Foot Aquifer Subbasin boundary. Figure 5-16 shows Deep Aquifer groundwater pumping over time. In reference to the adjacent 180/400-Foot Aquifer Subbasin, the GSP states that, "…groundwater elevations in wells located near Cooper Road and Blanco Road have declined more than 5 ft/year over the past 15 years."

HWG Comment: *We note that the three wells in the 180/400-Foot Aquifer Subbasin have data through about 2020 and generally show fluctuating but overall stable groundwater elevations from about 2015 to 2020. Several of the MCWD wells within the Monterey Subbasin shown in the figure are lacking data from about 2017 to 2020, but the overall trend from available data appears to be declining groundwater elevations within Monterey Subbasin from 2015 to 2020. We note that Figure 5-16 shows significant increases in both agricultural and urban pumping from the Deep Aquifer after 2013, with urban pumping comprising approximately half of the total Deep Aquifer pumping over that time period. Figure 5-16 shows a doubling of urban pumping between 2013 and 2018, but no discussion/explanation of the sharp jump in urban pumping is provided in the text. Overall, the characterization of recent Deep Aquifer groundwater elevation trends between the two subbasins in the text appears to be inaccurate based on review of the figures.*

14. The GSP states, "These downward vertical gradients are caused by areal surface recharge, groundwater extraction from deeper aquifers, and laterally extensive aquitards, which exist in the Marina-Ord Area." (Section 5.1.4, Vertical Hydraulic Groundwater Gradients, pp. 31-32).

HWG Comment: *We note that the GSP references the presence of laterally extensive aquitards separating Principal Aquifers throughout Monterey Subbasin, a statement that we agree with, and yet the conceptual model described in GSP Chapters 4 and 5 provides for essentially no aquitard between the 180-Foot and 400-Foot Aquifers and a big hole in the thick aquitard between the 400-Foot Aquifer and Deep Aquifers.*

15. The GSP states that in the central Marina-Ord Area the groundwater elevations in the upper 180-Foot Aquifer are 70 feet lower than in the Dune Sand Aquifer (Section 5.1.4, Vertical Hydraulic Groundwater Gradients, p. 32).

HWG Comment: *This 70 foot difference in groundwater elevation almost certainly reflects the presence of perched aquifer conditions in the Dune Sand Aquifer at this location, which is why the HWG refers to the portion of the so-called Dune Sand Aquifer overlying the FO-SVA as the Perched/Mounded Aquifer. This observation also begs the question of why the Dune Sand Aquifer is being classified as a Principal Aquifer in this GSP, when much of it is a thinly saturated perched aquifer.*

16. The GSP states, "Within the Monterey Subbasin, seawater intrusion has been documented in the northern portion of the lower 180-Foot and 400-Foot Aquifers." (Section 5.3, Seawater Intrusion, p. 36).

HWG Comment: *As discussed other HWG comments in this letter, the designation of a geologically distinct lower 180-Foot Aquifer does not apply in the northern portion of the Monterey Subbasin. The entire thickness of the 180-Foot Aquifer is intruded at the coast and for some distance inland, with a seawater wedge having formed further inland (i.e., less saline water overlying more saline water due to density differences).*

17. The GSP describes data sources used in their analysis of seawater intrusion for the GSP, which include two airborne electromagnetic (AEM) surveys (Section 5.3.1, Seawater Intrusion, Data Sources, p. 36).

HWG Comment: *We note that the GSP utilizes an AEM profile entirely within the 180/400-Foot Aquifer Subbasin that passes through/near several MPWSP boreholes/wells, yet the GSP does not use the readily available MPWSP borehole/well data in its analysis. Furthermore, the HWG has conclusively demonstrated in previous documents (e.g., HWG, April 2019) that hydrogeologic interpretations derived from AEM data are flawed and inconsistent with borehole/well data.*

18. The GSP devotes several pages and two figures (5-26 and 5-27) to describing AEM surveys, primarily a profile entirely outside of the Monterey Subbasin (Section 5.3.1.2, Geophysical Data, pp. 36-38, 41-42, and 45-46).

HWG Comment: *It is not clear why the GSP relies so heavily on AEM data (primarily outside the Monterey Subbasin) in its discussion of seawater intrusion (and disregards borehole/well data for the same area) – especially given the flaws in the hydrogeologic and groundwater quality interpretations made using AEM data previously described in multiple HWG documents (e.g., January, March, April 2019). The hydrostratigraphy shown on the AEM profiles (Figures 5-26 and 5-27) is incorrect; particularly with regard to its depiction of aquitards (i.e., the presence of a continuous intermediate aquitard within the 180-Foot Aquifer and absence of a 180/400 Aquitard). In essence, the GSP is inappropriately trying to apply the Fort Ord hydrogeologic conceptual model (developed for a limited area south of Reservation Road) throughout the northern Monterey Subbasin and into the adjacent 180/400 Foot Aquifer Subbasin. Field borehole/well data demonstrate that application of the Fort Ord HCM to northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin is incorrect. There is no evidence/basis to support the stratigraphic interpretations in Figures 5-26 and 5-27 related to the presence (or absence) of aquitards between various aquifers. We note that there are no control points for the majority of the cross-section in Figure 5-26, yet the figure implies an abundance of fresh water. Field water quality data from MW-7M do not match that indicated on the profile. The two profiles are inconsistent; where control points exist with a TDS color coded legend the profiles are not shaded accordingly; however, where no control points exist to validate AEM water quality the profiles are shaded.*

19. In describing the purpose of the AEM surveys, the GSP states, "The studies' goal was to evaluate the understanding of the hydrostratigraphy in the study area and to interpret that distribution of groundwater quality indicated by available well data." (Section 5.3.1.2, Geophysical Data, p. 37).

HWG Comment: *While this statement references "available well data", it does not actually cite or use available well data. Rather, the GSP interpretations of hydrostratigraphy and seawater intrusion in this section are based primarily on interpretations of AEM data that are at odds with well data (see various HWG documents such as January 2019, March 2019, and April 2019).*

20. The GSP describes how AEM data (i.e. electrical resistivity) are dependent on, "…the amount of clay, the amount of water, and/or the salinity of the water…" (Section 5.3.1.2, Geophysical Data, p. 37).

HWG Comment: *While we agree with this statement, these facts also point out the high level of uncertainty associated with interpretation of AEM data in this coastal seawater intruded setting where multiple variables are impacting recorded AEM (resistivity) values. This allows for multiple non-unique interpretations of AEM data to be made in such settings, which creates more uncertainty in those hydrostratigraphic and groundwater quality interpretations. The GSP itself acknowledges that water quality interpretation is "difficult to discern" for a wide range of AEM resistivity values. The GSP does not acknowledge that geochemical interpretation of AEM resistivity values even outside of the cited large range are still subject to uncertainties related to variation in lithologic/saturation conditions.*

21. The GSP states, "The AEM surveys have found that high salinity groundwater as a result of seawater intrusion exists within the lower 180-Foot Aquifer and 400-Foot Aquifers of the Monterey Subbasin. This volume of high salinity groundwater is overlain by fresh groundwater in the Dune Sand and upper 180-Foot Aquifers. The results of the AEM study are consistent with water quality data collected within the Subbasin (EKI, 2019)." (Section 5.3.1.2, Geophysical Data, p. 38).

HWG Comment: *Both the AEM data and borehole/well data demonstrate that the coastal Dune Sand Aquifer and essentially the entire thickness of the 180-Foot Aquifer are seawater intruded from the ocean shoreline to approximately one mile inland. At that point, the coastal Dune Sand Aquifer begins to transition to the Perched/Mounded Aquifer that overlies of FO-SVA that is generally not seawater intruded because it is an elevated thinly saturated perched aquifer further inland, and the fully seawater intruded area of the 180-Foot Aquifer transitions to a seawater intrusion wedge with less saline water overlying more saline water due to density differences. While the results of the AEM survey may be consistent with the primarily Perched/Mounded Aquifer groundwater quality data cited in EKI (2019), the AEM survey based hydrostratigraphic and groundwater quality interpretations are inconsistent with the groundwater quality data collected for the MPWSP (e.g., HWG, April 2019) and key MCWD and Seaside Basin wells.*

22. The GSP presents an analysis (Figure 5-23) that demonstrates the definition of 500 mg/L chloride as the threshold for defining seawater intrusion is equivalent to a TDS of 1,000 mg/L. The GSP also cites the State of California upper Secondary Maximum Contaminant Level of 1,000 mg/L for TDS (Section 5.3.2, Defining Seawater Intrusion, p. 40).

HWG Comment: *We concur with the use of 500 mg/L chloride (although a good argument can be made for use of 250 mg/L chloride as a better indicator) and 1,000 mg/L TDS as an appropriate standards/thresholds for drinking water and seawater intrusion. We note that the AEM studies (study authors and study proponents) continue to argue for a drinking water and seawater intrusion threshold of 3,000 mg/L TDS, but this is at odds with GSP stated seawater intrusion and drinking water standards/thresholds of 500 mg/L and 1,000 mg/L TDS. Furthermore, due to the significant uncertainties in AEM groundwater quality interpretations, the AEM studies primarily attempt to differentiate* *groundwater above and below 3,000 mg/L TDS. The use of AEM data with a lower cutoff value (e.g., 1,000 mg/L TDS) results in even greater uncertainty in interpreted results than are achieved using the already uncertain AEM interpretations based on a cutoff of 3,000 mg/L TDS. We note that the GSP adopts a double standard by saying seawater intrusion has occurred when TDS exceeds 1,000 mg/L or chloride exceeds 500 mg/L in the Deep Aquifer, yet concentrations of 3,000 mg/L TDS and over 1,000 mg/L chloride represent low-TDS groundwater that is considered a source of drinking water supply in the AEM studies cited in the GSP.*

23. In reference to the AEM profiles shown in Figures 5-26 and 5-27, the GSP states, "TDS and AEM data shown on these cross-sections confirm that seawater intrusion in the Monterey Subbasin primarily exists in the lower 180-Foot Aquifer and 400-Foot Aquifer, whereas groundwater in the Dune Sand and upper 180-Foot Aquifers remains fresh." (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, p. 41).

HWG Comment: *While the statement refers to Monterey Subbasin, it should be noted that the Figure 5-26 is located entirely outside (north of) Monterey Subbasin, and Figure 5-27 contains very little data for the AEM profile within Monterey Subbasin. Furthermore, we have previously commented (in this letter and previous documents) on the flaws in the hydrostratigraphic and water quality interpretations shown on these AEM profiles (e.g., HWG, April 2019). Actual borehole/well data show the coastal Dune Sand Aquifer and entire thickness of the 180-Foot Aquifer are heavily intruded with seawater at the coast and for a significant distance inland. We recommend that AEM data only be used where results can be clearly validated with actual lithologic and water quality data. By not using this approach, the groundwater conditions are being misrepresented.*

24. In reference to the 180-Foot and 400-Foot Aquifers, the GSP states, "It appears that seawater intrusion in these two aquifers forms a unified intrusion wedge, due to the discontinuity of the 180/400-Foot Aquitard near the coast." (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, p. 41).

HWG Comment: *The HWG has previously demonstrated the flaws and inaccuracies in the hydrostratigraphic/water quality interpretations from AEM data inherent in this statement (i.e., absence of 180/400 Aquitard) (see HWG, April 2019).*

25. The GSP states, "Based on available TDS and AEM data, Figure 5-28 depicts the estimated extent of seawater intrusion within the Monterey Subbasin." (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, p. 41).

HWG Comment: *The area covered by Figure 5-28 does not include the AEM profile shown in Figure 5-26 and the AEM profile in Figure 5-27 provides very little data for the mapped area in Figure 5-28. Therefore, Figure 5-28 presumably is based essentially exclusively on TDS data. Furthermore, the area covered by Figure 5-28 has separate 180-Foot and 400-Foot Aquifers separated by an aquitard, so one map is mixing data from different aquifers and should be revised to be two separate figures as is done by the MCWRA.*

26. The GSP states, "…the 180-Foot Aquifer in the Subbasin is divided by an intermediate aquitard into an upper zone and a lower zone. There is no observed seawater intrusion in the upper portion of the 180-Foot Aquifer." (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, pp. 41-42).

HWG Comment: *As discussed previously in this letter, the area covered by Figure 5-28 does not have a continuous intermediate aquitard in the 180-Foot Aquifer, does have a 180/400-Foot Aquitard, and seawater intrusion is present in a significant zone along (and inland of) the ocean throughout the entire thickness of the 180-Foot Aquifer (see HWG, 2017; Staal, Gardner & Dunne, 1992; Fugro West 1996 and 2001).*

27. In reference to Figure 5-28, the GSP states, "The figure shows that depressed groundwater elevations in the 180/400 Foot Aquifer Subbasin are creating inland groundwater gradients that are contributing to seawater intrusion within the Monterey Subbasin." (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, pp. 41-42).

HWG Comment: *It should be noted that there are also depressed groundwater elevations from groundwater pumping within the Monterey Subbasin that are contributing to inland groundwater gradients that are contributing to seawater intrusion within the Monterey Subbasin. In fact, the groundwater elevation contour map provided in Figure 5-28 indicates flow lines from the ocean end in a groundwater depression within the Monterey Subbasin. Furthermore, much greater historical pumping from Fort Ord and MCWD wells within the Monterey Subbasin created seawater intrusion within the Monterey Subbasin. Once seawater intrusion occurs, it requires many decades of maintaining seaward gradients to flush saline water back out of the aquifers.*

28. GSP Figure 5-24 purports to show TDS concentrations and the extent of seawater intrusion in Monterey Subbasin (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, p. 43).

HWG Comment: *The dark blue zone in the Dune Sand Aquifer map extending approximately 0.5 miles inland from the shoreline suggests presence of fresh water coastal Dune Sand Aquifer, which is attributed to the 2018 AEM Survey report according to the map legend. The light blue zone that presumably attempts to define TDS concentrations below 1,000 mg/L includes a lobe that extends west of the FO-SVA extent that is not supported by any well data. On the contrary, available well data from the MCWD office site on Reservation Road for the Dune Sand Aquifer shows significant seawater intrusion has occurred in the area the AEM Survey report shown to be fresh water in the Dune Sand Aquifer along the coast (Staal, Gardner & Dunne, 1991 and 1992; Fugro West, 1996a and 1996b; Fugro West, 2001).*

29. The GSP states, "…seawater continues to flow across the area that is intruded towards the 180/400 Foot Aquifer Subbasin, while there is minimal migration of seawater intrusion to inland areas of the Monterey Subbasin. (Section 5.3.4, Historical Progression of Seawater Intrusion, p. 48.)

HWG Comment: *While the title of this GSP section refers to "Historical Progression of Seawater Intrusion", it fails to actually discuss the historical progress of seawater intrusion within Monterey Subbasin. As indicated in seawater intrusion maps prepared by MCWRA (Appendix 5B), a significant lobe of seawater intrusion into the 180-Foot Aquifer and 400-Foot Aquifer solely within Monterey Subbasin occurred south of Reservation Road in the 1970's and 1980's. This initial seawater intrusion into Monterey Subbasin occurred as a result of groundwater pumping from MCWD and Fort Ord wells screened in the 180-Foot Aquifer and 400-Foot Aquifer production zones, which were sequentially abandoned and moved inland and/or deeper as seawater intrusion moved inland in response to pumping of MCWD and Fort Ord production wells (Harding ESE, 2001). Most of the saline water that was induced to flow into Monterey Subbasin in the 1970s and 1980s still resides in Monterey Subbasin aquifers, and remains part of the overall area of seawater intrusion that exists today.*

30. Figure 5-29 of the GSP (Total Dissolved Solid Concentration Trends in the Lower 180-Foot, 400-Foot Aquifer) shows historical and recent TDS concentrations in various wells, including MCWD Wells MCWD-29 and MCWD-31. (Section 5.3.4, Historical Progression of Seawater Intrusion, p. 49).

HWG Comment: *Figure 5-29 indicates TDS concentrations of approximately 400 mg/L during 2019 in MCWD-29 and MCWD-31. Review of the 2019 AEM Survey Report Table 4-1 shows that AEM based TDS concentrations in the zone screened by these wells is estimated to be greater than 1,000 mg/L (about three times the field measured concentrations). Based on analysis (AEM data is a major data source of mapping sweater intrusion in the GSP) and relationships between chloride and TDS established in the GSP (e.g., chloride concentrations of 500 mg/L equate to TDS concentrations of approximately 1,000 mg/L), it seems that MCWD wells MCWD-29 and MCWD-31 should be included within the area of mapped seawater intrusion. In fact, this discrepancy demonstrates how interpretation of AEM data with regard to water quality can result in significant errors relative to field measured data. Interpreted AEM data has also been shown to significantly underpredict TDS/chloride concentrations (e.g., HWG, April 2019) is some areas.*

31. The GSP relies on a study conducted by WRA Environmental (2020) to conclude that 19.51 acres of aquatic and upland biological communities at six ponds are dependent upon groundwater (Section 5.7.1, Groundwater Dependent Ecosystems, Coastal Vernal Ponds within the City of Marina, p. 68).

HWG Comment: *We note that the five authors of the report by WRA Environmental are all biologists, with no apparent contribution from a hydrogeologist to help evaluate groundwater conditions and dependence of the plant communities on groundwater. The only investigation of groundwater in the report was digging a hole to 14 inches in depth to look for soil saturation; however, these field efforts are inadequate to determine groundwater conditions at the sites because there may be shallow fine-grained sediment layers supporting perched/saturated soils in the upper few feet of soil. The WRA report also cites the fact that their field efforts were conducted in June 2020, well after the end of the rainy season, and water was still observed in most of the ponds (implying it must be groundwater). However, review of monthly precipitation data for the 2019 and 2020 water years indicates the 2019 year was very wet (133% of normal) and the 2020 water year was wet (105% of normal). In addition, heavy rainfall* *occurred in March and April 2020 (about 6.5 inches or close to half the average annual rainfall) with smaller amounts of rainfall in May and June; therefore, it would be expected that surface runoff remained in the ponds with near surface saturation at the time of WRA's June 2020 site visits. We also note that the WRA Report relies on other studies such as Formation Environmental (April 2020) and the draft City of Marina GSA GSP (2020). The HWG has previously commented on these studies, and Geoscience/AECOM conducted the most recent study on the vernal pools (HWG, November 2019; Geoscience and AECOM, August 18, 2020). Summary Geoscience/AECOM comments on the Formation Environmental TM included: 1) very limited use of available groundwater data from MPWSP MW-4 and MW-7 to one point in time without considering entire record and impact of agricultural irrigation return flows in immediate vicinity; 2) relies solely on ET data to justify conclusion that Armstrong Ranch Ponds are groundwater dependent without consideration of alternative water sources such a seasonal surface water from rainfall; 3) failure to account for perched aquifer conditions underlying area; 4) failure to account for effects of urbanization surrounding six ponds in city of Marina that caused ponds to become primarily reliant of surface water runoff and leading to ponds becoming perennial. Furthermore, all six ponds in the Marina area are not hydraulically connected to the coastal Dune Sand Aquifer (thus, pumping from coastal Dune Sand Aquifer will not affect them); and all ponds received surface discharge from storm drains that empty into the ponds. Several ponds were found to have hardpan layers beneath them that limit percolation and likely account for WRA observations of shallow saturation. In addition, water quality data suggest that ponds are more influenced by stormwater runoff than groundwater from the perched aquifer system. Overall, it was found that the Formation Environmental study is fundamentally flawed , misrepresents potential impacts on ponds from pumping in the coastal Dune Sand Aquifer, and does not consider all available evidence concerned the nature of these pond resources and potential impacts to them from pumping. HWG comments on the City of Marina GSA Draft GSP state, "the fact that nearby GDEs are seasonally flooded and have a seasonal nature to them (and are associated with "a lens of less pervious soil") suggests a surface water source is most likely sustaining vegetation in these areas. The GSP evaluation to determine if potential GDEs are actual GDEs did not consider that shallow groundwater in these nearby potential GDE areas is saline or the likelihood that fresh surface water is the primary sustaining factor for these areas and (which means they are not GDEs)."*

32. We note that the City of Marina Draft GSP stated the following with regard to pumping from Marina Coast Water District Deep Aquifer wells, "The combined extraction from these wells was approximately 1,823 AFY in 2015, and is forecast to increase to 3,905 AFY by 2035…" (Section 3.1.8, page 3-17).

HWG Comment: *While the Monterey Subbasin GSP comments on the impacts of increasing pumping from the Deep Aquifer in the adjacent 180/400-Foot Aquifer Subbasin, it is silent on the issue of increased pumping from existing (and potential future new) MCWD Deep Aquifer wells. The cited MCWD Deep Aquifer pumping numbers represent a greater than doubling of the amount of current MCWD pumping from the Deep Aquifer, a pumping amount that already results in Deep Aquifer water levels within Monterey Subbasin on the order of 50-100 feet below sea level. Such increased pumping from the Deep Aquifer by MCWD and others is likely not sustainable.*

33. We note that the City of Marina Draft GSP stated, "In the Monterey Subbasin, groundwater demand from the Deep Aquifer by MCWD to supply the City of Marina is expected to increase….however, the increase is projected to be within MCWD's allocated pumping rights." (Section 3.3.10.4, page 3-69).

HWG Comment: *Regardless of the validity of allocated pumping rights (which is yet to be determined), it remains unclear if the proposed MCWD increase in pumping from the Deep Aquifer is sustainable. In addition, the increased pumping from the Deep Aquifer to the east to support agricultural expansion is based on overlying rights, not allocated (paper water) pumping rights, and are thereby presumably superior to MCWD rights.*

Monterey Subbasin GSP Comment Log (Prepared by SVBGSA)

1. In Comment 41 (dated 1/7/21) Tina Wang states, "…There is one thing we pointed out in that chapter, is the dune sand aquifer and the upper 180 foot aq is not SWI intruded, it is fresh."

HWG Comment: *As pointed out in our comments on GSP Chapters 4 and 5, the Fort Ord Site Conceptual Model (i.e., continuous intermediate aquitard within 180-Foot Aquifer and lack of a 180/400-Foot Aquitard) does not apply in northern Monterey Subbasin. Furthermore, available field data indicate that the Dune Sand Aquifer and upper portion of the 180-Foot Aquifer are seawater intruded (chloride greater than 500 mg/L) for a significant distance inland from the coast in the northern Monterey Subbasin and Southern 180/400-Foot Aquifer Subbasin. We also note that EKI's (and others) definition of fresh water in many previous documents related to the MPWSP has been TDS up to 3,000 mg/L; however, HWG have shown such levels of TDS also have greater than 1,000 mg/L chloride in the area, which is far in excess of the 500 mg/L standard applied by MCWRA for seawater intrusion. The Monterey Subbasin GSP uses AEM data outside of Monterey Subbasin (i.e., in southern 180/400-Foot Subbasin) to claim the presence of this so-called fresh water, yet actual field data show seawater intrusion has occurred at the coast and for a significant distance inland in this area (see HWG, 2017).*

2. In Comment 44 (dated 1/7/21) Derrik Williams responds to the commenter (Bob Jaques) that, "We have discussed the AEM data with some members of the blue ribbon panel…the didn't have too many concerns.'

HWG Comment: *If the commenter is referring to the Hydrogeologic Working Group, this statement by Derrik Williams is incorrect. The HWG has many concerns about the hydrogeologic interpretation of the AEM data and has documented our concerns in numerous documents (e.g., HWG, 2017; HWG, 2018; HWG, January 2019; HWG, March 2019; HWG, April 2019; HWG, June 2020).*

Sincerely,

The Hydrogeologic Working Group (Dennis Williams, Tim Durbin, Martin Feeney, Peter Leffler)

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Dennis Williams

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Tim Durbin

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Martin Feeney

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Peter Leffler

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LIST OF ACRONYMS & ABBREVIATIONS

AEM	Aerial Electromagnetics
bgs	below ground surface
Cal Am or CalAm	California American Water Company
CPUC	California Public Utilities Commission
DSA	Dune Sand Aquifer
FO-SVA	Ford Ord Salinas Valley Aquitard
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCM	Hydrogeologic Conceptual Model
HWG	Hydrologic Working Group
MCWD	Marina Coast Water District
MCWRA	Monterey County Water Resources Agency
MPL	Monterey Peninsula Landfill
mg/L	Milligrams per Liter
MGSA	Marina Groundwater Sustainability Agency
MPWSP	Monterey Peninsula Water Supply Project
MW	Monitoring Well
SGMA	Sustainable Groundwater Management Act
SVB	Salinas Valley Basin
TDS	Total Dissolved Solids
USGS	United States Geological Survey

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November 1, 2021

Remleh Scherzinger
General Manager
c/o Paula Riso
Executive Assistant to the Board
Marina Coast Water District Groundwater Sustainability Agency
11 Reservation Road
Marina CA 93933-2099

RE: Groundwater Sustainability Plan – Monterey Subbasin
Marina Coast Water District Groundwater Sustainability Agency
Salinas Valley Basin Groundwater Sustainability Agency

Dear Mr. Remleh Scherzinger:

The City of Seaside received a notice dated September 20, 2021 from the Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA) that they had prepared a draft Groundwater Sustainability Plan for the Monterey Subbasin (the GSP) as required by the Sustainable Groundwater Management Act (SGMA). Staff reviewed the draft Groundwater Sustainability Plan, Monterey Subbasin prepared by EKI Water & Environment, Inc. for the Marina Coast Water District Groundwater Sustainability Agency and the Salinas Valley Basin Groundwater Sustainability Agency dated September 2021 (the GSP) download from the MCWD website on October 13, 2021 from the following link https://mcwd.org/gsa_gsp.html. The following comments are submitted for your consideration.

1. The City of Seaside requests to be included as stakeholder (page 28)
2. The City of Seaside is requests membership in the Technical Committee (page 8-10)
3. Since the Framework agreement between the MCWD GSA and the SVBGSA (the Agreement) appears to give MCWD additional jurisdiction within the City of Seaside city limits beyond the MCWD GSA boundary, the Agreement should be made available for review and comment by the City of Seaside (page 12).
4. The MCWD should clarify how the Water Augmentation Project would be implemented to ensure proposed development would not cause exceedances of groundwater extraction allocations (pages 6-57 and 9-31)
5. The GSP should clarify how the sustainable yield would be affected by the 180/400 & the Seaside Subbasins operated under conditions similar to current conditions or probable future conditions that do not meet MT or MO boundary conditions (page 6-59).
6. The MCWD should support the Seaside Watermaster to facilitate the development of alternative water for replenishing the Seaside Subbasin to ensure that the Seaside

Subbasin is able to achieve Protective Water Levels to mitigate seawater intrusion (page 9-13).

7. The GSP should clarify if Project R2, Regional Municipal Supply, is substantially different than the Regional Project as proposed by Cal Am. If not, why is "Further analysis and scoping ... needed to determine the exact location of the desalination plant, end uses, and desalination technology [9.4.2]"? If so, how are they different? (page 9-26)
8. In Section 9.4, the GSP should tabulate the scope of and capital costs for the proposed Seawater Extraction Barrier Project (page 9-26). The scope should clarify alternatives for discharging and/or reusing extracted brackish water (page 9-28).
9. It is assumed that additional investment is required to reimburse the capital expenditures and debt servicing incurred by MCWD for producing 600 AFY of recycled water. The MCWD should clarify what this investment is (page 9-58).
10. Since the GSP states that potable water could be delivered to Zone 2C by direct diversion and treatment from the Salinas River during certain months with some minor permit modifications, it should also be possible to deliver irrigation water through direct diversion. This should be explored and promoted as an alternative for providing irrigation water to supplement the more expensive treated water from Pure Water Monterey (i.e. $1,100/AF versus $1,600/AF, respectively) (page 9-22)
11. Section 10.7.1, "MCWD GSA Start-up Budget and Funding to Meet Costs," should be modified to include capital projects costs which are part of the costs for implementing the GSP over the next five years and should include an estimated cost to rate payers if no grant funding becomes available (page 10-16).

In addition, attached is a table of minor comments and requests for clarifications on the GSP. Please contact me at npatel@ci.seaside.ca.us or (831) 899-6884 if you require any further clarification on our comments.

Sincerely,

Nisha Patel
Public Works Director/ City Engineer

Attachment

cc: Sheri Damon
Roberta Greathouse
Patrick Breen

Review Comments
Marina Coast Water District GSA Groundwater Sustainability Plan

Page Label	Comments
12	Please add "the City of Seaside" to the definition of the Marina-Ord Management Area.
12	Since the Framework agreement between the MCWD GSA and the SVBGSA (the Agreement) appears to give MCWD additional jurisdiction within the City of Seaside city limits beyond the MCWD GSA boundary, the Agreement should be made available for review and comment by the City of Seaside.
28	Please confirm that the City of Seaside would be included in the stakeholder database.
55	If the "2020 UWMP anticipates that projected water demand within the entire District would be 9,584 AFY by 2040, including 2,974 AFY within the City of Marina and 6,610 AFY for the existing and future developments within the Ord Community," why is it shown as 9,300 AFY here?
145	The ordinate scales on the groundwater elevation graphs are too large to confirm if a linear trend line is best fit for determining trend lines. Please clarify why linear trend lines were selected to approximate groundwater elevations in the 400-ft aquifer.
149	Confusion in datum for groundwater elevations. Figure 5-12 states that it is both msl and NAVD88. These are not the same datum.
213	Why has the inflow from Seaside Basin increased by 45% from historic to current? Is this trend expected to continue?
215	Was annual well pumping determined from well meters (i.e. does it include non-revenue water or leakage)? If not, then that component of leakage should be omitted from the estimated recharge.
233	What does the following statement mean? "... fall within the middle of the range of projected boundary conditions."
235	Unclear. Is the assumption that the MT or MO Boundary conditions are achieved in the short term?
238	Why is well pumping under the "No Project" scenario shown as 8,767 AFY when the MCWD UWMP estimates that the demand would be 9,584 AFY. Applying the 5% leakage rate used in this GSP indicates future pumping should be 10,088 AFY. Please clarify.
243	Could groundwater extraction along the coast mitigate the inland flow of seawater? Could modeling this scenario help?
244	Should modeling be performed to predict scenarios under which MCWD alters pumping regime to minimize seawater intrusion?
245	What causes groundwater elevations to instantaneously increase by 2 feet under the no project condition?
245	How was the MO of approximately 7-ft increase determined?
245	How was the MT of 2-ft increase determined?
248	Is this correct? Outflow from the 180/400 Subbasin are affecting the Monterey Subbasin?
250	Note (c) is missing.
250	Table 6-5 (No Project Condition) shows outflow to 180/400 Subbasin at 3,849 AFY and 1,927 AFY for MT and MO boundary conditions, respectively. Table 6-8 (Project Condition) shows 6,833 AFY and 4,901 AFY respectively. This appears to indicate that the MT and MO boundary conditions to the 180/400 Subbasin are attained at significantly different times or are different for the "No Project" and "Project" scenarios. This appears to also be the case for inter-basin transfer to the Seaside Basin. Can this be better explained?
250	Table 6-5 (No Project) shows well pumping at 8,767 AFY for MT and MO boundary conditions. Table 6-8 (Project) shows 4,488 AFY for MT and MO boundary conditions. Does the model account for variability in pumping conditions since the Water Augmentation project would not come on-line for at least 6 years (see Fig. 9-6)? That is, what would cause and when would pumping exceed 4,488 AFY under the "Project" Conditions?
250	Do the future pumping rates shown in Table 6-8 account for leakage?
251	Are the increases in groundwater elevations shown here mostly attributed to actions performed, and MTs and MOs achieved, in adjacent subbasins?
252	It appears that this report is stating that if the adjacent subbasins are no operated sustainably, then the Monterey Subbasin could not be managed sustainably?
252	The groundwater levels appear to stabilize within the first 10 years due to assumed actions in adjacent subbasins. It could be important to consider the effects on water budget for scenarios where the adjacent subbasins are not operated under MT and MO boundary conditions.
253	It is unclear how the range of 4,400 to 9,900 AFY was determined? Above the report states that 2,714 AFY is the lower limit of the range and Table 6-5 suggests that 8,767 AFY is sustainable if MOs are achieved.
256	Is there a discontinuity in the modeling geometry at the interface of the Seaside Basin and MBGWFM? If so, how can this be rectified?
311	Based upon Table 6-4, it appears that sustainability goal can be achieved mostly by inter-basin coordination.
312	How will Seaside Watermaster Actions be supported?
315	The City of Seaside or the Seaside Watermaster should consider requesting membership in the Technical Committee.
316	Why was 2004 groundwater elevation used for this MO?
329	Are the MT and MO for the 180/400 Subbasin approximately -8 and -3.4 near Well MW-B-05-180? If not, why are -8 and-3.4 the MT and MO for this well?
329	1992 to 1998 data for MW-OU2-29-180 and MW-B-05-180 seem to be skewed and may need to be ignored when determining MT and MO.

Review Comments
Marina Coast Water District GSA Groundwater Sustainability Plan

Page Label	Comments
330	Is this one out-lier determining the MT of -13.3 for MP-BW-42-295. (see MT-10 for adjacent Well MW-OU2-66-180).
335	Setting the MTs to 2015 groundwater elevations seems to contradict the goal of preventing seawater intrusion.
342	Can the following statement be clarified to state whether the proposed MTs and MOs help Seaside Basin obtain its adjudication requirements: "Monterey Subbasin minimum thresholds do not prevent the Seaside basin from meeting its adjudication requirements, including the occurrence of Material Injury."
392	Should a column be added to Table 9-1 for "... a description of the measurable objective that is expected to benefit from the project or management action [354.44(a)(1)"? If not, is this information given elsewhere?
394	If the extraction barrier is a necessary component of Project R2 (see Section 9.4.2.7 which states it is a precursor), should it be included here? If not, why is the seawater extraction barrier not included as a separate project in Table 9-1?
394	Please confirm estimated cost of $172M fro R1 (Section 9.4.1.7 seems to indicate $181M)
396	The costs for pilot scale modeling should be moved from Project M4 to Project M3.
396	The demand for 1,427 AFY irrigation water at a unit production cost of $1,600/AF seems high. Section 9.4.6.7 states "MCWD's 2020 UWMP estimates that 950 AFY of landscape irrigation demand can be met by recycled water by 2030 and 1,270 AFY by 2040"
398	Should the costs shown here only reflect costs to the MCWD GSA?
398	The Seaside Watermaster supports the construction of a facility that would allow water to be imported and injected into the Seaside Basin (see letter to M1W et al dated May 24, 2021). Can this section be clarified to state potential actions that will be implemented by the GSA to support the Seaside Watermaster desire to import water?
399	Should the costs shown here only reflect costs to the MCWD GSA?
399	Projects I5 and I6 appear to be the same action. Please clarify how one could be implemented without the other.
399	Please consider adding an action that supports modeling integration with Seaside Subbasin.
400	Should Project I9 be modified to include wells that become non-productive due to such things as high TDS?
403	Section 9.4 would be more readable if the organization of project descriptions followed Table 9-1 and used the P/MA # found there.
407	Does the FORA HCP have water rights and flow prescriptions for the Salinas River?
407	Since the GSP states that potable water could be delivered to Zone 2C by direct diversion and treatment from the Salinas River during certain months with some minor permit modifications, it should also be possible to deliver irrigation water through direct diversion. Should this be explored and promoted as an alternative for providing irrigation water to supplement the more expensive treated water from Pure Water Monterey (i.e. $1,100/AF versus $1,600/AF, respectively)?
411	Where is the scope of work and capital costs described for the Seawater Intrusion Extraction Barrier Project?
411	Project R2 states "The plant will produce approximately 15,000 AFY of potable water for use." Chapter 6 states that there is approx increased demand of 5,300 AFY. Why is desal plant being proposed that could provide almost 3 times the future demand?
411	Is Project R2 substantially different than the Regional Project as proposed by Cal Am? If not, why is "Further analysis and scoping ... needed to determine the exact location of the desalination plant, end uses, and desalination technology"? If so, how are they different?
411	Table 9-1 does not include "Priority Project 6." Please clarify where this project is tabulated.
412	Please clarify how extracting an additional 35,000 AFY from the basin reduces groundwater extraction and will "either raise groundwater elevations or reduce the rate of groundwater elevation decline over time."
412	Please clarify if the extraction wells are extracting 100% seawater. If not, how is this project able to reduce groundwater extraction.
412	Please clarify how extracting water from the basin will reduce any potential for land subsidence.
412	Please clarify " This would reduce groundwater extraction by that amount, increase the Subbasin's groundwater storage." Unless the extraction wells are pumping 100% seawater, there is not a one-for-one benefit for reduction in groundwater extraction.
413	Please clarify alternatives for discharging and/or reusing extracted brackish water. If none, please clarify if there are potential cost effective alternatives to Project R2.
416	Please clarify where this cost data is derived from.
417	Why is the seawater intrusion extraction barrier project not better described in this section?
440	Please clarify how IPR would increase groundwater elevations.
440	Since Project M3 is not a supplemental water supply project, it is unclear how it would "add" water to the aquifer for future development? Please clarify.
443	Have all the capital expenditures been paid for the 600 AFY? If not, please clarify the investment needed to reimburse the capital expenditures and debt servicing for the 600 AFY.
443	Please clarify if the "soft costs" provided here include debt servicing. If not, why not?

Review Comments

Marina Coast Water District GSA Groundwater Sustainability Plan

Page Label	Comments
445	Please confirm that RUWAP pipe extends south of Coe Ave in GJM Blvd.
487	Can the Monterey Subbasin Model be coordinated with the Seaside Basin model to simulate conditions across the subbasins?
491	Addressing potential overdraft could be managed by producing documents such as a monitoring and management plan and a management action plan that addresses policies and procedures to monitor and respond to water elevation concerns.
497	Can extraction wells be added to the monitoring network?
497	The annual report could also address if milestones and goals are being attained and, if necessary, potential corrective actions that may be employed to respond to deviations from goals.
507	What is the estimated additional costs to rate payers if no grant funding becomes available?
508	Please clarify why Administration and Legal costs are 30% of the total cost.

November 1, 2021

Salinas Valley Basin GSA
P.O. Box 1350
Carmel Valley, CA 93924

Submitted via web: https://form.jotform.com/201537036733047

Re: Public Comment Letter for Monterey Subbasin Draft GSP

Dear Donna Meyers,

On behalf of the above-listed organizations, we appreciate the opportunity to comment on the Draft Groundwater Sustainability Plan (GSP) for the Monterey Subbasin being prepared under the Sustainable Groundwater Management Act (SGMA). Our organizations are deeply engaged in and committed to the successful implementation of SGMA because we understand that groundwater is critical for the resilience of California's water portfolio, particularly in light of changing climate. Under the requirements of SGMA, Groundwater Sustainability Agencies (GSAs) must consider the interests of all beneficial uses and users of groundwater, such as domestic well owners, environmental users, surface water users, federal government, California Native American tribes and disadvantaged communities (Water Code 10723.2).

As stakeholder representatives for beneficial users of groundwater, our GSP review focuses on how well disadvantaged communities, drinking water users, tribes, climate change, and the environment were addressed in the GSP. While we appreciate that some basins have consulted us directly via focus groups, workshops, and working groups, we are providing public comment letters to all GSAs as a means to engage in the development of 2022 GSPs across the state. Recognizing that GSPs are complicated and resource intensive to develop, the intention of this letter is to provide constructive stakeholder feedback that can improve the GSP prior to submission to the State.

Based on our review, we have significant concerns regarding the treatment of key beneficial users in the Draft GSP and consider the GSP to be **insufficient** under SGMA. We highlight the following findings:

1. Beneficial uses and users **are not sufficiently** considered in GSP development.
    a. Human Right to Water considerations **are not sufficiently** incorporated.
    b. Public trust resources **are not sufficiently** considered.
    c. Impacts of Minimum Thresholds, Measurable Objectives and Undesirable Results on beneficial uses and users **are not sufficiently** analyzed.
2. Climate change **is not sufficiently** considered.
3. Data gaps **are not sufficiently** identified and the GSP **needs additional plans** to eliminate them.

4. Projects and Management Actions **do not sufficiently consider** potential impacts or benefits to beneficial uses and users.

Our specific comments related to the deficiencies of the Monterey Subbasin Draft GSP along with recommendations on how to reconcile them, are provided in detail in **Attachment A.**

Please refer to the enclosed list of attachments for additional technical recommendations:

Attachment A	GSP Specific Comments
Attachment B	SGMA Tools to address DAC, drinking water, and environmental beneficial uses and users
Attachment C	Freshwater species located in the basin
Attachment D	The Nature Conservancy's "Identifying GDEs under SGMA: Best Practices for using the NC Dataset"
Attachment E	Maps of representative monitoring sites in relation to key beneficial users

Thank you for fully considering our comments as you finalize your GSP.

Best Regards,

Ngodoo Atume
Water Policy Analyst
Clean Water Action/Clean Water Fund

J. Pablo Ortiz-Partida, Ph.D.
Western States Climate and Water Scientist
Union of Concerned Scientists

Samantha Arthur
Working Lands Program Director
Audubon California

Danielle V. Dolan
Water Program Director
Local Government Commission

E.J. Remson
Senior Project Director, California Water Program
The Nature Conservancy

Melissa M. Rohde
Groundwater Scientist
The Nature Conservancy

Attachment A

Specific Comments on the Monterey Subbasin Draft Groundwater Sustainability Plan

1. Consideration of Beneficial Uses and Users in GSP development

Consideration of beneficial uses and users in GSP development is contingent upon adequate identification and engagement of the appropriate stakeholders. The (A) identification, (B) engagement, and (C) consideration of disadvantaged communities, drinking water users, tribes,[1] groundwater dependent ecosystems, streams, wetlands, and freshwater species are essential for ensuring the GSP integrates existing state policies on the Human Right to Water and the Public Trust Doctrine.

A. Identification of Key Beneficial Uses and Users

Disadvantaged Communities and Drinking Water Users

The identification of Disadvantaged Communities (DACs) and drinking water users is **incomplete**. The GSP provides information on DACs, including identification by name and location on a map (Figure 1), and identifying the water source for DAC members. However, the GSP fails to clearly state the population of each DAC.

The GSP provides a density map of domestic wells in the subbasin (Figure 3-7). However, the plan fails to provide depth of these wells (such as minimum well depth, average well depth, or depth range) within the subbasin.

These missing elements are required for the GSA to fully understand the specific interests and water demands of these beneficial users, and to support the consideration of beneficial users in the development of sustainable management criteria and selection of projects and management actions.

RECOMMENDATIONS
• Provide the population of each identified DAC. • Include a map showing domestic well locations and average well depth across the subbasin.

Interconnected Surface Waters

The identification of Interconnected Surface Waters (ISWs) is **insufficient**, due to lack of supporting information provided for the ISW analysis. The GSP does not present a map of interconnected stream reaches in the subbasin. Furthermore, the GSP does not show the location of groundwater wells or stream gauges in the subbasin, or provide description of temporal availability of groundwater data.

[1] Our letter provides a review of the identification and consideration of federally recognized tribes (Data source: SGMA Data viewer) within the GSP from non-tribal members and NGOs. Based on the likely incomplete information available to our organizations for this review, we recommend that the GSA utilize the California Department of Water Resources' "Engagement with Tribal Governments" Guidance Document (https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents) to comprehensively address these important beneficial users in their GSP.

The GSP presents maps showing depth-to-groundwater contours for depths within 20 feet of the ground surface for two dates, fall 2017 and fall 2019. The GSP does not present an explanation of why 20 feet was chosen for the maximum depth shown on the contour maps. Furthermore, using seasonal groundwater elevation data over multiple water year types is an essential component of identifying ISWs. The use of two fall dates does not reflect the temporal (seasonal and interannual) variability inherent in California's climate.

RECOMMENDATIONS
- Describe available groundwater elevation data and stream flow data in the subbasin. ISWs are best analyzed using depth-to-groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought), to determine the range of depth and capture the variability in environmental conditions inherent in California's climate.   - Provide a map of stream reaches in the subbasin. Overlay the stream reaches with full depth-to-groundwater contour maps (not just to 20 feet below ground surface) to illustrate groundwater depths and the groundwater gradient near the stream reaches. Show the location of groundwater wells in the subbasin used to create the contour maps.   - For the depth-to-groundwater contour maps, use the best practices presented in Attachment D. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a Digital Elevation Model (DEM) to estimate depth-to-groundwater contours across the landscape. This will provide accurate contours of depth to groundwater along streams and other land surface depressions where GDEs are commonly found.   - On the map of stream reaches, consider any segments with data gaps as potential ISWs and clearly mark them as such. Describe data gaps for the ISW analysis. Reconcile these data gaps with specific measures (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP.

Groundwater Dependent Ecosystems
The identification of Groundwater Dependent Ecosystems (GDEs) is **insufficient**, due to a lack of supporting information provided for the GDE analysis. The GSP took initial steps to identify and map GDEs using the Natural Communities Commonly Associated with Groundwater dataset (NC dataset). Additional local habitat management plans and studies were used to map GDEs located at the City of Marina coastal vernal ponds and Fort Ord wetlands. The GSP presents GDEs on Figure 5-37 and has retained all GDEs from these sources as potential GDEs in the GSP.

The GSP states (p. 5-68): *"These potential GDEs within the former Fort Ord are located within the federal land areas of the Subbasin not subject to SGMA."* However, SGMA states plans shall include "efforts to develop relationships with State and Federal regulatory agencies" [Water Code §10727.4(j)], and that "The federal government...may voluntarily agree to participate in the preparation and administration of a groundwater sustainability plan" [Water Code §10720.3(c)]. Finally, SGMA defines the federal government as a beneficial user of groundwater [Water Code §10723.2(g)]. Please include information on what steps were taken to address these requirements.

The GSP does not attempt to verify the NC dataset with groundwater data, however. While the GSP does acknowledge that shallow groundwater data in areas near GDEs is a data gap, no map is provided that shows the location of existing groundwater wells in the subbasin, or a description of spatial and temporal availability of existing groundwater data. Describing groundwater conditions within the basin's GDEs is an essential precursor to identifying data/monitoring gaps and evaluating potential effects on GDEs when establishing SMCs.

While the GSP discusses the vegetation communities at the City of Marina coastal vernal ponds observed during a site visit in June 2020, this is the only mention of vegetation communities within the subbasin's GDEs. The GSP does not provide further discussion or an inventory of the flora or fauna species present in the subbasin's GDEs or acknowledge endangered, threatened, or special status species in the subbasin.

RECOMMENDATIONS
● Discuss available shallow groundwater data. Use 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. We recommend that a baseline period (10 years from 2005 to 2015) be established to characterize groundwater conditions over multiple water year types. 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. ● Provide depth-to-groundwater contour maps, noting the best practices presented in Attachment D. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a digital elevation model (DEM) to estimate depth-to-groundwater contours across the landscape. ● Provide a complete inventory, map, or description of fauna (e.g., birds, fish, amphibian) and flora (e.g., plants) species in the subbasin (see Attachment C of this letter for a list of freshwater species located in the Monterey Subbasin). Note any threatened or endangered species. ● Provide further information about the steps taken to involve or collaborate with the federal government regarding potential GDEs located within the former Fort Ord area.

Native Vegetation and Managed Wetlands

Native vegetation and managed wetlands are water use sectors that are required to be included in the water budget.[2,3] The integration of native vegetation into the water budget is **insufficient**. The GSP text discusses evapotranspiration, but combines crop, urban, and native evapotranspiration in the discussion. Despite explicit mention that evapotranspiration is included in the Soil Moisture Budget (SMB) model, no evapotranspiration results for the land surface

[2] "'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." [23 CCR §351(al)]

[3] "The water budget shall quantify the following, either through direct measurements or estimates based on data: (3) Outflows from the groundwater system by water use sector, including evapotranspiration, groundwater extraction, groundwater discharge to surface water sources, and subsurface groundwater outflow." [23 CCR §354.18]

system are included in the GSP. The omission of explicit water demands for native vegetation is problematic because key environmental uses of groundwater are not being accounted for as water supply decisions are made using this budget, nor will they likely be considered in project and management actions. Managed wetlands are not mentioned in the GSP and are not included in the water budgets.

RECOMMENDATION
• Quantify and present all water use sector demands in the historical, current, and projected water budgets with individual line items for each water use sector, including native vegetation and managed wetlands (if present).

B. Engaging Stakeholders

Stakeholder Engagement During GSP Development

Stakeholder engagement during GSP development is **sufficient**. SGMA's requirement for public notice and engagement of stakeholders is fully met by the description in the Communications and Stakeholder Engagement section (Chapter 2).[4]

The GSA's outreach activities include an Advisory Committee including representation by underrepresented communities (URCs), rural residential well owners, and environmental stakeholders, Marina Coast Water District (MCWD) GSA Board Meetings, stakeholder workshops, and one-on-one meetings with interested parties.

Despite the outreach to DACs, there is no specific pathway for feedback from DAC residents and representatives to be considered and included in the GSP and its implementation.

We note specific engagement with DACs and environmental organizations during the GSP implementation process. The GSP states (p. 10-11): *"MCWD and SVBGSA's Stakeholder Communication and Engagement Plans (SCEPs) will continue to be refined, updated, and executed during GSP implementation."* These activities include subbasin planning committees transitioning to implementation committees , engaging residents of DACs during GSP implementation through engagement of MCWD customers and coordination with the City of Marina, and GSAs routine reporting to the public about GSP implementation and progress towards sustainability and needs for efficient groundwater use.

RECOMMENDATIONS

[4] "A communication section of the Plan shall include a requirement that the GSP identify how it encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin." [23 CCR §354.10(d)(3)]

- In the Communications and Stakeholder Engagement section, provide more information on how DACs and environmental stakeholders were included in the Advisory Committee and the role that it plays in GSP development.
- DAC and environmental stakeholder engagement should be improved by incorporating feedback and recommendations from DAC and environmental stakeholders engaged in the GSP process.
- Further describe efforts to engage with stakeholders during the GSP *implementation* phase in the Communications and Stakeholder Engagement section of the GSP. Refer to Attachment B for specific recommendations on how to actively engage stakeholders during all phases of the GSP process.
- Utilize DWR's tribal engagement guidance to comprehensively address all tribes and tribal interests in the subbasin within the GSP.[5]

C. Considering Beneficial Uses and Users When Establishing Sustainable Management Criteria and Analyzing Impacts on Beneficial Uses and Users

The consideration of beneficial uses and users when establishing sustainable management criteria (SMC) is **insufficient**. The consideration of potential impacts on all beneficial users of groundwater in the basin are required when defining undesirable results and establishing minimum thresholds.[6,7,8]

<u>Disadvantaged Communities and Drinking Water Users</u>

For chronic lowering of groundwater levels, the GSP discusses minimum thresholds impact on domestic wells (Section 8.7.3.2). The GSP states (p. 8-35): *"In the Corral de Tierra Area, 100% of the domestic wells should have at least 25 feet of water in them to remain operable if groundwater elevations are at minimum thresholds. Therefore, the minimum thresholds appear to be reasonably protective for domestic users."* However, the analysis was only based on 19 wells out of the total 169 domestic wells in the OSWCR database. Furthermore, the GSP states (p. 8-35): *"Some domestic wells may draw water from shallow, perched groundwater that is not managed in this GSP."* The GSP states (p. 4-36): *"There is one single principal aquifer in the Corral de Tierra Area called the El Toro Primary Aquifer System."* The shallow perched zones are part of the primary aquifer system and are still governed by the requirements of SGMA. The current analysis, which only considers 19 out of 169 wells, is insufficient and does not use best available information, for example including Public Land Survey System (PLSS) section location data, as was used in the 180/400 Foot Aquifer GSP.

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[5] Engagement with Tribal Governments Guidance Document. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Guidance-Doc-for-SGM-Engagement-with-Tribal-Govt_ay_19.pdf

[6] "The description of undesirable results shall include [...] 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." [23 CCR §354.26(b)(3)]

[7] "The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]

[8] "The description of minimum thresholds shall include [...] how state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the agency shall explain the nature of and the basis for the difference." [23 CCR §354.28(b)(5)]

The GSP states (p. 8-20): *"Groundwater elevation minimum thresholds in the Corral de Tierra Area are defined as follows: Groundwater elevation observed in 2015 in the El Toro Primary Aquifer System."* The GSP does not describe or analyze the impact on DACs and domestic well owners to minimum thresholds that are set to drought-level groundwater elevations, nor does it describe how the existing groundwater level minimum thresholds will avoid significant and unreasonable impacts on DACs and domestic well users beyond 2015 and be consistent with Human Right to Water policy.[9]

For degraded water quality, the GSP identifies constituents of concern (COCs) within the subbasin in Table 8-5, which provides a list of constituents and number of wells that must exceed regulatory standards in order to trigger minimum thresholds. However, the GSP fails to provide justification for how those numbers were selected. The GSP also sets measurable objectives identical to minimum thresholds. The exceedance of minimum thresholds is supposed to trigger additional actions but since minimum thresholds in this plan are identified as measurable objectives, it is unclear what action is triggered. Furthermore, the regulatory standards are not explicitly provided in the GSP.

RECOMMENDATIONS

Chronic Lowering of Groundwater Levels

- Describe direct and indirect impacts on DACs and drinking water users when defining undesirable results for chronic lowering of groundwater levels. For the analysis of minimum threshold impact on domestic wells, use best available information such as Public Land Survey System (PLSS) section location data.

- Establish minimum thresholds at the representative monitoring wells that account for the specific undesirable results the GSA has determined for the subbasin.

Degraded Water Quality

- Describe direct and indirect impacts on DACs and drinking water users when defining undesirable results for degraded water quality. For specific guidance on how to consider these users, refer to "Guide to Protecting Water Quality Under the Sustainable Groundwater Management Act."[10]

- Set measurable objectives at lower levels than minimum thresholds (i.e., indicative of better water quality).

- Set concentration-based minimum thresholds and measurable objectives for COCs in the subbasin that are impacted by groundwater use and/or management. Ensure they align with drinking water standards.[11]

[9] California Water Code §106.3. Available at: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=106.3
[10] Guide to Protecting 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.
[11] "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." [23 CCR §354.34(c)(4)]

- Evaluate the cumulative or indirect impacts of proposed minimum thresholds for degraded water quality on DACs and drinking water users.

<u>Groundwater Dependent Ecosystems and Interconnected Surface Waters</u>

Sustainable management criteria for chronic lowering of groundwater levels provided in the GSP do not consider potential impacts to environmental beneficial users. The GSP neither describes nor analyzes direct or indirect impacts on environmental users of groundwater when defining undesirable results. This is problematic because without identifying potential impacts to GDEs, minimum thresholds may compromise, or even destroy, these environmental beneficial users. Since GDEs are present in the subbasin, they must be considered when developing SMC.

Sustainable management criteria for depletion of interconnected surface water are established by proxy using minimum shallow groundwater elevations historically observed between 1995 and 2015 near locations of interconnected surface water. To describe impacts to ecological surface water users, the GSP states (p. 8-76): *"There are no known flow prescriptions on the El Toro Creek or any tributaries in the Corral de Tierra Area. Therefore, the current level of depletion has not violated any ecological flow requirements. This conclusion is not meant to imply that depletions do not impact potential species living in or near surface water bodies in the Corral de Tierra Area. However, any impacts that may be occurring have not risen to a level that triggers regulatory intervention. Therefore, the impacts from current rates of depletion on ecological surface water users adjacent to the El Toro Creek are not unreasonable."* The GSP makes no attempt to evaluate the impacts of the proposed minimum threshold on environmental beneficial users of surface water. The GSP does not explain how the chosen minimum thresholds and measurable objectives avoid significant and unreasonable effects on surface water beneficial users in the subbasin, such as increased mortality and inability to perform key life processes (e.g., reproduction, migration).

RECOMMENDATIONS

- When defining undesirable results for chronic lowering of groundwater levels, provide specifics on what biological responses (e.g., extent of habitat, growth, recruitment rates) would best characterize a significant and unreasonable impact to GDEs. Undesirable results to environmental users occur when 'significant and unreasonable' effects on beneficial users are caused by one of the sustainability indicators (i.e., chronic lowering of groundwater levels, degraded water quality, or depletion of interconnected surface water). Thus, potential impacts on environmental beneficial uses and users need to be considered when defining undesirable results in the subbasin.[12] Defining undesirable results is the crucial first step before the minimum thresholds can be determined.[13]

- When defining undesirable results for depletion of interconnected surface water, include a description of potential impacts on instream habitats within ISWs when

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[12] "The description of undesirable results shall include [...] 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". [23 CCR §354.26(b)(3)]

[13] The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]

minimum thresholds in the subbasin are reached.[14] The GSP should confirm that minimum thresholds for ISWs avoid adverse impacts to environmental beneficial users of interconnected surface waters as these environmental users could be left unprotected by the GSP. These recommendations apply especially to environmental beneficial users that are already protected under pre-existing state or federal law.[6,15]

- When establishing SMC for the subbasin, consider that the SGMA statute [Water Code §10727.4(l)] specifically calls out that GSPs shall include "impacts on groundwater dependent ecosystems".

2. Climate Change

The SGMA statute identifies climate change as a significant threat to groundwater resources and one that must be examined and incorporated in the GSPs. The GSP Regulations require integration of climate change into the projected water budget to ensure that projects and management actions sufficiently account for the range of potential climate futures.[16] The effects of climate change can intensify the impacts of water stress on GDEs, making available shallow groundwater resources more critical for their survival. Research shows that GDEs are more likely to succumb to water stress and rely more on groundwater during times of drought.[17] When shallow groundwater is unavailable, riparian forests can die off and key life processes (e.g., migration and spawning) for aquatic organisms, such as steelhead, can be impeded.

The integration of climate change into the projected water budget is **insufficient**. The GSP incorporates climate change into the projected water budget using DWR change factors for 2030 and 2070. However, the plan does not consider multiple climate scenarios (e.g., the 2070 extremely wet and extremely dry climate scenarios) in the projected water budget. The GSP should clearly and transparently incorporate the extremely wet and dry scenarios provided by DWR into projected water budgets or select more appropriate extreme scenarios for the subbasin. While these extreme scenarios may have a lower likelihood of occurring, their consequences could be significant and their inclusion can help identify important vulnerabilities in the subbasin's approach to groundwater management.

If the water budgets are incomplete, including the omission of extremely wet and dry scenarios, then there is increased uncertainty in virtually every subsequent calculation used to plan for projects, derive measurable objectives, and set minimum thresholds. Plans that do not adequately include climate change projections may underestimate future impacts on vulnerable beneficial users of groundwater such as ecosystems and domestic well owners.

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[14] "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." [23 CCR §354.28(c)(6)]

[15] Rohde MM, Seapy B, Rogers R, Castañeda X, editors. 2019. Critical Species LookBook: A compendium of California's threatened and endangered species for sustainable groundwater management. The Nature Conservancy, San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/Critical_Species_LookBook_91819.pdf

[16] "Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow." [23 CCR §354.18(e)]

[17] Condon et al. 2020. Evapotranspiration depletes groundwater under warming over the contiguous United States. Nature Communications. Available at: https://www.nature.com/articles/s41467-020-14688-0

The GSP states that climate change is incorporated into key inputs (e.g., precipitation, evapotranspiration, surface water flow, and sea level rise) of the projected water budget. However, we were unable to confirm this since Appendix 6B (Monterey Subbasin Groundwater Flow Model Documentation) was not available at the time of the Draft GSP's publication.

RECOMMENDATIONS

- Integrate climate change, including extremely wet and dry scenarios, into all elements of the projected water budget to form the basis for development of sustainable management criteria and projects and management actions.
- Provide details in the GSP on how climate change was incorporated into key inputs (e.g., precipitation, evapotranspiration, surface water flow, and sea level rise) of the water budget.
- Incorporate climate change scenarios into projects and management actions.

3. Data Gaps

The consideration of beneficial users when establishing monitoring networks is **insufficient**, due to lack of specific plans to increase the Representative Monitoring Sites (RMSs) in the monitoring network that represent water quality conditions around DACs and domestic wells and shallow groundwater elevations around GDEs and ISWs in the subbasin. These beneficial users may remain unprotected by the GSP without adequate monitoring and identification of data gaps in the shallow aquifer. The Plan therefore fails to meet SGMA's requirements for the monitoring network.[18]

Figure 7-1 through Figure 7-6 show the locations of the groundwater elevation monitoring network and wells selected for the RMS network within the Marina-Ord Area and the Corral De Tiera Area. Refer to Attachment E for maps of these monitoring sites, plotted by depth, in relation to key beneficial users of groundwater. The monitoring network that represents shallow groundwater elevations around DACs and domestic wells in the subbasin appears sufficient in terms of spatial and depth distribution.

Figure 7-17 (Locations of Wells in the Groundwater Quality Monitoring Network) shows that no water quality monitoring wells are located across portions of the subbasin near DACs and domestic wells. The monitoring network that represents water quality conditions around DACs and domestic wells in the subbasin is insufficient in terms of spatial and depth distribution. Note we were unable to create a map of water quality RMSs since Appendix 7F was not available at the time of the Draft GSP's publication.

The GSP discusses plans to install a new shallow monitoring well in the Corral de Tierra Area to assess ISWs. The GSP does not, however, discuss plans to fill data gaps for GDEs, despite acknowledging significant GDE data gaps in the GDE section of the GSP.

RECOMMENDATIONS

[18] "The monitoring network objectives shall be implemented to accomplish the following: [...] (2) Monitor impacts to the beneficial uses or users of groundwater." [23 CCR §354.34(b)(2)]

- Provide maps that overlay current and proposed monitoring well locations with the locations of DACs, domestic wells, GDEs, and ISWs to clearly identify potentially impacted areas.

- Increase the number of RMSs in the shallow aquifer across the subbasin as needed to adequately monitor all groundwater condition indicators across the subbasin and at appropriate depths for *all* beneficial users. Prioritize proximity to DACs, domestic wells, and GDEs when identifying new RMSs.

- Ensure groundwater elevation and water quality RMSs are monitoring groundwater conditions spatially and at the correct depth for *all* beneficial users - especially DACs, domestic wells, and GDEs.

- Describe biological monitoring that can be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the subbasin.

4. Addressing Beneficial Users in Projects and Management Actions

The consideration of beneficial users when developing projects and management actions is **insufficient** due to the failure to completely identify benefits or impacts of identified projects and management actions, including water quality impacts, to key beneficial users of groundwater such as GDEs, aquatic habitats, surface water users, DACs, and drinking water users. Therefore, potential project and management actions may not protect these beneficial users. Groundwater sustainability under SGMA is defined not just by sustainable yield, but by the avoidance of undesirable results for *all* beneficial users.

Section 9.4.3 documents the Multi-benefit Stream Channel Improvements and discusses its benefits including groundwater recharge. However, the project is described as a potential project that will be implemented on an as-needed basis and the GSP does not explicitly define a planning horizon within the SGMA process.

In Section 9.5.9 (Dry Well Notification System), the GSP states (p. 9-104): "*The GSA could develop or support the development of a program to assist well owners (domestic or state small and local small water systems) whose wells go dry due to declining groundwater elevations."* The GSP states that the program could involve a notification system, monitoring triggered by lowered groundwater elevations, public outreach, "*...referral to assistance with short-term supply solutions, technical assistance to assess why it went dry, and/or long-term supply solutions*." However, no further specifics on a drinking water well impact mitigation program are provided.

RECOMMENDATIONS

- For DACs and domestic well owners, provide specific plans for implementation of a drinking water well impact mitigation program to proactively monitor and protect drinking water wells through GSP implementation. Refer to Attachment B for specific recommendations on how to implement a drinking water well mitigation program.

- For DACs and domestic well owners, include a discussion of whether potential impacts to water quality from projects and management actions could occur and how the GSAs plans to mitigate such impacts.

- Clarify the planning horizon of the described multi-benefit stream channel improvements to ensure that the project will proactively provide groundwater recharge, remove invasive species, and reduce streamflow impediments through GSP implementation.

- Recharge ponds, reservoirs, and facilities for managed stormwater recharge can be designed as multiple-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. For guidance on how to integrate multi-benefit recharge projects into your GSP, refer to the "Multi-Benefit Recharge Project Methodology Guidance Document".[19]

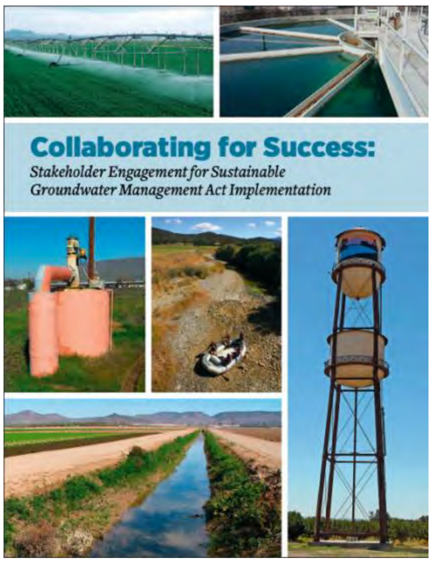
- Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.

[19] The Nature Conservancy. 2021. Multi-Benefit Recharge Project Methodology for Inclusion in Groundwater Sustainability Plans. Sacramento. Available at: https://groundwaterresourcehub.org/sgma-tools/multi-benefit-recharge-project-methodology-guidance/

Attachment B

SGMA Tools to address DAC, drinking water, and environmental beneficial uses and users

Stakeholder Engagement and Outreach



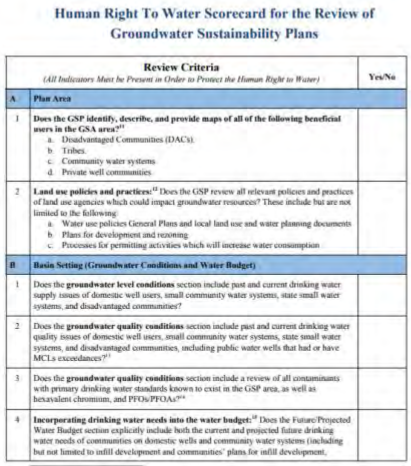
Clean Water Action, Community Water Center and Union of Concerned Scientists developed a guidance document called Collaborating for success: Stakeholder engagement for Sustainable Groundwater Management Act Implementation. It provides details on how to conduct targeted and broad outreach and engagement during Groundwater Sustainability Plan (GSP) development and implementation. Conducting a targeted outreach involves:

- Developing a robust Stakeholder Communication and Engagement plan that includes outreach at frequented locations (schools, farmers markets, religious settings, events) across the plan area to increase the involvement and participation of disadvantaged communities, drinking water users and the environmental stakeholders.

- Providing translation services during meetings and technical assistance to enable easy participation for non-English speaking stakeholders.

- GSP should adequately describe the process for requesting input from beneficial users and provide details on how input is incorporated into the GSP.

The Human Right to Water

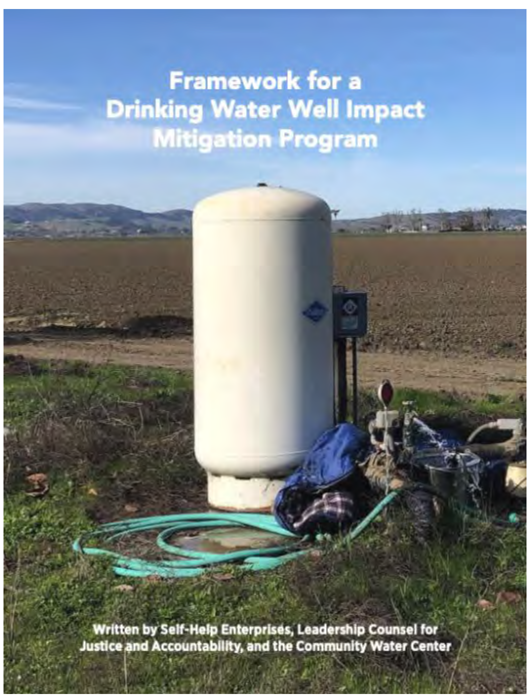


Human Right To Water Scorecard for the Review of Groundwater Sustainability Plans

Review Criteria *(All Indicators Must be Present in Order to Protect the Human Right to Water)*		Yes/No
A	**Plan Area**	
1	**Does the GSP identify, describe, and provide maps of all of the following beneficial users in the GSA area?**[11] a. Disadvantaged Communities (DACs). b. Tribes. c. Community water systems d. Private well communities	
2	**Land use policies and practices:**[12] Does the GSP review all relevant policies and practices of land use agencies which could impact groundwater resources? These include but are not limited to the following: a. Water use policies General Plans and local land use and water planning documents b. Plans for development and rezoning c. Processes for permitting activities which will increase water consumption	
B	**Basin Setting (Groundwater Conditions and Water Budget)**	
1	Does the **groundwater level conditions** section include past and current drinking water supply issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities?	
2	Does the **groundwater quality conditions** section include past and current drinking water quality issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities, including public water wells that had or have MCLs exceedances?[13]	
3	Does the **groundwater quality conditions** section include a review of all contaminants with primary drinking water standards known to exist in the GSP area, as well as hexavalent chromium, and PFOs/PFOAs?[14]	
4	**Incorporating drinking water needs into the water budget:**[15] Does the Future/Projected Water Budget section explicitly include both the current and projected future drinking water needs of communities on domestic wells and community water systems (including but not limited to infill development and communities' plans for infill development.	

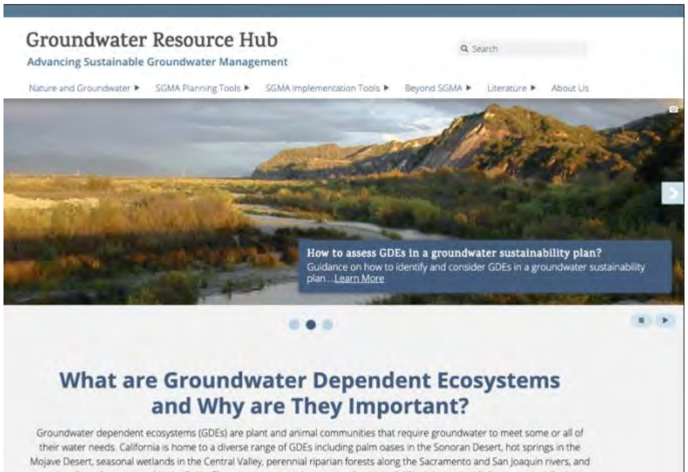
The Human Right to Water Scorecard was developed by Community Water Center, Leadership Counsel for Justice and Accountability and Self Help Enterprises to aid Groundwater Sustainability Agencies (GSAs) in prioritizing drinking water needs in SGMA. The scorecard identifies elements that must exist in GSPs to adequately protect the Human Right to Drinking water.

Drinking Water Well Impact Mitigation Framework



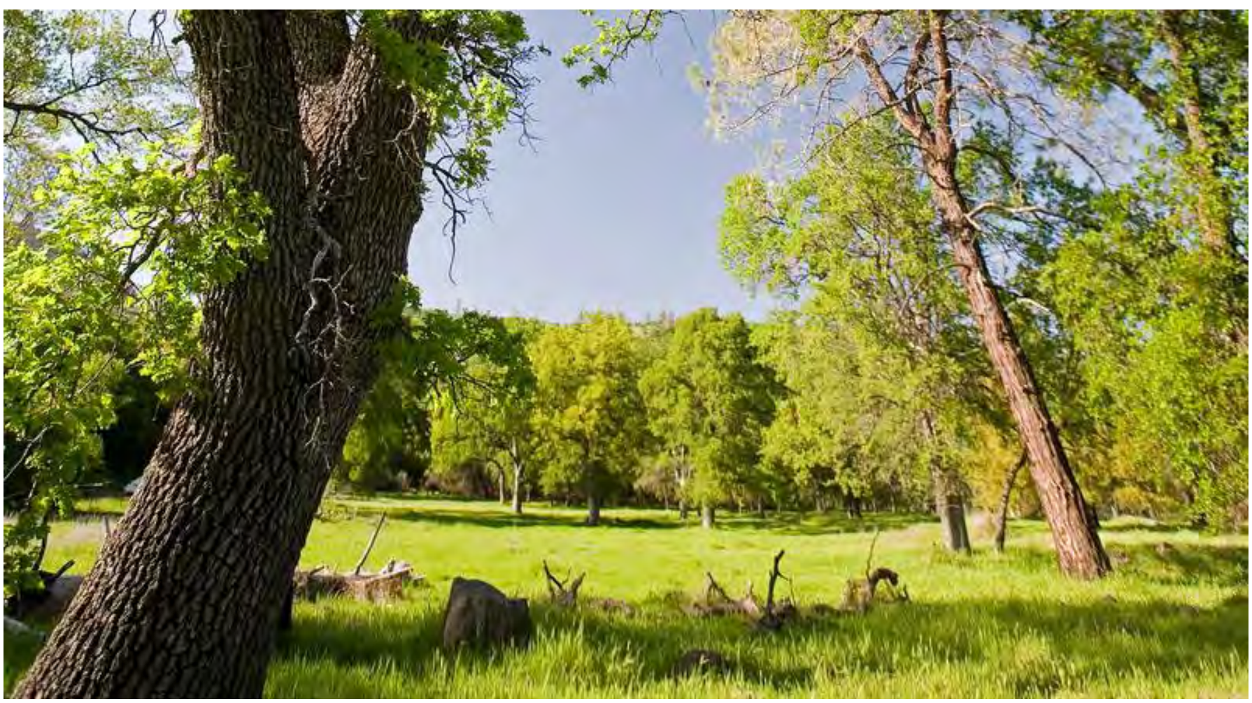
The Drinking Water Well Impact Mitigation Framework was developed by Community Water Center, Leadership Counsel for Justice and Accountability and Self Help Enterprises to aid GSAs in the development and implementation of their GSPs. The framework provides a clear roadmap for how a GSA can best structure its data gathering, monitoring network and management actions to proactively monitor and protect drinking water wells and mitigate impacts should they occur.

Groundwater Resource Hub



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.

Rooting Depth Database



The Plant Rooting Depth Database provides information that can help assess whether groundwater-dependent vegetation are accessing groundwater. Actual rooting depths will depend on the plant species and site-specific conditions, such as soil type and availability of other water sources. Site-specific knowledge of depth to groundwater combined with rooting depths will help provide an understanding of the potential groundwater levels are needed to sustain GDEs.

How to use the database

The maximum rooting depth information in the Plant Rooting Depth Database is useful when verifying whether vegetation in the Natural Communities Commonly Associated with Groundwater (NC Dataset) are connected to groundwater. A 30 ft depth-to-groundwater threshold, which is based on averaged global rooting depth data for phreatophytes[1], is relevant for most plants identified in the NC Dataset since most plants have a max rooting depth of less than 30 feet. However, it is important to note that deeper thresholds are necessary for other plants that have reported maximum root depths that exceed the averaged 30 feet threshold, such as valley oak (*Quercus lobata*), Euphrates poplar (*Populus euphratica*), salt cedar (*Tamarix spp.*), and shadescale (*Atriplex confertifolia*). The Nature Conservancy advises that the reported max rooting depth for these deeper-rooted plants be used. For example, a depth-to groundwater threshold of 80 feet should be used instead of the 30 ft threshold, when verifying whether valley oak polygons from the NC Dataset are connected to groundwater. It is important to re-emphasize that actual rooting depth data are limited and will depend on the plant species and site-specific conditions such as soil and aquifer types, and availability to other water sources.

The Plant Rooting Depth Database is an Excel workbook composed of four worksheets:

1. California phreatophyte rooting depth data (included in the NC Dataset)
2. Global phreatophyte rooting depth data
3. Metadata
4. References

How the database was compiled

The Plant Rooting Depth Database is a compilation of rooting depth information for the groundwater-dependent plant species identified in the NC Dataset. Rooting depth data were compiled from published scientific literature and expert opinion through a crowdsourcing campaign. As more information becomes available, the database of rooting depths will be updated. Please Contact Us if you have additional rooting depth data for California phreatophytes.

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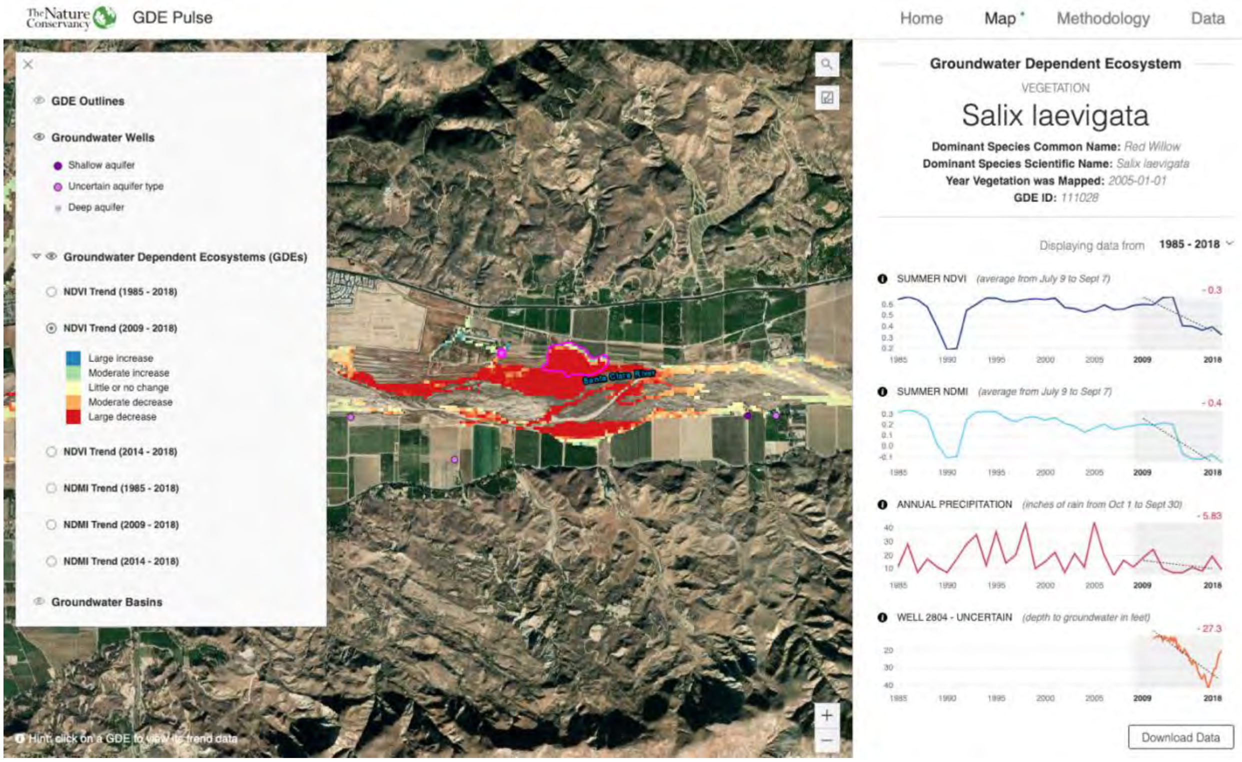
[1] Canadell, J., Jackson, R.B., Ehleringer, J.B. et al. 1996. Maximum rooting depth of vegetation types at the global scale. Oecologia 108, 583–595. https://doi.org/10.1007/BF00329030

GDE Pulse



[GDE Pulse](https://gde.codefornature.org/) is a free online tool that allows Groundwater Sustainability Agencies to assess changes in groundwater dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data. 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. The following datasets are available for downloading:

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.

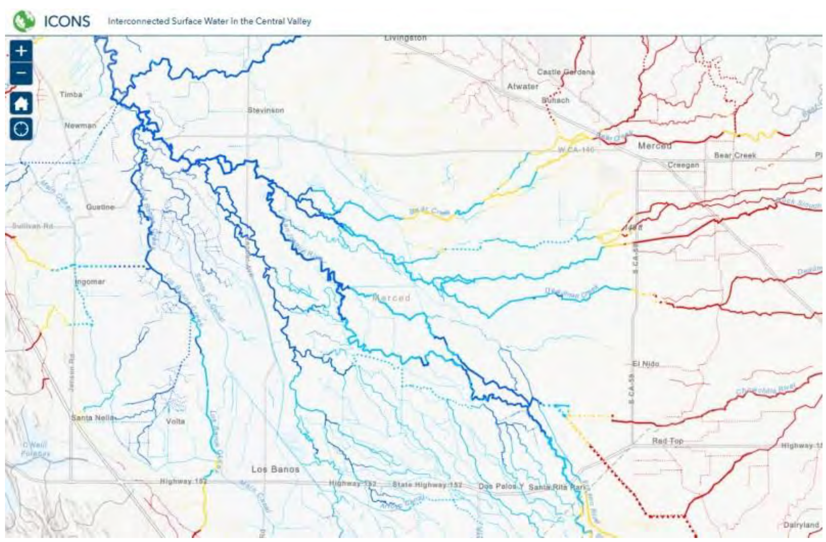
Normalized Difference Moisture Index (NDMI) is a satellite-derived index that represents water content in vegetation. NDMI is derived from the Near-Infrared (NIR) and Short-Wave Infrared (SWIR) channels. Vegetation with adequate access to water tends to have higher NDMI, while vegetation that is water 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. 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.

ICONOS Mapper

Interconnected Surface Water in the Central Valley



ICONS maps the likely presence of interconnected surface water (ISW) in the Central Valley using depth to groundwater data. Using data from 2011-2018, the ISW dataset represents the likely connection between surface water and groundwater for rivers and streams in California's Central Valley. It includes information on the mean, maximum, and minimum depth to groundwater for each stream segment over the years with available data, as well as the likely presence of ISW based on the minimum depth to groundwater. The Nature Conservancy developed this database, with guidance and input from expert academics, consultants, and state agencies.

We developed this dataset using groundwater elevation data available online from the California Department of Water Resources (DWR). DWR only provides this data for the Central Valley. For GSAs outside of the valley, who have groundwater well measurements, we recommend following our methods to determine likely ISW in your region. The Nature Conservancy's ISW dataset should be used as a first step in reviewing ISW and should be supplemented with local or more recent groundwater depth data.

Attachment C

Freshwater Species Located in the Monterey Basin

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 Monterey Basin. To produce the freshwater species list, we used ArcGIS to select features within the California Freshwater Species Database version 2.0.9 within the 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[1]. 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[2] as well as on The Nature Conservancy's science website[3].

Scientific Name	Common Name	Legal Protected Status		
		Federal	State	Other
BIRDS				
Agelaius tricolor	Tricolored Blackbird	Bird of Conservation Concern	Special Concern	BSSC - First priority
Aechmophorus clarkii	Clark's Grebe			
Aechmophorus occidentalis	Western Grebe			
Anas acuta	Northern Pintail			
Anas americana	American Wigeon			
Anas clypeata	Northern Shoveler			
Anas crecca	Green-winged Teal			
Anas platyrhynchos	Mallard			
Anas strepera	Gadwall			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Aythya americana	Redhead		Special Concern	BSSC - Third priority
Aythya collaris	Ring-necked Duck			
Aythya marila	Greater Scaup			
Aythya valisineria	Canvasback		Special	
Bucephala albeola	Bufflehead			
Bucephala clangula	Common Goldeneye			
Butorides virescens	Green Heron			
Calidris alpina	Dunlin			

[1] 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

[2] California Department of Fish and Wildlife BIOS: https://www.wildlife.ca.gov/data/BIOS

[3] Science for Conservation: https://www.scienceforconservation.org/products/california-freshwater-species-database

Calidris mauri	Western Sandpiper			
Calidris minutilla	Least Sandpiper			
Chroicocephalus philadelphia	Bonaparte's Gull			
Cistothorus palustris palustris	Marsh Wren			
Cygnus columbianus	Tundra Swan			
Egretta thula	Snowy Egret			
Fulica americana	American Coot			
Gallinago delicata	Wilson's Snipe			
Gallinula chloropus	Common Moorhen			
Himantopus mexicanus	Black-necked Stilt			
Icteria virens	Yellow-breasted Chat		Special Concern	BSSC - Third priority
Lophodytes cucullatus	Hooded Merganser			
Megaceryle alcyon	Belted Kingfisher			
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			
Piranga rubra	Summer Tanager		Special Concern	BSSC - First priority
Pluvialis squatarola	Black-bellied Plover			
Podiceps nigricollis	Eared Grebe			
Podilymbus podiceps	Pied-billed Grebe			
Porzana carolina	Sora			
Rallus limicola	Virginia Rail			
Riparia riparia	Bank Swallow		Threatened	
Setophaga petechia	Yellow Warbler			BSSC - Second priority
Tachycineta bicolor	Tree Swallow			
Tringa melanoleuca	Greater Yellowlegs			
Tringa semipalmata	Willet			
CRUSTACEANS				
Linderiella occidentalis	California Fairy Shrimp		Special	IUCN - Near Threatened
FISH				
Oncorhynchus mykiss - SCCC	South Central California coast steelhead	Threatened	Special Concern	Vulnerable - Moyle 2013

HERPS				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Ambystoma californiense californiense	California Tiger Salamander	Threatened	Threatened	ARSSC
Anaxyrus boreas boreas	Boreal Toad			
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 hammondii hammondii	Two-striped Gartersnake		Special Concern	ARSSC
Thamnophis sirtalis sirtalis	Common Gartersnake			
Anaxyrus boreas halophilus	California Toad			ARSSC
Pseudacris regilla	Northern Pacific Chorus Frog			
Pseudacris sierra	Sierran Treefrog			
INSECTS & OTHER INVERTS				
Enallagma civile	Familiar Bluet			
Libellula pulchella	Twelve-spotted Skimmer			
Sympetrum corruptum	Variegated Meadowhawk			
PLANTS				
Lasthenia conjugens	Contra Costa Goldfields	Endangered	Special	CRPR - 1B.1
Alopecurus saccatus	Pacific Foxtail			
Arundo donax	NA			
Baccharis glutinosa	NA			Not on any status lists
Callitriche heterophylla bolanderi	Large Water-starwort			
Callitriche heterophylla heterophylla	Northern Water-starwort			
Callitriche marginata	Winged Water-starwort			
Calochortus uniflorus	Shortstem Mariposa Lily		Special	CRPR - 4.2
Cicendia quadrangularis	Oregon Microcala			
Cicuta maculata bolanderi	Bolander's Water-hemlock		Special	CRPR - 2B.1
Cotula coronopifolia	NA			

Crassula aquatica	Water Pygmyweed			
Crypsis vaginiflora	NA			
Datisca glomerata	Durango Root			
Elatine brachysperma	Shortseed Waterwort			
Eleocharis acicularis acicularis	Least Spikerush			
Eleocharis macrostachya	Creeping Spikerush			
Euthamia occidentalis	Western Fragrant Goldenrod			
Isoetes howellii	NA			
Isoetes orcuttii	NA			
Juncus falcatus falcatus	Sickle-leaf Rush			
Juncus phaeocephalus paniculatus	Brownhead Rush			
Juncus phaeocephalus phaeocephalus	Brown-head Rush			
Juncus rugulosus	Wrinkled Rush			
Juncus uncialis	Inch-high Rush			
Legenere limosa	False Venus'-looking-glass		Special	CRPR - 1B.1
Marsilea vestita vestita	NA			Not on any status lists
Navarretia intertexta	Needleleaf Navarretia			
Persicaria amphibia				Not on any status lists
Phacelia distans	NA			
Pilularia americana	NA			
Plantago elongata elongata	Slender Plantain			
Platanus racemosa	California Sycamore			
Pogogyne douglasii	NA			
Psilocarphus brevissimus brevissimus	Dwarf Woolly-heads			
Psilocarphus tenellus	NA			
Ranunculus lobbii	Lobb's Water Buttercup		Special	CRPR - 4.2
Rorippa curvisiliqua curvisiliqua	Curve-pod Yellowcress			
Rumex salicifolius salicifolius	Willow Dock			
Salix lasiolepis lasiolepis	Arroyo Willow			
Stachys ajugoides	Bugle Hedge-nettle			
Triglochin scilloides	NA			Not on any status lists
Typha latifolia	Broadleaf Cattail			
Veronica anagallis-aquatica	NA			
Veronica catenata	NA			Not on any status lists

Attachment D

The Nature Conservancy

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[1] 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)[2]. This document highlights six best practices for using local groundwater data to confirm whether mapped features in the NC dataset are supported by groundwater.

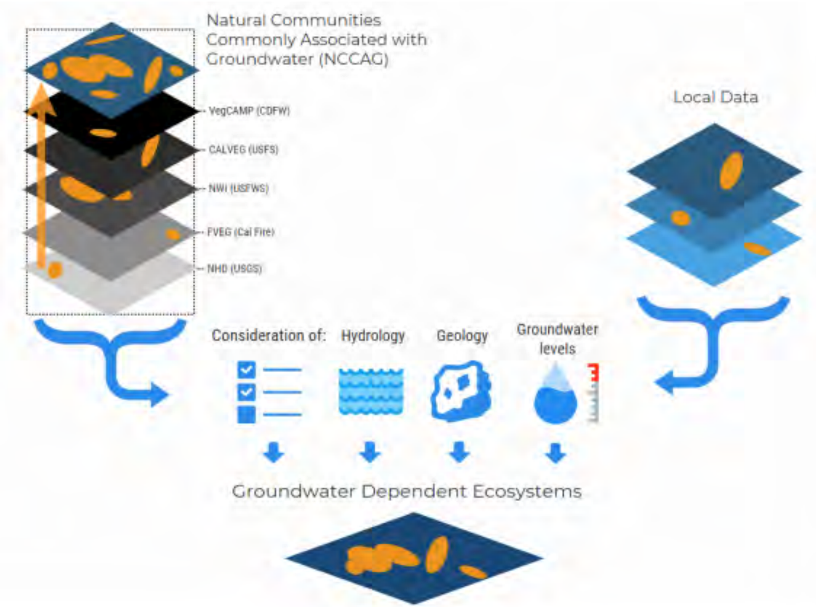


Figure 1. Considerations for GDE identification.
Source: DWR[2]

[1] NC Dataset Online Viewer: https://gis.water.ca.gov/app/NCDatasetViewer/
[2] 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[3]. 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[4] on the Groundwater Resource Hub[5], 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*.

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[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/
[5] The Groundwater Resource Hub: www.GroundwaterResourceHub.org

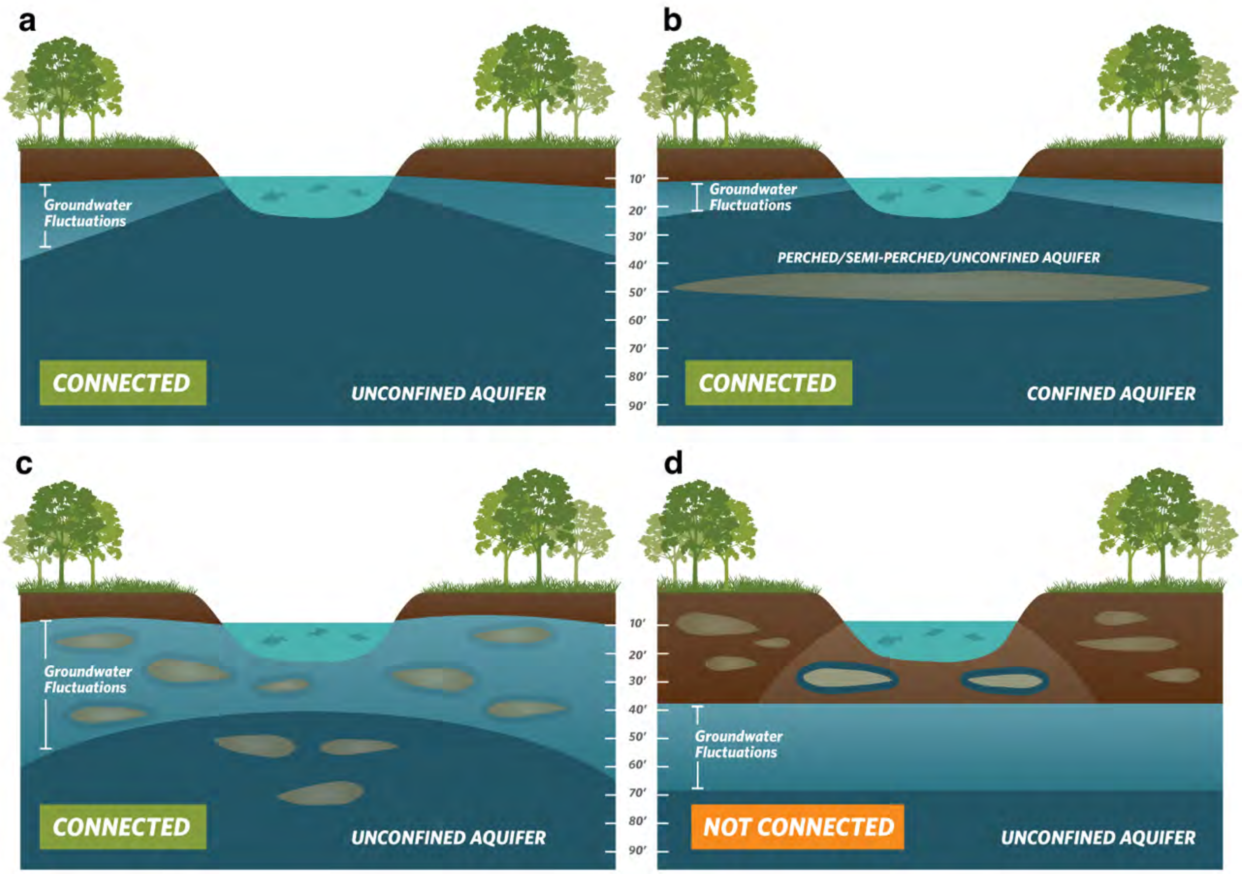

Figure 2. Confirming whether an ecosystem is connected to groundwater. Top: (a) Under the ecosystem is an unconfined aquifer with depth-to-groundwater fluctuating seasonally and interannually within 30 feet from land surface. (b) Depth-to-groundwater in the shallow aquifer is connected to overlying ecosystem. 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[6] 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[7] 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[8] 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[9]. 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).

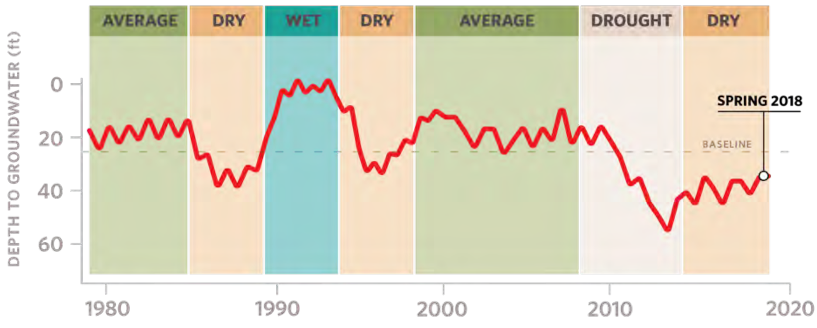

Figure 3. Example seasonality and interannual variability in depth-to-groundwater over time. Selecting one point in time, such as Spring 2018, to characterize groundwater conditions in GDEs fails to capture what groundwater conditions are necessary to maintain the ecosystem status into the future so adverse impacts are avoided.

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[6] 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

[7] 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)]

[8] 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]).

[9] 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[10], 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).

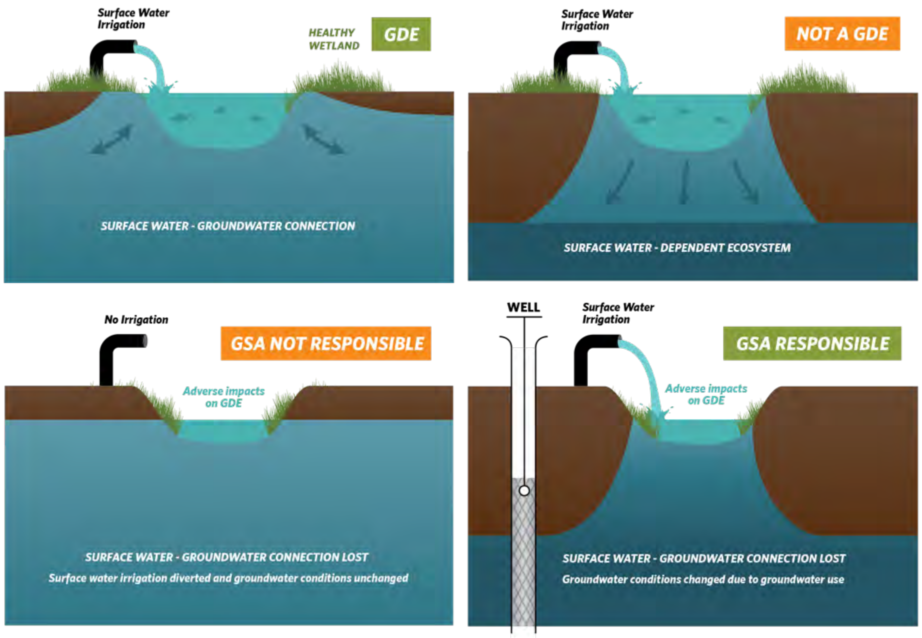

Figure 4. Ecosystems often depend on multiple sources of water. Top: (Left) Surface water and groundwater are interconnected, meaning that the GDE is supported by both groundwater and surface water. (Right) Ecosystems that are only reliant on non-groundwater sources are not groundwater-dependent. Bottom: (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.

[10] 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.

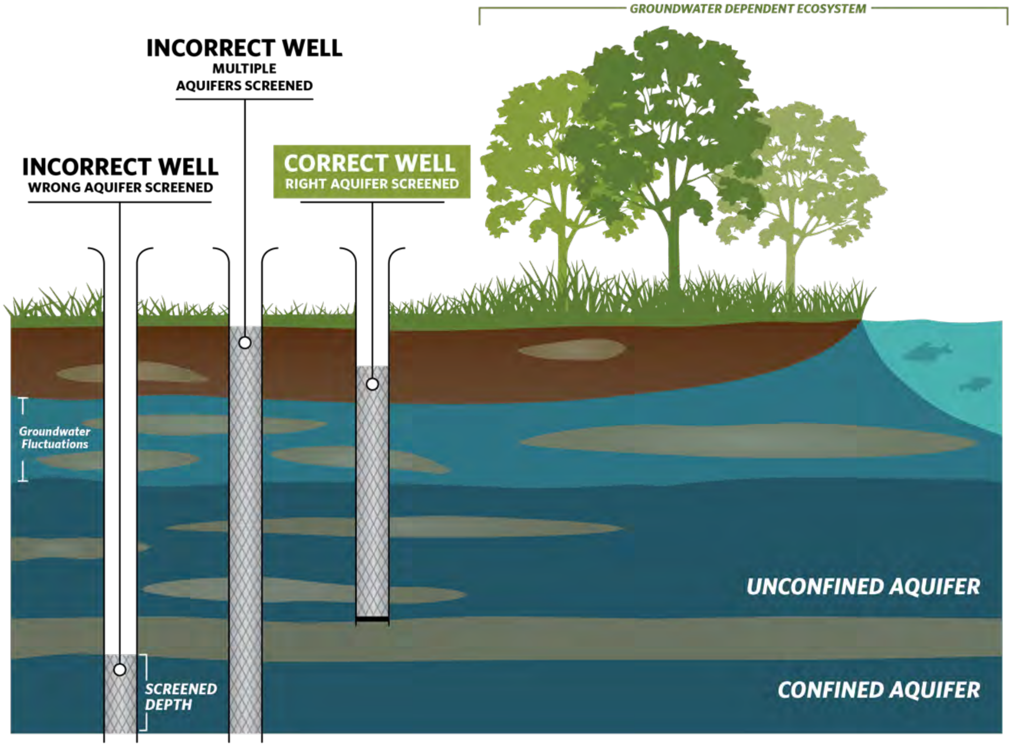

Figure 5. Selecting representative wells to characterize groundwater conditions near GDEs.

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)[11] 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.

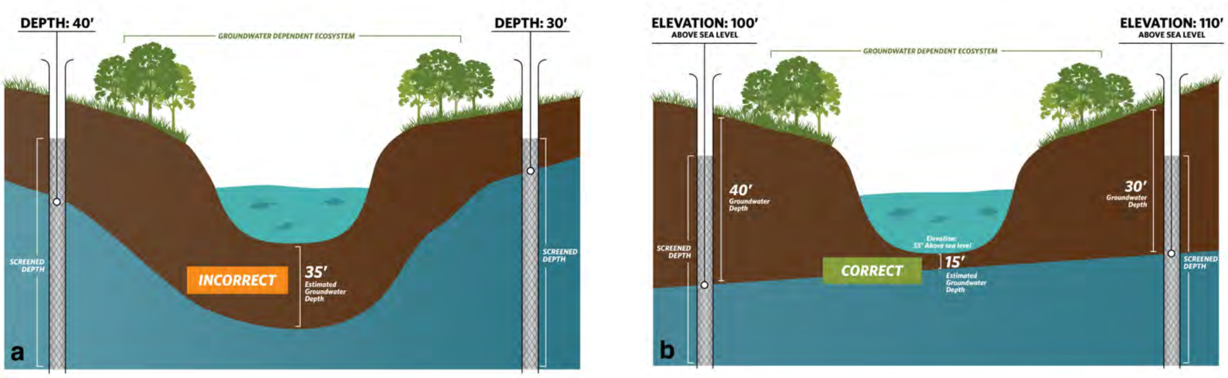

Figure 6. Contouring depth-to-groundwater around surface water features and GDEs. (a) Groundwater level interpolation using depth-to-groundwater data from monitoring wells. (b) Groundwater level interpolation using groundwater elevation data from monitoring wells and DEM data.

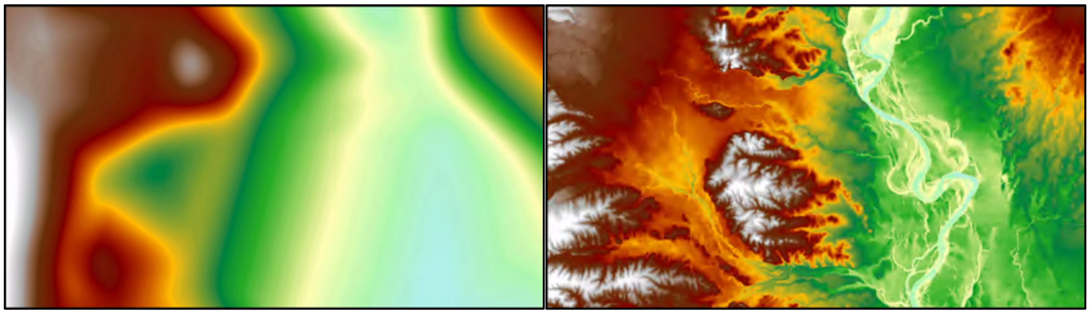

Figure 7. Depth-to-groundwater contours in Northern California. (Left) Contours were interpolated using depth-to-groundwater measurements determined at each well. (Right) Contours were determined by interpolating groundwater elevation measurements at each well and superimposing ground surface elevation 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.

[11] 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

Maps of representative monitoring sites in relation to key beneficial users

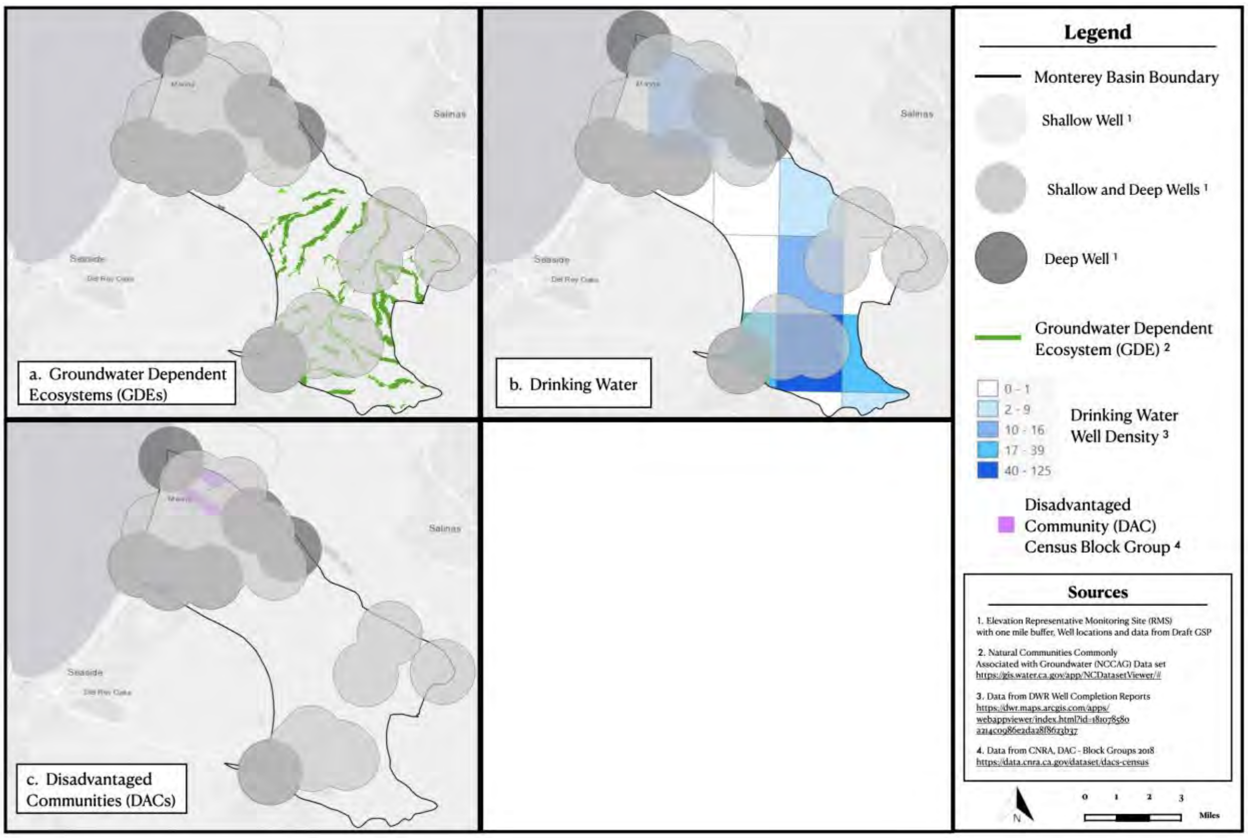

Figure 1. Groundwater elevation representative monitoring sites in relation to key beneficial users: a) Groundwater Dependent Ecosystems (GDEs), b) Drinking Water users, c) Disadvantaged Communities (DACs), and d) Tribes.

From: Mike McCullough <MikeM@my1water.org>
Sent: Thursday, November 4, 2021 3:14 PM
To: Abby Ostovar <aostovar@elmontgomery.com>; Emily Gardner <gardnere@svbgsa.org>
Cc: Alison Imamura <Alison@my1water.org>
Subject: Comments on the Monterey Subbasin GSP

Abby and Emily,

On page 9-52, the statement below reads.

In 2020, M1W completed Phase I of the AWPF that has the capacity to produce 4,300 AFY of advanced treated water. Of this water produced, 3,700 AFY is conveyed to Seaside Subbasin for IPR use as part of M1W's Pure Water Monterey project, and 600 AFY is available to MCWD. Based on current plans, the AWPF will be expanded further to produce an additional 2,250 AFY of purified water for M1W and 827 AFY for MCWD[6].

M1W's response

M1W completed its Pure Water Monterey project and MCWD's 600 AFY yield for urban irrigation in former Fort Ord project in 2020. M1W's Supplemental EIR for the Expanded Pure Water Monterey Project increased the 3,700 AFY to 5,950 AFY that is conveyed to the Seaside Subbasin for indirect potable reuse for the Monterey Peninsula (CalAm Monterey District). The expansion will continue to provide 600 AFY to MCWD.

On Page 9-54, the statement below reads.

The current operation frequency of MCWD's production wells generally ranges from 10% to 40%. These operation frequencies are low and, barring other constraints (e.g., concerns regarding seawater intrusion), could likely be increased to an operational frequency of up to 70% to capture injected water. Additional production wells might need to be constructed to provide additional extraction capacity, depending on the volume and rate of injection. The 2020 Water Supply Augmentation Study evaluated two potential production capacities for the IPR project including 973 AFY and 2,400 AFY. The project could be readily expanded to facilitate injection of additional advanced treated water as it becomes available.

M1W's response

M1W is not aware of any future projections of MCWD wastewater flows that provide for a quantity of influent water that could be used to meet the identified yield for an expanded Ord area irrigation project or an as-yet-undefined indirect potable reuse project. Current and approved expanded facilities provide for 600 AFY total yield for MCWD. RUWAP has always been described and evaluated as a water *augmentation* project; the MCWD, FORA, and M1W approvals of RUWAP all described and evaluated that the supplies from RUWAP would *augment* groundwater supplies for the redevelopment of the former Fort Ord; the project was never described as a project to replace or reduce use of groundwater. Specifically, the RUWAP project approval in 2004 (with modifications in October 2006, February 2007, and April 2016) describe the existence of rights to groundwater from zones 2 and 2A for the benefit of the former Fort Ord and that the RUWAP adds to those volumes of water available. The Pure Water Monterey Project was approved in October 2015 and that approval included no capacity for MCWD customers. In M1W's Addendum for the Proposed Capacity Expansion from 4-mgd maximum production rate to a 5-mgd maximum production rate (dated October 2017), M1W approved providing only up to 600 AFY for urban irrigation water within the former Fort Ord. Use of MCWD wastewater flows are limited to 300 acre feet during April 1 through Sept 30 plus M1W summer wastewater rights of up to 650 AFY during May 1 through August 31. Those volumes of water do not provide the flows needed to inject water per the proposed study recommendations.

Also, as noted in the first amendment to the Pure Water Delivery and Supply Project Agreement between M1W and MCWD, Section 1.03 (a) states "Because of the uncertainty resulting from the possibility that a portion of MCWD AWT Phase 2 will be used for injection, details regarding Phase 2 implementation of MCWD's AWT Phase 2 water for injection will require a separate agreement or an amendment to this agreement based upon the existing terms of the agreement."

Please let me know if you have any questions regarding these comments

Mike McCullough, MPA
Director of External Affairs
Monterey One Water
P:831-645-4618
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Monterey One Water
Providing Cooperative Water Solutions

Luhdorff & Scalmanini
Consulting Engineers

November 19, 2021

Marina Coast Water District Groundwater Sustainability Agency
11 Reservation Road
Marina, CA 93933
Attn: Patrick Breen, Water Resources Manager
Email: pbreen@mcwd.org

Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Attn: Emily Gardner, Deputy General Manager and Derrik Williams, GSP Project Manager
Email: gardnere@svbgsa.org; dwilliams@elmontgomery.com

SUBJECT: Comments on Monterey Subbasin Public Draft GSP Appendix 6B (Monterey Subbasin Groundwater Flow Model Documentation)

Dear Mr. Breen, Ms. Gardner, and Mr. Williams:

This letter is submitted on behalf of California American Water and provides comments on Appendix 6B (Monterey Subbasin Groundwater Flow Model Documentation) for the Public Draft Monterey Subbasin GSP updated appendices released on November 10, 2021. Detailed comments are provided along with a summary of the main comments. Overall, given the number of significant deficiencies identified in these comments, the Monterey Subbasin groundwater model as currently configured does not provide reliable model results for use in GSP implementation.

DETAILED COMMENTS

Specific comments are organized by subsection with page numbers referenced below.

Section 2 (Methodology and Approach)

- Appendix 6B states the model western boundary ends at the Pacific Ocean (section 2.2.1, p. 7). **Comment: The Principal Aquifers (180-Foot Aquifer, 400-Foot Aquifer, Deep Aquifer) extend out beneath the ocean several miles beyond the Pacific Ocean shoreline. More representative model results would be obtained by extending the model domain further out beneath the ocean.**

- Appendix 6B states the model is discretized vertically into eight layers that include Layer 3 representing the Upper 180-Foot Aquifer, Layer 4 representing the 180-Foot Aquitard, Layer 5 representing the Lower 180-Foot Aquifer (Section 2.2.3, p. 8). **Comment: While this model layering may apply in the southern part of the Monterey Subbasin in the Fort Ord area, it does not apply in the northern Monterey Subbasin or the southern 180/400 Foot Aquifer Subbasin included in the model domain, where there is no aquitard within the 180-Foot Aquifer. This comment relates to the Hydrogeologic Conceptual Model (HCM) that forms the basis of the groundwater model and**

was noted in previous Hydrogeologic Working Group (HWG) comments on GSP Chapters 4 and 5 (April 5, 2021). This incorrect portrayal of the stratigraphy in the model layering in the northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin results in inaccurate model predictions in terms of groundwater levels and seawater intrusion.

- Appendix 6B states that as part of GSP development, a 3-D hydrostratigraphy model was developed to, "…provide for a more accurate representation of Principal Aquifer and Aquitard geometries and to facilitate MBGWFM grid development. The Leapfrog hydrostratigraphy model of the Basin was originally developed as part of two Airborne Electromagnetic (AEM) geophysical surveys conducted by Marina Coast Water District (MCWD) in 2017 and 2019…to help characterize seawater intrusion within the Basin." (Section 2.2.3, p. 9). **Comment: Previous HWG Comment letters (e.g., August 2018, April 2019, June 2020) have repeatedly demonstrated the significant uncertainties and flaws in the hydrostratigraphic interpretations derived from the two AEM surveys. These errors in hydrostratigraphic interpretation have been incorporated into the Monterey Subbasin groundwater model and will result in inaccurate predictions of future groundwater levels and seawater intrusion. One example of the flawed stratigraphic interpretation for the northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin is provided in Figure 2 of Appendix 6B 2, which displays a thick and continuous aquitard in the middle of the 180-Foot Aquifer and no Aquitard between the 180-Foot Aquifer and 400-Foot Aquifer. These two aquitards are misrepresented (and essentially reversed) in this area of the model domain.**
- Appendix 6B states, "…it is assumed the Deep Aquifer is not hydraulically connected to the Pacific Ocean." (Section 2.4.1, p. 12). **Comment: The lack of seawater intrusion in the Deep Aquifer at the present time is insufficient basis for adopting a No Flow boundary in the groundwater model. It is possible the Deep Aquifer is connected to the Pacific Ocean at the Monterey submarine canyon. At the very least, the Deep Aquifer likely extends out beneath the ocean floor for many miles offshore.**
- Appendix 6B describes the historical groundwater level measurements used as input for the general head boundaries on the northern edge of the model domain as including, "…seven wells in the Upper 180-Foot Aquifer (Layer 3), 12 wells in the Lower 180/400-Foot Aquifer (Layers 5 and 7)…". There is a footnote associated with this text that reads, "MCWRA water levels records classify wells in a grouped "Lower 180/400-Foot Aquifer" system, and thus specified heads from these wells were assigned to both Layer 5 and Layer 7 of the MBGWFM." (Section 2.4.2.1.1, p. 12). **Comment: This assignment of historical water levels to general head boundaries along the northern edge of the model domain is flawed for the reasons described above related to an inaccurate HCM stratigraphy. MCWRA maps of groundwater elevations clearly show distinct (different) groundwater elevations in the 180-Foot and 400-Foot Aquifers. The footnote relative to MCWRA category of wells in a "Lower 180/400-Foot Aquifer" system likely refers to wells screened in both aquifers and does not mean both aquifers have the same water levels as is assumed in the Monterey Subbasin groundwater model.**
- Appendix 6B states, "The final network of SGMA monitoring wells used for projected simulations includes seven wells in the Upper 180-Foot Aquifer (Layer 3), 10 wells in the Lower 180/400-Foot Aquifer (Layers 5 and 7)…" (Section 2.4.2.1.2, p. 13). **Comment: This assignment of future water levels to general head boundaries along the northern edge of the model domain is flawed for the reasons**

described above related to an inaccurate HCM stratigraphy. MCWRA maps of groundwater elevations clearly show distinct (different) groundwater elevations in the 180-Foot and 400-Foot Aquifers.

- In describing the southern model domain boundary of the Monterey Subbasin groundwater model, Appendix 6B describes notable differences in "hydrogeologic conceptualization and geometry between the two models that will result in imperfect matching of head conditions and unique estimates of cross-boundary flows. Notably, the Seaside Model defines aquifer units differently than the MBGWGM and includes a different number of layers." (Section 2.4.2.2.1, p. 15). **Comment: Although not described or acknowledged in Appendix 6B, this same issue of significantly different hydrogeologic conceptualization and geometry also applies along the northern model domain of the Monterey Subbasin groundwater model. This is due to the previously described flawed HCM and stratigraphy that served as the basis for model layering in northern Monterey Subbasin and southern 180/400-Foot Aquifer Subbasin.**

- Appendix 6B Table 2 provides a comparison of Seaside Model Layers to MBGWFM Layers (Section 2.4.2.2.1, p. 16). **Comment: A similar table showing the disagreement with the HCM and previous models of the 180/400-Foot Aquifer Subbasin are not provided. A table comparing the Monterey Subbasin groundwater model aquifer layers with the 180/400-Foot Aquifer Subbasin is provided below. This table shows the discontinuities and offset of aquifer units between the two subbasins, which is quite problematic for evaluation of groundwater levels and sea water intrusion between the two subbasins.**

Monterey Subbasin Aquifer Unit	**180/400 Foot Aquifer Subbasin Aquifer Unit**	**Comments**
Dune Sand Aquifer	**Dune Sand Aquifer and Perched "A" Aquifer**	**The Dune Sand Aquifer is perched and mounded on top of SVA and cannot be readily represented in MODFLOW. Appendix 6B does not explain how this unit was simulated.**
Upper 180-Foot Aquifer	**180-Foot Aquifer**	**The grouping of lower 180 and 400-Foot Aquifers in MBGWFM is inconsistent with all previous and existing models of the 180/400-Foot Aquifer Subbasin.**
Lower 180-Foot Aquifer And 400-Foot Aquifer	**400-Foot Aquifer**	
Deep Aquifer	**Deep Aquifer**	

- Appendix 6B describes how similar estimates of cross-boundary flows were obtained along the southern model domain boundary for both the Seaside Basin model and the Monterey Subbasin groundwater model (section 2.4.2.2.1, p. 16). **Comment: Similar cross-boundary flows were not obtained across the northern model domain boundary compared to the 180/400-Foot Aquifer Subbasin GSP, which was approved by DWR.**

- Appendix 6B states, "Various studies and projects have been proposed (see GSP Section 9) or are already being implemented by water management entities in both subbasin to better characterize and model local groundwater conditions and cross-boundary flows in the Laguna Seca area and across the entire Monterey-Seaside boundary." (Section 2.4.2.2.2, p. 17). **Comment: A similar statement regarding additional studies to address discrepancies in cross-boundary flows along the northern model domain boundary does not appear to be provided Appendix 6B or the remainder of the GSP.**

- Appendix 6B states, "More recent investigations of seawater intrusion conditions within the Basin…also indicate that the Deep Aquifer is not currently seawater intruded along the Monterey coastline. As such, GHB cells were assigned along the Pacific Ocean boundary for all layers in the MBGWFM apart from layer 8 (i.e., the Deep Aquifer), which was modeled as a no-flow boundary at the Monterey coastline."." (Section 2.4.2.3, p. 18). **Comment: The Deep Aquifer is certain to extend many miles out beneath the ocean, possibly ultimately outcropping in the submarine Monterey Canyon. While it would be best to extend the model domain extent out beneath the ocean, the next best choice is to assign a general head boundary. The selected choice to assign a no-flow boundary to the Deep Aquifer is flawed and is likely to result in erroneous predictions of future groundwater levels and seawater intrusion.**

- Appendix 6B describes texture maps based on borehole log lithologic descriptions for model layers 1, 3, 5, 7, and 8, which represent the various aquifers. (Section 2.5.1, p. 21). **Comment: It is just as important (maybe more important) to develop such texture maps for the aquitard model layers 2, 4, and 6, but apparently this was not done or is not presently described.**

<u>Section 3 (Stresses)</u>

- Appendix 6B states, "…it was assumed that 25% of total projected deliveries would be applied for outdoor uses between April – September, while the remainder of deliveries would be used to meet potable and non-potable indoor demands." (Section 3.1.2.3, p. 27). **Comment: While this assumption seems reasonable, it is inconsistent with the primary proposed future project of meeting 50% of future water demands with recycled water (see Table 8 on page 28 of Appendix 6B), which would require extensive indoor use of recycled water.**

- Appendix 6B states, "For both scenarios, pumping was distributed within individual MCWD wells based on historical monthly and total pumping rates at each well." (Section 3.2.2, p. 28). **Comment: As noted in the GSP Chapter 6 comment letter submitted on November 1, 2021, future pumping of MCWD wells based on historical pumping patterns does not accurately reflect pumping trends towards a greater amount of pumping from the Deep Aquifer.**

- Appendix 6B Table 8 (Projected MCWD Pumping Rates) shows total water demand in 2040 of 9,584 AFY with 5,495 AFY provided by recycled water and 4,089 of actual groundwater pumping. In addition, water demand is projected to increase from 3,367 AFY in 2020 to 6,001 AFY in 2025, with the vast majority of that increase being covered by increased groundwater pumping (Section 3.2.2, p. 28). **Comment: It is not clear how recycled water can realistically provide 57% of total water demand in 2040. Near term, an increase in groundwater pumping from 3,367 AFY to 5,401 AFY in 2025 is likely to exacerbate seawater intrusion that is already occurring with 3,367 AFY of groundwater pumping by MCWD.**

Section 4 (Calibration)

- Appendix 6B states that the discrepancy in cross boundary groundwater flow estimates between the Monterey Subbasin GSP and 180/400 Foot Aquifer Subbasin GSP is due to 180/400 Foot Aquifer Subbasin GSP estimates being made by non-modeling methods, and that the 180/400 Foot Aquifer Subbasin GSAs plan to do additional studies of cross-boundary flows for the 5-Year Update. It is noted that the estimates in the 180/400 Foot Aquifer Subbasin were derived from, "…aggregating data and analyses from previous reports and other available sources. No numerical modeling was completed to develop the historical or current water budget." (Section 4.4, p. 31)**. Comment: The implication of the Appendix 6B text is that the non-modeling methods of determining water budgets and cross-boundary flows must be wrong. However, water budgets are commonly done using non-modeling methods, even if ultimately being used as input to a numerical model from which the final water budget is determined. For example, the 180/400 Foot Aquifer Subbasin describes using stream gage data at multiple stations to determine streamflow percolation, which likely is better than a model estimate. Furthermore, the historical and current estimates of groundwater inflow/outflow for the 180/400 Foot Aquifer Subbasin are based in part on the Salinas Valley IGSM groundwater model. In addition, the 180/400 Foot Aquifer Subbasin GSP notes that future water budgets were based on the SVIHM groundwater model developed by USGS. Overall, both subbasins estimated groundwater inflow/outflow amounts using groundwater models.**

- Appendix 6B states that, "SVIHM does not accurately reflect hydrologic conditions in the Monterey Subbasin." (Section 4.4, p. 31)**. Comment: This statement is used to help justify Monterey Subbasin GSP cross-boundary groundwater flow estimates being more reliable than those provided in the 180/400 Foot Aquifer Subbasin GSP. However, as noted above in this comment letter and in the previous HWG comment letter on Monterey Subbasin GSP Chapters 4 and 5, the HCM used as the basis for the Monterey Subbasin groundwater model is flawed in the northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin portions of the model domain and does not accurately reflect geologic or hydrologic conditions along the northern Monterey Subbasin groundwater model domain boundary. Thus, the basis for Monterey Subbasin GSP estimates for cross-boundary flows are likely less valid than those provided in the 180/400 Foot Aquifer Subbasin GSP that has already been approved by DWR.**

- Appendix 6B states, "SVBGSA is in the process of developing a dual density groundwater model for the coastal regions of the greater Salinas Valley Basin. This model will incorporate the MBGWFM and be used to further assess volumetric exchanges between the ocean and the Salinas Valley groundwater basin. It will also aid in evaluating flows across subbasin boundaries and will be used evaluate impacts of potential regional projects that have been proposed in this GSP and other GSPs to address seawater intrusion in the Salinas Valley groundwater basin." (Section 4.4, p. 31). **Comment: Given that the MBGWFM is expected to be expanded and have uses much greater than and beyond the scope of the Monterey Subbasin GSP, it is critical that the hydrostratigraphic misrepresentation and flawed model layering (and model boundary conditions) outlined above be addressed for this broader effort (and preferably for use in the Monterey Subbasin GSP itself).**

- Appendix 6B Table 10 indicates the Normalized RMSE for Model Layer 1 is 5.7% based on a range in elevations of 198.4 feet; and that the Normalized RMSE for Model Layer 8 is 2.9% based on a range in elevations of 728.4 feet. The text states, "A generalized rule of thumb in model calibration is that the model is considered well-calibrated when the normalized RMSE is less than 10%. The low normalized RMSEs are therefore an indicator that the model is well-calibrated as a whole and within individual layers given the range of observed data." (Section 4.7, p. 33). **Comment: Review of the hydrographs indicates the range in elevations for Model Layer 1 is not more than 115 feet, resulting in a Normalized RMSE of about 10%. Even if there were an outlier somewhere in the hundreds of hydrographs provided, it would be an extreme outlier that artificially increased the range of elevations and lowered the RMSE to 5.7 %. Overall review of hydrographs indicates the calibration of the Dune Sand Aquifer is not particularly good and is no better than previous models of the area. The extreme range in elevations of 728.4 feet for Layer 8 is apparently mixing data from near the ocean in the Marina-Ord area with the highest elevations of the Corral de Tierra area, which artificially lowers the Normalized RMSE by a large amount. A more realistic groundwater elevation range of about 95 feet for the Marina Ord area for which hydrographs show an RMSE of about 14.5 feet yields a Normalized RMSE of about 15%. There was insufficient time to do similar checks on other model layers, but results for Model Layers 1 and 8 indicate a relatively poor overall calibration for the Marina-Ord area. It is also noted that while the Monterey Subbasin modeling effort appeared to use practically all available monitoring well data for model calibration (with notable exception of MPWSP data); however, the monitoring well hydrograph for MW-OU2-29-A is missing from the dataset for the Dune Sand Aquifer, which is noteworthy because it was a particularly challenging hydrograph to match with previous models.**

- Appendix 6B provides a map (Figure 29) of calibration hydrograph locations (Section 4.7, p. 33). **Comment: It is not clear why nested monitoring well data from the Monterey Peninsula Water Management Project (MPWSP) are not being used in the model calibration. These wells are located in key data gap areas of the model domain.**

<u>**Section 5 (Sensitivity and Uncertainty Analysis)**</u>

- Appendix 6B states the final calibrated Kv of Model Layer 2 was 2 x 10^{-4} ft/d (Section 5, p. 34). **Comment: A Kv of 2 x 10^{-4} ft/d is equivalent to 7 x 10^{-8} cm/s. This is an extremely low and unrealistic Kv value for a regional clay layer. Such an unrealistically low calibrated Kv value was likely driven by trying to achieve a better calibration within the overlying Model Layer 1. Previous studies indicate that accurately representing (from a hydrogeologic standpoint) the Dune Sand Aquifer (Model Layer 1) is extremely difficult because it contains perched and mounded water on top of a sloping clay layer and numerical models have trouble accurately representing such hydrogeologic conditions. The text of Appendix 6B provides no discussion of this issue and how it was addressed in the Monterey Subbasin groundwater model. The consultants that prepared Appendix 6B are quite familiar with the issue and have critiqued previous models in the area regarding this issue, yet they provide no explanation of how the issue was addressed in their own model. Regardless, it is clear from detailed inspection of calibration hydrographs for Model Layer 1 and the use of an unrealistically low Kv value for Model Layer 2 that these model challenges for simulating the Dune Sand Aquifer remain unresolved for the Monterey Subbasin groundwater model.**

<u>Section 6 (Model Limitations and Suggested Future Refinements)</u>

- Appendix 6B states, "…the model calibration error is within acceptable bounds…As demonstrated by the calibration error statistics summarized in Section 4.7 the MBGWFM reasonably represents historical groundwater conditions within the Subbasin using a set of parameters that are within real-world observations and established scientific principles." (Section 6, p. 35). **Comment: As discussed previously: 1) A limited review of the calibration data indicates Model Layers 1 and 8 are poorly calibrated (time did not permit for checking calibration of other model layers); 2) the HCM forming the basis for model layering and general head boundary conditions on the northern portion of the model domain are flawed; and 3) the calibrated Kv for Model Layer 2 is unrealistically low by at least two orders of magnitude. These findings indicate the statements in Section 6 about model calibration being acceptable and the model being based on realistic model parameters are inaccurate.**

- Appendix 6B notes that, "…only a small number of wells exist in the Deep Aquifers within the 180/400 Foot Aquifer Subbasin with observed water level data spanning the full duration of the historical Period. As such, simulated Deep Aquifers heads along the northern model boundary are subject to the limitations in available data to the north of the boundary, which may impact resulting calculations of 180/400 Foot Aquifer Subbasin exchanges within the water budget." (Section 6, p. 35). **Comment: It should be noted that the same limitations on available data are equally applicable south of the boundary.**

- Appendix 6B notes that there is a lack of water level calibration data outside of certain areas such as the MCWD service area and former Fort Ord Site (Section 6, p. 36). **Comment: While this statement is generally correct, there is no explanation as to why an extensive monitoring well data set for the MPWSP is not used in the model calibration – particularly given it is located in a data gap area.**

- Appendix 6B notes there is significant uncertainty with the climate change predictions provided by DWR that are the basis for future scenarios in the GSP (Section 6, p. 37). **Comment: Given the uncertainty in climate change predictions related to precipitation, it would be more prudent for future water management to assume that groundwater recharge will not increase in the future due to climate change (as has been assumed in the GSP) and assume instead it will remain consistent with historical data.**

SUMMARY OF COMMENTS

Although limited by the available time frame for review of Monterey Subbasin GSP Appendix 6B, many detailed comments are provided above. A few of the major takeaways from this review include the following:

- The HWG previously reviewed Draft GSP Chapters 4 and 5 for the Monterey Subbasin GSP and provided comments dated April 5, 2021. While the HWG comments were acknowledged as being received by the GSA, the Public Draft versions of Chapters 4 and 5 included no significant changes to the text or figures related to the HWG comments. Furthermore, these previous comments have direct bearing on the groundwater model development documented in Appendix 6B, and it is apparent that these previous HWG comments were not considered in Monterey Subbasin groundwater model development. In particular, the HCM in northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin is fatally flawed (in terms of model layering and boundary conditions) to the extent it will impact model results and lead to inaccurate future predictions of groundwater elevations and seawater intrusion in this area of the model domain.

- Although the allowed review time was insufficient to conduct a review of model calibration for Model Layers 3 through 7, review of calibration hydrographs and associated calibration statistics for Model Layers 1 (Dune Sand Aquifer) and 8 (Deep Aquifer) indicate model calibration is not within acceptable limits for the Marina Ord portion of the model domain.
- The historical challenges in achieving acceptable calibration for the Dune Sand Aquifer have not been resolved in the Monterey Subbasin groundwater model. The Kv for the underlying Model Layer 2 had to be set at unrealistically low values even to achieve the relatively poor calibration of Model Layer 1 documented in this comment letter. Utilizing a realistic Kv value for Model Layer 2 presumably would have resulted in an even worse model calibration for Model Layer 1.
- It is not clear why a No Flow boundary condition at the ocean shoreline would be used for the Deep Aquifer. This choice of boundary condition will likely lead to inaccurate future predictions of groundwater elevations and seawater intrusion.

Thank you for the opportunity to provide these comments.

Sincerely,

LUHDORFF AND SCALMANINI
CONSULTING ENGINEERS

Peter Leffler

Peter Leffler,
Principal Hydrogeologist

REFERENCES

Hydrogeologic Working Group (HWG), *HWG Comments on Technical Appendices/Attachments to Letters Submitted by MCWD and City of Marina to the CPUC and MBNMS on April 19, 2018*, Letter submitted to California Public Utilities Commission and Monterey Bay National Marine Sanctuary, August 15, 2018.

HWG, *HWG Comments on Remy Moose Manley Letter Attachments Prepared by HGC, EKI, and AGF for City of Marina Planning Commission Hearing Agenda Item #5A on MPWSP Coastal Development Permit Held on February 14, 2019*, Letter submitted to City of Marina, April 12, 2019.

HWG, *HWG Comments on AGF Final Report on the 2019 Airborne Electromagnetic Survey of Selected Areas within the Marina Coast Water District, Undated*, Technical Memorandum Submitted as an attachment to Cal Am response to City of Marina comments on 180/400 Foot Aquifer Subbasin GSP, June 26, 2020.

Appendix 2-E

Supplemental Comment Letter Responses

City Of Seaside's Comments on Draft Monterey Subbasin Groundwater Sustainability Plan

"The City of Seaside received a notice dated September 20, 2021 from the Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA) that they had prepared a draft Groundwater Sustainability Plan for the Monterey Subbasin (the GSP) as required by the Sustainable Groundwater Management Act (SGMA). Staff reviewed the draft Groundwater Sustainability Plan, Monterey Subbasin prepared by EKI Water & Environment, Inc. for the Marina Coast Water District Groundwater Sustainability Agency and the Salinas Valley Basin Groundwater Sustainability Agency dated September 2021 (the GSP) download from the MCWD website on October 13, 2021 from the following link https://mcwd.org/gsa gsp.html. The following comments are submitted for your consideration."

Seaside Comments	**Responses**
Major Comments	
1. The City of Seaside requests to be included as stakeholder (page 28)	The City of Seaside has been added to MCWD's stakeholder list and SVBGSA's Subbasin Planning Committee. Please note that the Technical Committee is formed only between the two basin GSAs to implement the GSAs' Framework Agreement.
2. The City of Seaside is requests membership in the Technical Committee (page 8-10)	See response to Comment 1.
3. Since the Framework agreement between the MCWD GSA and the SVBGSA (the Agreement) appears to give MCWD additional jurisdiction within the City of Seaside city limits beyond the MCWD GSA boundary, the Agreement should be made available for review and comment by the City of Seaside (page 12).	A copy of the Framework Agreement will be provided to the City of Seaside. It should be noted that the subject of the Framework Agreement is the responsibility for development of GSPs for the 180/400-Foot Aquifer and Monterey Subbasins.
4. The MCWD should clarify how the Water Augmentation Project would be implemented to ensure proposed development would not cause exceedances of groundwater extraction allocations (pages 6-57 and 9-31)	The environmental and feasibility assessment of the project will include an analysis of compliance with groundwater laws and with any applicable FORA water allocations.
5. The GSP should clarify how the sustainable yield would be affected by the 180/400 & the Seaside Subbasins operated under conditions similar to current conditions or probable future conditions that do not meet MT or MO boundary conditions (page 6-59).	Given SGMA requirements which apply to the 180/400 Foot Aquifer subbasin and adjudication requirements, which apply to the Seaside Subbasin, it is reasonable to assume that these basins will operate sustainability into the Future and that the 180/400 Foot Aquifer subbasin will meet MT or MO boundary conditions through voluntary or regulatory actions. Assuming otherwise leads to an infinite set of potential future boundary conditions that cannot be evaluated in the Monterey GSP.
6. The MCWD should support the Seaside Watermaster to facilitate the development of alternative water for replenishing the Seaside Subbasin to ensure that the Seaside Subbasin is able to achieve Protective Water Levels to mitigate seawater intrusion (page 9-13)	Comment noted. MCWD is collaborating with and supporting the Seaside Watermaster's groundwater monitoring and future supply projects, including future deliveries to the golf course as well as existing Ord service area customers that overly the Seaside Subbasin.
7. The GSP should clarify if Project R2, Regional Municipal Supply, is substantially different than the Regional Project as proposed by Cal Am. If not, why is "Further analysis and scoping ... needed to determine the exact location of the desalination plant, end uses, and desalination technology [9.4.2]"? If so, how are they different? (page 9-26)	As described in Section 9.4.2, this project builds upon the Seawater Extraction Barrier Project proposed in the 180/400-Foot Aquifer Subbasin GSP. This project is substantially different from the Monterey Peninsula Water Supply Project proposed by Cal Am as to source wells and desalination plant locations.
8. In Section 9.4, the GSP should tabulate the scope of and capital costs for the proposed Seawater Extraction Barrier Project (page 9-26). The scope should clarify alternatives for discharging and/or reusing extracted brackish water (page 9-28).	The scope and capital costs of the Seawater Extraction Barrier Project can be found in the 180/400-Foot Aquifer Subbasin GSP. The GSP provides a reference to that document. As discussed in Section 9.4.2.7, "the estimated capital cost for the pipeline from the wells to

Seaside Comments	Responses
	the desalination plant and desalination plant is $309,387,000. The estimated capital cost for the distribution network ranges from $65,257,000 to $84,315,000 depending on how many communities receive water. Annual operations and maintenance are projected to cost about $13,300,000". Additional analysis and refinement of the project will be conducted during the first two years of GSP implementation should the SVBGSA Board take up this project. The Seawater Extraction Barrier Project is not included in this GSP. This GSP includes the Regional Municipal Supply Project, which would treat water from the extraction barrier and deliver it for use in municipal areas.
9. It is assumed that additional investment is required to reimburse the capital expenditures and debt servicing incurred by MCWD for producing 600 AFY of recycled water. The MCWD should clarify what this investment is (page 9-58).	Language has been modified under Project M3 regarding cost to implement recycled water for irrigation.
10. Since the GSP states that potable water could be delivered to Zone 2C by direct diversion and treatment from the Salinas River during certain months with some minor permit modifications, it should also be possible to deliver irrigation water through direct diversion. This should be explored and promoted as an alternative for providing irrigation water to supplement the more expensive treated water from Pure Water Monterey (i.e., $1,100/AF versus $1,600/AF, respectively) (page 9-22)	Comment noted. The cost/benefit, timing, and priority of the proposed projects will be further analyzed during the first two years of GSP implementation.
11. Section 10.7.1, "MCWD GSA Start-up Budget and Funding to Meet Costs," should be modified to include capital projects costs which are part of the costs for implementing the GSP over the next five years and should include an estimated cost to rate payers if no grant funding becomes available (page 10-16).	It is difficult to estimate the cost to rate payers at this time since the capital projects that will actually be implemented have not been selected, are subject to environmental and feasibility studies, and may be regional in nature. In addition, development of each capital project will depend upon then available sources of funding, including grants, loans, and other sources.
Minor Comments	
Page 12. Please add "the City of Seaside" to the definition of the Marina-Ord Management Area.	Edits made.
Page 12. Since the Framework agreement between the MCWD GSA and the SVBGSA (the Agreement) appears to give MCWD additional jurisdiction within the City of Seaside city limits beyond the MCWD GSA boundary, the Agreement should be made available for review and comment by the City of Seaside.	See response to Comment 3.
Page 28. Please confirm that the City of Seaside would be included in the stakeholder database.	See response to Comments 1 and 2.
Page 55. If the "2020 UWMP anticipates that projected water demand within the entire District would be 9,584 AFY by 2040, including 2,974 AFY within the City of Marina and 6,610 AFY for the existing and future developments within the Ord Community," why is it shown as 9,300 AFY here?	9,300 AFY is the water demand projection presented in the 2020 Master Plan. It is removed from this paragraph to avoid confusion.
Page 145. The ordinate scales on the groundwater elevation graphs are too large to confirm if a linear trend line is best fit for determining trend lines. Please clarify why linear trend lines were selected to approximate groundwater elevations in the 400-ft aquifer.	Linear trends are used to predict water levels in the SMC sections. In the absence of more detailed information, use of linear trends is appropriate and generally used for such predictions.

Seaside Comments	Responses
Page 149. Confusion in datum for groundwater elevations. Figure 5-12 states that it is both msl and NAVD88. These are not the same datum.	The "msl" notation is a typo and removed from the figure. The datum is at NAVD88.
Page 213. Why has the inflow from Seaside Basin increased by 45% from historic to current? Is this trend expected to continue?	The increase in groundwater inflows from Seaside Subbasin is due to recent changes in groundwater gradients observed along the Seaside-Monterey boundary. Specifically, it appears groundwater level declines observed in the 400-Foot Aquifer and Deep Aquifers during the current period contribute to increased inflows from the Seaside Subbasin into the Monterey Subbasin as rates of groundwater extraction in the Marina-Ord area have not increased. Projected Model results provide estimates of potential future inflows from the Seaside Basin into the Monterey Subbasin under variable boundary conditions at the 180/400 Foot Aquifer Subbasin boundary. MTs and MOs in the Monterey Subbasin have been established to limit increases in flows across the subbasin boundary. However, as recognized in the GSP a coordinated approach between subbasins will be required to achieve sustainability in these Subbasins.
Page 215. Was annual well pumping determined from well meters (i.e. does it include non-revenue water or leakage)? If not, then that component of leakage should be omitted from the estimated recharge.	Groundwater pumping estimates were informed by (1) metered MCWD well production for the Marina-Ord area, and (2) pumping estimates provided by SVBGSA for domestic, agricultural, and municipal supply wells within the Corral de Tierra Area (Section 6.2.2). Pumping estimates provided by SVBGSA include municipal pumping data from the four water agencies within the Corral de Tierra Area (i.e., California Water Service, CalAm Toro, Hidden Hills, and Ambler Units), which were obtained directly from the Seaside Groundwater Model (see Appendix 6B). The 5% leakage factor was only applied to municipal supply pumping from these five water agencies within the Subbasin, and does not include unmetered pumping from domestic and agricultural wells.
Page 233. What does the following statement mean?"... fall within the middle of the range of projected boundary conditions."	Groundwater levels specified along the 180/400-Foot Aquifer Subbasin boundary under MO boundary conditions generally fall around the mid points between groundwater levels specified under the MT and SWI boundary conditions.
Page 235. Unclear. Is the assumption that the MT or MO Boundary conditions are achieved in the short term?	As described in detail in Section 6.5.1.3 and in Appendix 6B, water levels along the 180/400-Foot Aquifer Subbasin boundary are initiated at their Fall 2018 levels for all projected scenarios, gradually adjusted over twenty years to MT/MO/SWI levels, and then held constant for the remaining 30 years of the projected simulation. For the MT scenario, water levels are adjusted linearly from Fall 2018 to MT water levels over twenty years. For the MO scenario, water levels are adjusted in five-year increments based on the interim milestones (IMs) identified in the 180/400-Ft. Aquifer Subbasin GSP.
Page 238. Why is well pumping under the "No Project" scenario shown as 8,767 AFY when the MCWD UWMP estimates that the demand would be 9,584 AFY. Applying the	The 8,767 AFY estimate reflects 50-year average projected pumping rates within the Marina-Ord Area. As described in Section 6.5.1.1. and in Appendix 6B,

Seaside Comments	Responses
5% leakage rate used in this GSP indicates future pumping should be 10,088 AFY. Please clarify.	projected MCWD pumping under the “no-project” scenario follows the projected pumping demands specified in MCWD’s 2020 UWMP, where MCWD pumping is expected to increase from 3,367 AFY in 2020 to 9,584 AFY in 2040. Demand projections provided in Table 4.6 of the 2020 UWMP include a provision for loss, which is estimated to be around 5% of total demand. Thus, total projected demand estimates listed in the 2020 UWMP serve as a reasonable proxy for total projected MCWD pumping, inclusive of non-revenue water lost to leakage.
Page 243. Could groundwater extraction along the coast mitigate the inland flow of seawater? Could modeling this scenario help?	The MBGWFM currently does not simulate variable-density groundwater flow nor does it simulate groundwater flow in adjacent subbasins, (see Appendix 6B), thus making a detailed analysis of seawater intrusion mitigation strategies is impractical. However, as described in Section 9.8.6*,* SVBGSA in coordination with MCWD plans to create a variable density model for the coastal region of the greater Salinas Valley Groundwater basin that incorporates the MBGWFM within the first 5-years of SGMA implementation. A more detailed analysis of seawater intrusion mitigation strategies will be completed upon development of this model.
Page 244. Should modeling be performed to predict scenarios, under which MCWD alters pumping regime to minimize seawater intrusion?	See response to comment re: page 243 above.
Page 245. What causes groundwater elevations to instantaneously increase by 2 feet under the no project condition?	It is a result of model simulation and likely due to that the first two years of the analog period are wet years, as can shown by the similar patterns observed around years 2038 and 2058.
Page 245. How was the MO of approximately 7-ft increase determined?	The 2004 average groundwater level was about 7 ft higher than the 2018 average groundwater level.
Page 245. How was the MT of 2-ft increase determined?	The 2015 average groundwater level was about 2 ft higher than the 2018 average groundwater level.
Page 248. Is this correct? Outflow from the 180/400 Subbasin are affecting the Monterey Subbasin?	Yes, given their demonstrated hydraulic connectivity, interactions between subbasins are affecting the sustainability of other subbasins.
Page 250. Note (c) is missing.	Reference to note (c) is a typo and is deleted.
Page 250. Table 6-5 (No Project Condition) shows outflow to 180/400 Subbasin at 3,849 AFY and 1,927 AFY for MT and MO boundary conditions, respectively. Table 6-8 (Project Condition) shows 6,833 AFY and 4,901AFY respectively. This appears to indicate that the MT and MO boundary conditions to the 180/400 Subbasin are attained at significantly different times or are different for the "No Project" and "Project" scenarios. This appears to also be the case for inter-basin transfer to the Seaside Basin. Can this be better explained?	See response to comment re: page 235 above. For all scenarios, water levels are initialized at Fall 2018 conditions along the 180/400-Foot Aquifer Subbasin Boundary, gradually adjusted to reach MT/MO/SWI levels over 20 years and are then held constant over the remaining 30 years of the simulation. Similarly, for all scenarios, water levels along the Seaside Subbasin boundary are held constant at Fall 2017 levels simulated from the Seaside Model, or at MT water levels specified for Corral de Tierra wells in the Laguna Seca area (see Section 6.5.1.3 and Appendix 6B). There are no changes in boundary condition assumptions between the “project” and “no project” scenarios. Rather, implementation of the “project” scenario results in higher water levels within the Monterey Subbasin relative to the “no project” scenario, thus impacting cross-boundary flow estimates with the adjacent subbasins.

Seaside Comments	Responses
Page 250. Table 6-5 (No Project) shows well pumping at 8,767 AFY for MT and MO boundary conditions. Table 6-8 (Project) shows 4,488 AFY for MT and MO boundary conditions. Does the model account for variability in pumping conditions since the Water Augmentation project would not come on-line for at least 6 years (see Fig. 9-6)? That is, what would cause and when would pumping exceed 4,488 AFY under the "Project" Conditions?	Yes, see slide #20 on stakeholder presentation #5.
Page 250. Do the future pumping rates shown in Table 6-8 account for leakage?	Yes.
Page 251. Are the increases in groundwater elevations shown here mostly attributed to actions performed, and MTs and MOs achieved, in adjacent subbasins?	That is correct.
Page 252. It appears that this report is stating that if the adjacent subbasins are no operated sustainably, then the Monterey Subbasin could not be managed sustainably?	Since the Monterey Subbasin is interconnected with adjacent subbasins, the sustainability of one subbasin is dependent on other basins also achieving sustainability.
Page 252. The groundwater levels appear to stabilize within the first 10 years due to assumed actions in adjacent subbasins. It could be important to consider the effects on water budget for scenarios where the adjacent subbasins are not operated under MT and MO boundary conditions.	See response in Comment #5.
Page 253. It is unclear how the range of 4,400 to 9,900 AFY was determined? Above the report states that 2,714 AFY is the lower limit of the range and Table 6-5 suggests that 8,767 AFY is sustainable if MOs are achieved.	This paragraph discusses the future sustainable yield of the Marina-Ord Area WBZ which are based on the “no project” scenario analysis (Section 6.5.4) and the “project” scenario analysis (Section 9.6.1). These results show that groundwater levels stabilize during the 30-year GSP implementation period when average rates of extraction are 4,376 AFY for the “project” scenario and 9,870 AFY for the “no project scenario”. This range of values is identified as the potential future sustainable yield of the Monterey Subbasin as MTs and in some cases MOs are achieved in RMS wells at these rates of extraction, under variable boundary conditions and climate scenarios. The projected sustainable yield is not the same as the historical sustainable yield (2,714 AFY) because it takes into account future conditions including variable climate and boundary conditions. The variable boundary conditions assume that adjacent subbasins will also achieve sustainability into the future.
Page 256. Is there a discontinuity in the modeling geometry at the interface of the Seaside Basin and MBGWFM? If so, how can this be rectified?	As described in detail in Appendix 6B, there are notable differences in hydrogeologic conceptualization and geometry between the MBGWFM and the Seaside Model that will result in imperfect matching of head conditions between the two models. As such, a few simplifying assumptions had to be made to effectively link head outputs from the Seaside Model to general head boundary cells along the Seaside boundary within the MBGWFM. This was done in a manner that results in very similar estimates of total historical cross-boundary flows between the two models (i.e., within 2% on average). MCWD encourages continued collaboration with the Seaside Basin to further rectify the discrepancies between the two models in a future

Seaside Comments	Responses
	update to the MBGWFM, and/or to integrate both models into a regional model that covers both subbasins.
Page 311. Based upon Table 6-4, it appears that sustainability goal can be achieved mostly by inter-basin coordination.	Yes
Page 312. How will Seaside Watermaster Actions be supported?	As discussed on page 311 (Section 8.2), these projects and actions are further described in Chapter 9. Please see Section 9.5.1 for further details.
Page 315. The City of Seaside or the Seaside Watermaster should consider requesting membership in the Technical Committee.	See response to Comment 2.
Page 316. Why was 2004 groundwater elevation used for this MO?	See Section 8.7.3.1.
Page 329. Are the MT and MO for the 180/400 Subbasin approximately-8 and -3.4 near Well MW-B-05-180? If not, why are -8 and-3.4 the MT and MO for this well?	As described in Section 6.1.5.3 and in Appendix 6B, MT and MO water levels were assigned to general head boundary cells along the northern MBGWFM boundary using the closest representative monitoring well (RMW) to each cell in the 180/400 Foot Aquifer Subbasin SGMA monitoring network. In the vicinity of Well MB-B-05-180, MT and MO water levels at the northern boundary were informed by RMW 14S02E27A001 in the 180/400-Foot Aquifer Subbasin. At this RMW, the MT is set at -9.9 ft msl, and the MO is set at -3.1 ft msl, which is very close to the MT/MO defined for Well MW-B-05-180. The MT and MO were set at Well MW-B-05-180 per its historical water levels using the same methodology as outlined in Section 8.7.3.1.
Page 329. 1992 to 1998 data for MW-OU2-29-180 and MW-B-05-180 seem to be skewed and may need to be ignored when determining MT and MO.	Water levels have been relatively stable in these wells and the changes since 1992 are relatively minor (i.e., within 2 ft).
Page 330. Is this one outlier determining the MT of-13.3 for MP-BW-42-295. (see MT-10 for adjacent Well MW-OU2-66-180).	The MT and MO in Well MP-BW-42-295 were set using the same methodology in Section 8.7.3.1, and the water levels at this well have been relatively stable.
Page 335. Setting the MTs to 2015 groundwater elevations seems to contradict the goal of preventing seawater intrusion.	See Section 8.7.3.1.
Page 342. Can the following statement be clarified to state whether the proposed MTs and MOs help Seaside Basin obtain its adjudication requirements: "Monterey Subbasin minimum thresholds do not prevent the Seaside basin from meeting its adjudication requirements, including the occurrence of Material Injury."	This statement was added per the request of the Seaside Watermaster. Since the Seaside Subbasin is not subject to SGMA, there are no direct SMCs established in the Seaside Subbasin that can be compared to those defined in the Monterey Subbasin. However, the GSAs will work with the Seaside Watermaster to meet
Page 392. Should a column be added to Table 9-1 for"...a description of the measurable objective that is expected to benefit from the project or management action [354.44(a)(l)"? If not, is this information given elsewhere?	The information can be found in sections "Expected Benefits and Evaluation of Benefits" under each project.
Page 394. If the extraction barrier is a necessary component of Project R2 (see Section 9.4.2.7 which states it is a precursor), should it be included here? If not, why is the seawater extraction barrier not included as a separate project in Table 9-1?	See response in Comment #8.
Page 394. Please confirm estimated cost of $172M for R1 (Section 9.4.1.7 seems to indicate $181M)	Edited to $181M.
Page 396. The costs for pilot scale modeling should be moved from Project M4 to Project M3.	The bench scale pilot testing is associated with the monitoring well(s), data gaps filling, project. Thus, the GSAs intend to keep it in Project M4.

Seaside Comments	Responses
Page 396. The demand for 1,427 AFY irrigation water at a unit production cost of $1,600/AF seems high. Section 9.4.6.7 states "MCWD's 2020 UWMP estimates that 950 AFY of landscape irrigation demand can be met by recycled water by 2030 and 1,270 AFY by 2040".	Delivering 1,427 AFY of recycled water to MCWD for irrigation will likely require an expansion of the M1W AWPF. Cost and benefits of the proposed projects will be further refined during the first two years of GSP implementation.
Page 398. Should the costs shown here only reflect costs to the MCWD GSA?	Total implementation costs are presented. In many cases, these costs reflect overall costs to both MCWD and SVBGSA.
Page 398. The Seaside Watermaster supports the construction of a facility that would allow water to be imported and injected into the Seaside Basin (see letter to M1W et al dated May 24, 2021). Can this section be clarified to state potential actions that will be implemented by the GSA to support the Seaside Watermaster desire to import water?	This level of detail is not included within the GSP, but will be identified in future updates. MCWD is collaborating with and supporting the Seaside Watermaster's groundwater monitoring and future supply projects, including future deliveries to the golf course as well as existing Ord service area customers that overly the Seaside Subbasin.
Page 399. Should the costs shown here only reflect costs to the MCWD GSA?	See response to comment re Page 398 above.
Page 399. Projects I5 and I6 appear to be the same action. Please clarify how one could be implemented without the other.	Project I5 includes a working group of multiple agencies and stakeholders to develop consensus on the current understanding of seawater intrusion, and the development of a plan to address seawater intrusion. Project I6 is being lead by the SVBGSA and MCWD and includes the development of numerical variable density groundwater model that will aid in modeling seawater intrusion within the Monterey Subbasin and the coastal regions of the Salinas Valley Groundwater basin. This model will be used to evaluate the efficacy of potential projects identified by the SWIG to address seawater intrusion.
Page 399. Please consider adding an action that supports modeling integration with Seaside Subbasin.	The numerical variable density groundwater model being developed for the coastal regions of the Salians Valley Groundwater Basin, will incorporate the Seaside Subbasin.
Page 400. Should Project I9 be modified to include wells that become non-productive due to such things as high TDS?	There are currently no domestic wells near the coast within the Monterey Subbasin.
Page 403. Section 9.4 would be more readable if the organization of project descriptions followed Table 9-1 and used the P/MA # found there.	P/MA # added to section titles.
Page 407. Does the FORA HCP have water rights and flow prescriptions for the Salinas River?	It does not.
Page 407. Since the GSP states that potable water could be delivered to Zone 2C by direct diversion and treatment from the Salinas River during certain months with some minor permit modifications, it should also be possible to deliver irrigation water through direct diversion. Should this be explored and promoted as an alternative for providing irrigation water to supplement the more expensive treated water from Pure Water Monterey (i.e. $1,100/AF versus $1,600/AF, respectively)?	See response to comment 10 under Major Comments.
Page 411. Where is the scope of work and capital costs described for the Seawater Intrusion Extraction Barrier Project?	See response to Comment 8 under Major Comments.
Page 411. Project R2 states ''The plant will produce approximately 15,000 AFY of potable water for use." Chapter 6 states that there is approx increased demand of 5,300 AFY. Why is desal plant being proposed that could provide almost 3 times the future demand?	The desalination plant is conceptualized as a regional project that may provide water to multiple subbasins including the 180/400-Foot Aquifer Subbasin and the Monterey Subbasin.

Seaside Comments	Responses
Page 411. Is Project R2 substantially different than the Regional Project as proposed by Cal Am? If not, why is "Further analysis and scoping ... needed to determine the exact location of the desalination plant, end uses, and desalination technology"? If so, how are they different?	See response to comment 7 under Major Comments.
Page 411. Table 9-1 does not include "Priority Project 6." Please clarify where this project is tabulated.	See response to Comment 8 under Major Comments.
Page 412. Please clarify how extracting an additional 35,000 AFY from the basin reduces groundwater extraction and will "either raise groundwater elevations or reduce the rate of groundwater elevation decline over time."	The Regional Municipal Supply Project (Project R2 in Chapter 9), was originally developed in the 180/400-Foot Aquifer Subbasin GSP. The purpose of extracting intruded seawater is to both prevent further intrusion as well as move the leading edge seaward by affecting the gradients in the vicinity of the extraction barrier. The extraction barrier works best in conjunction with other projects that can use the extracted and desalted water for in-lieu use, direct delivery, or injection, as described in the GSP. This GSP includes the Regional Municipal Supply Project, which would treat water from the extraction barrier and deliver it for use in municipal areas. By providing water for direct delivery, it would act as in lieu recharge through reducing the amount of groundwater that would need to be extracted. By reducing extraction, it would support raising groundwater elevations or reducing the rate of groundwater elevation decline over time.
Page 412. Please clarify if the extraction wells are extracting 100% seawater. If not, how is this project able to reduce groundwater extraction.	The exact location of the wells has yet to be determined; however, the conceptual design of this project is to draw brackish water such that it forms a hydraulic barrier to further seawater intrusion.
Page 412. Please clarify how extracting water from the basin will reduce any potential for land subsidence.	Using desalinated water instead of pumped groundwater leaves water in the ground and prevents risk for land subsidence.
Page 412. Please clarify" This would reduce groundwater extraction by that amount, increase the Subbasin's groundwater storage." Unless the extraction wells are pumping 100% seawater, there is not a one-for-one benefit for reduction in groundwater extraction	The extraction barrier and desalted water for other uses addresses seawater intruded groundwater and provides an alternative supply, thereby allowing for more groundwater to stay in the aquifers. There may not be a one-for-one benefit, but that is not the purpose or promise of the project.
Page 413. Please clarify alternatives for discharging and/or reusing extracted brackish water. If none, please clarify if there are potential cost effective alternatives to Project R2.	There are two options for the brackish water: discharge to the ocean or treat for beneficial use. The costs/benefits of various technologies and discharge options will be further analyzed during implementation should the SVBGSA Board take up this project.
Page 416. Please clarify where this cost data is derived from.	This project is still conceptual and cost estimates will be refined with further project scoping.
Page 417. Why is the seawater intrusion extraction barrier project not better described in this section?	See response to Comment 8 under Major Comments.
Page 440. Please clarify how IPR would increase groundwater elevations.	IPR provides in-lieu recharge benefits that would reduce MCWD's groundwater pumping.
Page 440. Since Project M3 is not a supplemental water supply project, it is unclear how it would "add" water to the aquifer for future development? Please clarify.	Project M3 is a water augmentation project that does provide additional water to meet water demands within the Subbasin and reduce reliance on groundwater.
Page 443. Have all the capital expenditures been paid for the 600 AFY? If not, please clarify the investment needed to reimburse the capital expenditures and debt servicing for the 600 AFY.	Language has been modified under Project M3 regarding cost to implement recycled water for irrigation.

Seaside Comments	Responses
Page 443. Please clarify if the "soft costs" provided here include debt servicing. If not, whv not?	Language has been modified under Project M3 regarding cost to implement recycled water for irrigation.
Page 445. Please confirm that RUWAP pipe extends south of Coe Ave in GJM Blvd.	Yes. It extends to near South Boundary Road in GJMB but is not constructed within South Boundary Road (the portion that heads east at the southern part of the diagram). The extension of the recycled line down South Boundary road is planned but not yet constructed.
Page 487. Can the Monterey Subbasin Model be coordinated with the Seaside Basin model to simulate conditions across the subbasins?	See response to comment re: page 256 above. MCWD encourages continued collaboration with the Seaside Basin to further rectify the discrepancies between the two models in a future update to the MBGWFM, and/or to integrate both models into a regional model that covers both subbasins.
Page 491. Addressing potential overdraft could be managed by producing documents such as a monitoring and management plan and a management action plan that addresses policies and procedures to monitor and respond to water elevation concerns.	Comment noted.
Page 497. Can extraction wells be added to the monitoring network?	They can be added to the seawater intrusion monitoring network. However, extraction wells are generally not included as part of part of the groundwater elevation monitoring network, because of the variability in water levels caused by extraction.
Page 497. The annual report could also address if milestones and goals are being attained and, if necessary, potential corrective actions that may be employed to respond to deviations from goals.	Comment noted.
Page 507. What is the estimated additional costs to rate payers if no grant funding becomes available?	See response to Comment 11 under Major Comments.
Page 508. Please clarify why Administration and Legal costs are 30% of the total cost.	This category includes District staff time.

4/5/2021 – HWG COMMENTS ON DRAFT MONTEREY SUBBASIN GROUNDWATER SUSTAINABILITY PLAN, CHAPTERS 4 AND 5

The Hydrologic Working Group (HWG) was formed pursuant to a 2013 Settlement Agreement associated with California American Water Company (CalAm) Monterey Peninsula Water Supply Project (MPWSP)[1]. *The HWG consists of Mr. Martin Feeney and Mr. Tim Durbin who represent the Salinas Valley Water Coalition (SVWC) and Mr. Peter Leffler and Dr. Dennis Williams who represent CalAm*[2]*. CalAm and SVWC are parties to the Settlement Agreement*[3]*. The HWG serves as an internal peer review group to evaluate data and analyses and prepare investigation documents associated with the MPWSP.*

The MPWSP is being implemented by California American Water Company (Cal Am) to increase water supply for its customers on the Monterey Peninsula. The MPWSP includes construction of slant wells that will extract a total of approximately 15.5 million gallons per day of groundwater and seawater as part of the intake system for a desalination plant[4]. The Slant wells are located in the 180/400 Foot Aquifer Subbasin, approximately 2/3 mile north of the Monterey Subbasin. The MPWSP does not provide any water to residents or other water users within the Monterey Subbasin. Concerns have been raised by Marina Coast Water District and others that the Slant wells will extract groundwater and impact groundwater quality within the Monterey Subbasin[5]. The MPWSP is currently the subject of litigation.

As indicated above, the HWG is funded by Cal Am and the SVWC, proponents of the MPWSP. The majority of the comments provided by HWG focus on conditions in the vicinity of the MPWSP, and reflect HWG's opinions regarding conditions within the Monterey Subbasin, which support the HWG's position that the MPWSP will not withdraw or degrade groundwater quality within the Monterey Subbasin[6]. A long record of comments and responses associated with the MPWSP exist but are not included herein.

The Monterey GSP does not address the potential impacts of the MPWSP on groundwater within the Monterey Subbasin. The Monterey Subbasin GSP focuses on basin sustainability and identifying projects and management actions that will bring the basin to sustainability. Given that the MPWSP is not located within the Monterey Subbasin nor will it provide water to entities within the Monterey Subbasin it is not analyzed in the GSP. Hydrogeologic conditions in the 180/400 Foot Aquifer Subbasin and in the vicinity of the MPWSP are discussed in the two GSPs that have been prepared for the 180/400 Foot Aquifer Subbasin including:

- Salinas Valley Groundwater Basin 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan, prepared by Montgomery Associates, dated 3 January 2020 (180/400 Foot Aquifer Subbasin GSP).
- Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin, prepared for the City of Marina Groundwater Sustainability Agency Marina CA, dated January 2020 (Marina GSA Area of the 180/400 Foot Aquifer Subbasin GSP).

If the MPWSP is implemented, its impacts on groundwater quality and sustainability within the Monterey Subbasin will be assessed consistent with long-term management and monitoring conducted pursuant to the GSP. Such monitoring

[1] California Public Utilities Commission and Monterey Bay National Marine Sanctuary, 2018 (FEIR). CalAm Monterey Peninsula Water Supply Project, Final Environmental Impact Report/Environmental Impact Statement SCH# 200611004, dated March 2018. Appendix E3

[2] California Public Utilities Commission and Monterey Bay National Marine Sanctuary, 2018 (FEIR). CalAm Monterey Peninsula Water Supply Project, Final Environmental Impact Report/Environmental Impact Statement SCH# 200611004, dated March 2018. Appendix E3

[3] The settling parties consist of CalAm, Citizens for Public Water, City of Pacific Grove, Coalition of Peninsula Businesses, County of Monterey, Division of Ratepayer Advocates, Landwatch Monterey County, Monterey County Farm Bureau (MCFB), Monterey County Water Resources Agency (MCWRA), Monterey Peninsula Regional Water Authority (MPRWA), Monterey Peninsula Water Management District, Monterey Regional Water Pollution Control Agency, Planning and Conservation League Foundation, Salinas Valley Water Coalition (SVWC), Sierra Club, and Surfrider Foundation. FEIR, Appendix E3.

[4] This information is based on the recovery rate of 42% cited on page 3-58 of the FEIR, which also states that 24.1 MGD of source water would be required to produce 9.6 MGD of desalinated water.

[5] FEIR, Chapter 8

[6] FEIR, Chapter 8

will be critical as the FEIR did not consider the potential impacts of SGMA[7] on future basin conditions and considered any potential changes to inland hydraulic gradients, which are causing seawater intrusion within the Salinas Valley Groundwater Basin (SVGB), as "speculative". Although the life of the MPWSP is assumed to extend well beyond 2041 when sustainable groundwater basin management is required under SGMA, the California Public Utilities Commission (CPUC)[8] concluded the following when approving the MPWSP:

> *Comments assert that the Final EIR/EIS fails to consider that future groundwater projects and those proposed as part of SGMA could restore groundwater levels in the SVGB and ultimately raise groundwater levels enough to flatten or reverse the inland groundwater gradient. It would realistically require decades of groundwater management to flatten the groundwater gradient, much less reverse it, and expectations that groundwater projects would be successful in affecting the inland gradient within the life of the MPWSP would be overly optimistic. There are no reasonably foreseeable cumulative projects proposed to reduce or reverse the current landward gradients in the Dune Sands and 180-Foot aquifers at this time, and while projects under the SGMA may improve the sustainability of the SVGB -- such as a basin-wide reduction in pumping, and/or increased recharge necessary to fill the groundwater depression on the east side of Salinas, and/or projects that may involve increasing protective groundwater elevations along the coast (much like CSIP) or include extraction systems to capture incoming seawater intrusion along the coast at CEMEX (much like the proposed MPWSP) -- such actions or projects are too speculative to assume and opine about in the EIR/EIS.*

HWG Comments	Responses
Chapter 4 – Hydrogeologic Conceptual Model	
1. The GSP states, "The geology described here is based on previously published scientific reports from investigations conducted by the USGS, State of California, other consulting firms, and academic institutions."(Section 4.1.1, Geological and Structural Setting, p. 64). **HWG Comment:** We note that extensive field work conducted by the HWG between 2013 and 2018, including test slant well installation/testing, drilling of several borings and installation of an extensive monitoring well network, extensive data analyses covering the coastal southern 180/400-Foot Aquifer Subbasin and coastal northern Monterey Subbasin are documented in publicly available reports prepared by the HWG and posted on the Monterey Peninsula Water Supply Project (MPWSP) website (e.g., HWG, November 2017). These HWG	The GSP incorporates information developed as part of the Monterey Peninsula Supply Project (MPWSP), to the extent that it is relevant to the GSP. However, the 8 well clusters completed as part of the MPWSP focused on the area of the MPWSP and are all located within the 180/400 Foot Aquifer Subbasin. None of these wells are located within the Monterey Subbasin, nor is the MPWSP the focus of this GSP. The data gathering and DMS construction for the Monterey Subbasin include: • > 100,000 water level & water quality records from > 1000 wells • Lithology & well construction from > 2,000 wells • MCWD production well data (20 years) • Airborne Electromagnetic Surveys (2017 – 2019)

[7] Page 8.5-635 of the FEIR states: "Actions that may be developed or required as a function of SGMA are too speculative to opine about in the EIR/EIS. Nonetheless, as demonstrated above, substantial actions would be needed merely to arrest seawater intrusion, without consideration of more dramatic actions that would be needed to reverse such intrusion.

… the expectation that the groundwater depression on the East Side will be resolved within a reasonable timeframe and the inland gradient would be dramatically decreased is speculative for the reasons explained above, and the impact conclusion on groundwater resources remains unchanged.

[8] 12 September 2018 Memorandum RE: Responses to Comments Received after Publication of the MPWSP Final EIR/EIS to Commissioners and ALJs From: John E. Forsythe- Energy Division MPWSP CEQA/NEPA Team CPUC Legal Division. page 18.

HWG Comments	Responses
documents incorporated data from previous studies by others (many of which are cited in the Monterey Subbasin GSP), and allowed for improved hydrogeologic interpretations by incorporating both existing and new field data collected by HWG. The Monterey Subbasin GSP ignores these HWG documents and makes geologic interpretations that are inconsistent with the most recent data that has been collected. Some of the specific inconsistencies are noted in other comments in this letter.	• Numerous publicly available field studies water level/quality data/hydrogeologic investigations, ect. These data have been used in combination to develop the Geological and Structural Setting presented in the Monterey Subbasin GSP.
2. The GSP mischaracterizes the Dune Sand Aquifer in multiple instances in Chapter 4. One example is the attempt to label the Dune Sand Aquifer as a "Principal Aquifer" (Section 4.2.1, Hydrogeology in the Marina-Ord Area, Table 4-1, page 79). **HWG Comment:** The Dune Sand Aquifer is not a Principal Aquifer in the subbasin. The Draft GSP prepared by City of Marina (2019) stated the Dune Sand Aquifer, "…is not commonly used for drinking water or agricultural irrigation". The Monterey County Water Resources Agency (MCWRA), which has studied and characterized the groundwater basin for many decades, does not consider the Dune Sand Aquifer as a principal aquifer (e.g., no seawater intrusion maps are prepared for the Dune Sand Aquifer by MCWRA). The 180/400-Foot Aquifer Subbasin GSP, which the MCWD GSA adopted and submitted to DWR, also does not classify the Dune Sand Aquifer as a Principal Aquifer. The Dune Sand Aquifer is not a Principal Aquifer due in part to its lack of capability for use in groundwater production (e.g., thin saturation, groundwater quality issues related to sea water intrusion and nitrates, etc.). In addition, the Hydrogeology section for the Corral de Tierra Area in Monterey Subbasin GSP Chapter 4 states that following about the upper 120 feet of sediments, "Several small domestic wells draw groundwater from these local alluvial aquifers, but these volumes of groundwater are minimal…Since this volume of groundwater is neither economic or significant, these shallow sediments are not considered a principal aquifer…Groundwater in these sediments is hydraulically connected to the	The Dune Sand Aquifer readily meets the definition of Principal Aquifer under SGMA. The California Code of Regulations Section 351 defines a Principal Aquifer as follows: *"Principal aquifer" refer to aquifer or aquifer systems that store, transmit and yield significant or economic quantities of groundwater to wells, springs, or surface water systems*. Areal recharge is the primary source of freshwater to the Monterey Subbasin. The Dune Sand Aquifer is the upper most aquifer within the Marina Ord Area and is made up of highly permeable Older Dune Sand and Dune Sand Deposits. It extends across over 1/2 of the Marina Ord Area, where it has been identified as a Principal Aquifer (see Figure 4-2 Monterey GSP[9]). It is highly permeable and stores, transmits, and yields significant quantities of groundwater to other aquifers within the Monterey Subbasin from which groundwater is withdrawn. The absence of drinking water wells or agricultural wells within this aquifer does not diminish its importance to the Monterey Subbasin, nor preclude it from being characterized as a Principal Aquifer within the Monterey Subbasin pursuant to SGMA. The extent of surficial Dune Sand Deposits which have high recharge potential are identified on geologic and hydrologic soil group maps presented on Monterey GSP Figure 4-2 and Figure 4-7. Fort Ord Monitoring wells, shown on Figure 3-9 show that these Dune Sand Deposits are saturated over a significant portion of the Marina Ord Area and make up the Dune Sand Aquifer. The Dune Sand Aquifer does not exist in the Corral de Tierra Area as discussed in Monterey GSP Section 4.2.2, therefore references by the HWG regarding properties of this aquifer within that area appear to be

[9] Figure reference numbers and section numbers within this response to comments are based on:

- Monterey GSP Chapters 1 through 4 published draft, dated 12 January 2021, and
- Monterey GSP Chapter 5 published Draft, dated 4 January 2021

HWG Comments	Responses
small streams found in the area…" (page 111 of Chapter 4). This conclusion for the Corral de Tierra Area is inconsistent with designating the Dune Sand Aquifer, which cannot even claim to be tapped by "several small domestic wells", as a Principal Aquifer. As noted above, designation of the Dune Sand Aquifer as a Principal Aquifer is inconsistent with the 180/400-Foot Aquifer Subbasin GSP (where the Dune Sand Aquifer also is present), which specifically did not designate the Dune Sand Aquifer as a Principal Aquifer. It is also important to point out that the Dune Sand Aquifer, as defined in the Monterey Subbasin GSP, consists of two distinct aquifers – the coastal Dune Sand Aquifer that directly overlies the 180-Foot Aquifer and the perched/mounded Dune Sand Aquifer (known as the A-Aquifer in Fort Ord studies) that overlies the Fort Ord Salinas Valley Aquitard (FO-SVA) clay layer (incorrectly referred to as Salinas Valley Aquitard in the Monterey Subbasin GSP). The coastal Dune Sand Aquifer is intruded with sea water, while the perched/mounded Dune Sand Aquifer is perched in areas, has thin saturation, is impacted by nitrates, and is not developed with production wells for any significant water supply uses.	misinterpreted. Further, the Dune Sand Aquifer does extend north of the Salinas River within the 180/400 Foot Aquifer Subbasin (See Monterey GSP Figure 4-2). Therefore, it is not inconsistent or surprising that the Dune Sand Aquifer was not identified as a Principal Aquifer in 180/400 Foot Aquifer Subbasin, the majority of which lies north of the Salinas River. The geology and extent of the Dune Sand Aquifer within the Monterey Subbasin is described in detail in Monterey GSP Section 4.2.2.1. The understanding of the Dune Sand Aquifer in the Monterey Subbasin is based upon hundreds of monitoring wells installed in this aquifer and deeper aquifers across the Marina Ord Area (see Monterey GSP Figure 3-9). The majority of these wells have been installed by the Army to characterize the stratigraphy and water quality of this aquifer and facilitate remediation of chemicals historically released at Fort Ord. Over 200 Million dollars has been spent by the Army to characterize the Dune Sand Aquifer and the underlying Upper 180-Foot Aquifer and clean up chemical impacts to groundwater within these aquifers. This fact alone should highlight the importance of these aquifers. Understanding the interdependence of these aquifers with groundwater resources within the Monterey Subbasin is critical to the GSP and long-term management of the groundwater basin.
3. The GSP relies on old geologic cross-sections from 2001 (Section 4.2.1.1, Cross-Sections, pages 8085). **HWG Comment:** The cited geologic cross-section references and Figures 4-9 through 4-12 do not utilize best available science and most recent borehole and geophysical logs for wells drilled in the area, nor do they utilize the most recent geologic cross-sections developed based on these data (see HWG, November 2017). This results in mischaracterization of hydrogeologic conditions for the GSP Plan Area. Geologic cross-sections that use the latest available data and include areas within the Monterey Subbasin are provided in previously published HWG documents (HWG, November 2017; HWG et al., February 2020).	The geologic cross-sections included in the GSP are basin-wide sections that incorporate substantial data that has been developed over time within the Plan Area. These boring logs do not include information from all of the wells and borings located within the Subbasin or adjacent subbasins. The 2017 borehole and geophysical logs completed as part of the MPWSP and referenced by the HWG focus on the area of that project. The MPWSP nor these boring logs are located within the Monterey Subbasin and are not the focus of the Monterey Subbasin GSP. Information from these wells was incorporated into the GSPs prepared for the 180/400 Foot Aquifer Subbasin.
4. With regard to the Dune Sand Aquifer, the GSP states, "The aquifer is perched further away from	There is no guidance or regulation under SGMA that would suggest that a Principal Aquifer cannot be perched in some areas.

HWG Comments	Responses
the coast in areas where the SVA exists… " (Section 4.2.12, Principal Aquifers, page 86). **HWG Comment:** The HWG agrees with this GSP statement about the Dune Sand Aquifer being perched in areas where it is underlain by the SVA (more correctly referred to as the FO-SVA). However, perched aquifers should not be designated as Principal Aquifers as is being done in the Monterey Subbasin GSP.	
5. The GSP refers to an average saturated thickness of the Dune Sand Aquifer being approximately 50 feet (Section 4.2.12, Principal Aquifers, page 86). **HWG Comment:** As described above, there are two distinct aquifers being referred to collectively in the GSP as the Dune Sand Aquifer. While the coastal DSA may have a saturated thickness of 50 feet or more in some areas, the perched/mounded DSA has a saturated thickness considerably less than 50 feet.	There is only one Dune Sand Aquifer that has been defined within the Monterey Subbasin. The groundwater levels presented on Monterey GSP Figures 5-1 and 5-5 show the hydraulic gradient mapped in the Dune Sand Aquifer, which is consistent with groundwater maps and interpretations developed by the Army as part of remedial efforts at Fort Ord. The groundwater gradient presented on these maps is consistent with chemical migration patterns also monitored at Fort Ord. The saturated thickness of the Dune Sand Aquifer does vary across the Monterey Subbasin. Groundwater elevation information and estimate specific yield indicates that approximately 30,000 AF to 60,000 AF of groundwater are stored within the Dune Sand Aquifer within the Marina Ord Area (Section 8.8.3.1).
6. The GSP does not distinguish and describe the differences between the Salinas Valley Aquitard (SVA) and Fort-Ord Salinas Valley Aquitard (FO-SVA) and its significance to the perched/mounded aquifer (underlain by FO-SVA) versus the Dune Sand Aquifer and its equivalents (not underlain by FO-SVA) in many places in the document (Chapter 4). **HWG Comment:** It should be noted that the SVA and FO-SVA are not the same aquitard and FO-SVA occurs at a higher elevation; therefore, they should not be referred to as the same aquitard.	The GSP does distinguish between the FO-SVA and the SVA and describes the relationship between these aquitards. Please see discussion in Monterey GSP Section 4.2.2.1.2. Fort Ord-Salinas Valley Aquitard.
7. The GSP shows a Conceptual Site Model diagram that was developed from Fort Ord studies, and implies that the Fort Ord Conceptual Site Model diagram applies throughout the Monterey Subbasin (Section 4.2.1.2, Principal Aquifers, Figure 4-13, p.87). **HWG Comment:** Recent studies completed by the HWG demonstrate that the Fort Ord Conceptual Site	Section 4.2.2 clearly states that the conditions in the Marina-Ord Area do not extend throughout the of the Monterey GSP, and different principal aquifers are present in the Corral De Tierra Area. The Monterey GSP also does not evaluate or draw conclusions regarding conditions in the southern portion of the 180/400 Foot Subbasin. However, as shown on Figure 3-9, hundreds of wells have been installed at the northern portion of the Monterey Subbasin, which have been used to characterize conditions in this area

HWG Comments	Responses
Model does not apply in the southern portion of the 180/400 Foot Aquifer Subbasin or the northern portion of the Monterey Subbasin. In particular, the concepts of an Intermediate 180-Foot Aquitard and lack of a 180/400 Foot Aquitard do not apply outside of Fort Ord. Work completed by HWG demonstrates that the 180-Foot Aquifer is one vertically continuous aquifer and that the 180/400 Foot Aquitard is present (HWG, November 2017).	of the Marina Ord Area. The preponderance of evidence shows that this hydrogeologic conceptual model does exist in the northern portion of the Monterey Subbasin.
8. The GSP states that horizontal hydraulic conductivity in the DSA ranges from 0.14 to 120 feet/day (Section 4.2.1.2, Principal Aquifers, p.87). **HWG Comment:** It is important to distinguish the two major portions of what is referred to in the GSP as the DSA – coastal and perched/mounded. While the coastal DSA does have K values on the higher end of the cited range, perched/mounded portion of the DSA only has K values at the lower end of the cited range.	The distribution of measured hydraulic conductivities in the Dune Sand Aquifer are shown on Figure 4-20. These data are based upon specific capacity tests and aquifer testing at the identified locations and are consistent with the magnitude of hydraulic conductivity estimates presented for the Dune Sand Aquifer in the Monterey Subbasin GSP.
9. The GSP makes general statements on hydrogeologic interpretations of AEM data, including outside of the GSP Plan area (Section 4.2.1.2, Principal Aquifers, p. 88). **HWG Comment:** It is not clear why the GSP is speculating on aquifer conditions outside of the Monterey GSP Plan Area based solely on AEM data, and without consideration of geologic and well data. The GSP also provides no demonstration/evidence of how these conclusions were reached. The HWG has previously provided extensive documentation of erroneous hydrogeologic interpretations of the AEM data (HWG, November 2017, January 2018, August 2018, January 2019, March 2019, and April 2019). The HWG April 2019 document clearly demonstrates with field data that the hydrogeologic	The 2017 AEM Study[10] and 2019 AEM Study[11] for the Monterey Subbasin and surrounding area were performed by highly regarded professors of Geophysics and California Licensed Geophysicists including: • Dr. Rosemary Knight, Ph. D.: Professor of Geophysics at Stanford University, • Theodore H. Asch, CA GP#1038; California Licensed Professional Geophysicist with Aqua Geo Frameworks, LLC. • Jared D. Abraham CA GP#1089: a California Licensed Professional Geophysicist with Aqua Geo Frameworks, LLC. The 2017 AEM study has been peer reviewed[12] and has been validated against lithologic and water quality data within the Monterey Subbasin. Both studies have also been provided to California Department of Water

[10] Stanford/Aqua Geo Frameworks, 2018. *Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA*, Ian Gottschalk, Rosemary Knight, Stanford University, Stanford, CA; Ted Asch, Jared Abraham, Jim Cannia, Aqua Geo Frameworks, Mitchell, NE, dated 15 March 2018.

[11] Aqua Geo Frameworks, 2019. *Final Report on the 2019 Airborne Electromagnetic Survey of Selected Areas Within the Marina Coast Water District*, dated 14 November 2019.

[12] Gottschalk, I., Knight, R., Asch, T., Abraham, J. and Cannia, J., 2020. Using an airborne electromagnetic method to map saltwater intrusion in the northern Salinas Valley, California. Geophysics, 85(4), pp.B119-B131. https://library.seg.org/doi/full/10.1190/geo2019-0272.1

HWG Comments	Responses
interpretations of aquitard gaps from the AEM study are invalid. Furthermore, as described above, MPWSP monitoring well borehole logs demonstrate that areas of uncertain aquitard continuity identified by MCWRA (who did not have MPWSP monitoring well borehole data available to them at the time of their study) near the northern Monterey Subbasin boundary are no longer uncertain and clearly have significant aquitard material present. Furthermore, review of water level and water quality data for the MPWSP clearly demonstrate the presence and continuity of the 180/400-Foot Aquitard in this area. The Monterey Subbasin GSP does not describe the applicability of the concept of a sea water wedge (i.e., where sea water intrusion occurs, less saline water often overlies more saline water in a given aquifer) to explain the expected presence of less saline water overlying more saline water in some areas of the vertically continuous 180-Foot Aquifer. The presence of less saline water in the upper portion of an aquifer does not demonstrate the aquifer is not sea water intruded. Furthermore, given the standard of 500 mg/L chloride applied by MCWRA for defining the area of seawater intrusion, the AEM data collected in the area are not capable of distinguishing between a chloride concentration below the standard (e.g., 200 mg/L) from a chloride concentration above the standard (e.g., 600 mg/L) given inherent uncertainties in AEM data interpretation and the complicating variable of lithologic influences on AEM data.	Resources (DWR) for review as part of a large new AEM Study that is being conducted by DWR across California. One of the primary authors of the 2017 AEM study, Dr. Ian Gottschalk, Ph. D., is one of the geophysicist working on DWR's study. It is noted that members of the HWG are not California Licensed Geophysicists with expertise in AEM collection and analysis. Geophysics is a highly specialized discipline and not within the established practice areas for licensed professional geologists. The revised draft of Chapter 4 of the Monterey GSP, dated 12 January 2021 does not address the continuity of the 180/400 Foot Aquitard within the 180/400 Foot Aquifer Subbasin as it is not relevant to the understanding and characterization of conditions within the Monterey Subbasin, which is the subject of the GSP. The mechanics of seawater intrusion and the "sea water intrusion wedge" is described in Monterey GSP Section 5.3.2. The GSP does not rely solely on AEM data to characterize seawater intrusion within the Monterey Subbasin. As shown on Monterey GSP Figure 5-24, characterization of water quality in the upper 180-foot Aquifer is based on hundreds of TDS measurements collected from wells screened in this aquifer. These data have been used to confirm AEM results, which are also presented on Figure 5-24.
10. The GSP states, "South of the City of Marina, in a portion of the former Fort Ord, the 180-Foot Aquifer is separated into an "upper" zone of sandy deposits with some gravel and a "lower" zone of gravel with sand and clay lenses; the two zones are separated by a thin clay layer (Ahtna Engineering, 2013). Data collected within the former Fort Ord show that significant head differences exist between the upper and lower ones of the 180-Foot Aquifer." (Section 4.2.1.2, Principal Aquifers, p. 91). HWG Comment: The HWG agrees that the area where this conceptual model applies is in a portion of former Fort Ord to the south of the City of Marina. However, the GSP implies this conceptual	Comparison of water levels shown on: • Figure 5-2: which presents groundwater level elevations in the Upper 180-Foot Aquifer, with • Figure 5-3: which presents groundwater level elevations in the Lower 180-Foot Aquifer and 400-Foot Aquifer Zone show that water levels in the Upper 180-Foot aquifer are approximately 5 to 10 feet higher than those in the Lower 180-Foot Aquifer and 400-foot aquifer north of Reservation Road in the Monterey Subbasin. Further, as shown on Figure 5-24 and consistent with other areas in the Marina Ord, TDS concentrations in groundwater within the Upper 180-Foot Aquifer are less than 1000 mg/L north of Reservation Road; whereas, TDS concentrations in the Lower 180-Foot Aquifer and 400 foot aquifer zones range between

HWG Comments	Responses
model (illustrated in Figure 4-13) applies throughout the GSP Plan Area, including north of Reservation Road, which is not correct as documented in work by HWG that is not referenced in this GSP (e.g., HWG, November 2017).	3,000 mg/L and >10,000 mg/L in this area. These data support the hydrogeologic conceptual model presented in the Monterey GSP.
11. The GSP discussion of the "Middle (180/400) Aquitard" suggests it is not present beneath the majority of the Marina-Ord Area, and implies this conceptual model applies throughout the Monterey Subbasin as illustrated by Figure 4-13 (Section 4.2.1.2, Principal Aquifers, p. 91). **HWG Comment:** As noted above with other aspects of the conceptual model presented in Figure 4-13, the concept that the 180/400 Foot Aquitard is not present in northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin is erroneous (see recent work by HWG not referenced in the GSP, as well as MCWD well logs). For example, HWG work demonstrates similar groundwater elevations in the upper and lower 180 Foot Aquifer (MW-6), and significantly different groundwater elevations and fluctuations in the 180 and 400 Foot Aquifers (multiple MPWSP monitoring wells).	See Response to Comment 7 above. Well MW-6 referenced by the HWG is not located in the Monterey Subbasin.
12. The GSP states, "The Lower 180-Foot Aquifer zone and the 400-Foot Aquifer in the vicinity of the City of Marina are functionally the same due to the missing Middle (180/400-Foot) Aquitard in this area." (Section 4.2.1.2, Principal Aquifers, p. 94). **HWG Comment:** As discussed above with other aspects of the Site Conceptual Model (Figure 4-13), this characterization does not apply to Northern Monterey Subbasin, contrary to what is stated/implied in the GSP.	See response to HWG Comment 7 above.
13. The GSP states, "Near the Monterey-Seaside subbasin boundary, a depression exists in the groundwater potentiometric surface of the 400-Foot Aquifer…These data suggest that a potential connection may exist between the 400-Foot Aquifer and the Deep Aquifer in this area." (Section 4.2.1.2, Principal Aquifers, p. 94.) **HWG Comment:** There is no geologic evidence provided in the GSP to support this statement. Preliminary review of geologic data (lithologic logs	The source of the depression is uncertain and will be identified as a data gap within the GSP. However, as discussed in Monterey GSP section 5.1.3.1 Two CASGEM wells in the southwestern portion of the Marina-Ord Area, MPWMD#FO-10 and MPWMD#FO-11, show consistent decreasing trends over the past 15-years. Additionally, groundwater elevations in these wells are significantly lower than those to the north near the City of Marina and to the south in the Seaside Subbasin. When water levels in these wells are plotted in conjunction with other 400-

HWG Comments	Responses
and Elogs) by HWG for MPWMD FO-10 and FO-11 indicate presence of sufficient thicknesses of clay layers to serve as aquitard layers between the 400-Foot and Deep Aquifers at this location.	Foot Aquifer wells in the Marina Ord Area, they indicate the presence of in a localized depression in the groundwater potentiometric surface of the 400-Foot Aquifer. However, there is no known extraction in the Monterey Subbasin in the vicinity of these wells and groundwater elevations observed in these wells are similar to those measured in the Deep Aquifers. These data suggest that (1) these wells are screened within sediments that connect directly to the Deep Aquifers; or (2) leakage is occurring from the 400-Foot Aquifer into the Deep Aquifers in the vicinity of these wells.
14. The GSP states, "As shown in Section 6 below, groundwater flow direction in the 400-Foot Aquifer is strongly influenced by groundwater pumping in the Salinas Valley Groundwater Basin, inland of the Monterey Subbasin." (Section 4.2.1.2, Principal Aquifers, p. 94) **HWG Comment:** A primary theme of this GSP here and elsewhere is that pumping in the 180/400 Foot Aquifer Subbasin is essentially solely responsible for seawater intrusion in the 180-Foot Aquifer and 400Foot Aquifer within Monterey Subbasin, and for depressed Deep Aquifer groundwater elevations in the within Monterey Subbasin. However, the history of groundwater development in the Monterey Subbasin demonstrates how groundwater production wells developed for MCWD and Fort Ord resulted in seawater intrusion in the 180-Foot Aquifer and 400-Foot Aquifers in Monterey Subbasin (for example, see quote below from Harding ESE, 2001). In addition, Deep Aquifer groundwater elevations were fluctuating around sea level prior to pumping of Deep Aquifer wells by MCWD that dropped Deep Aquifer groundwater elevations well below sea level. Thus, groundwater pumping from wells screened in the 180-Foot, 400-Foot, and Deep Aquifers within Monterey Subbasin have played a significant role in historical/current seawater intrusion and depressed groundwater elevations within Monterey Subbasin. Harding ESE (2001) states: "Seawater intrusion beneath the city of Marina was observed soon after installing several production wells in the 180-Foot Aquifer (MCWD-1, the first city well, was installed in 1956). Subsequent seawater intrusion into this area was closely related to ground water withdrawal by	Seawater intrusion within the Salinas Valley Groundwater Basin is the result of cumulative rates of groundwater extraction within the basin, which exceed freshwater recharge. However, the Monterey Subbasin water budget shows that inland cross boundary flows into the 180/400 Foot Aquifer Subbasin exceed total freshwater recharge to the Monterey Subbasin. Therefore, even if no groundwater was extracted within the Monterey Subbasin, the Monterey Subbasin would be in overdraft due to groundwater extraction from other portions of the Salinas Valley Basin. Therefore, the conclusion that groundwater extraction within other portions of the Salinas Valley Groundwater Basin (SVGB) are the primary cause of for seawater intrusion within the Monterey Subbasin is correct. Further, groundwater extracted within the Monterey subbasin does not exceed areal recharge to the subbasin. Additional information regarding the water budget for the Monterey Subbasin will be presented in Monterey GSP Chapter 6.

HWG Comments	Responses
the city of Marina and former Fort Ord. Deteriorating water quality forced the city of Marina to discontinue pumping most of its 180-Foot Aquifer wells by the late 1970's and install water-supply wells in the 400-foot (MCWD-8, -8a, and -9) and Deep Aquifers (MCWD-10, -11, and-12)."	
15. The GSP states with respect to the Deep Aquitard (otherwise known as 400 Foot/Deep Aquitard), "There is no analysis available for its spatial occurrence or geologic composition." (Section 4.2.1.2, Principal Aquifers, p. 95). **HWG Comment:** The GSP could have conducted the "missing" analysis of the aquitard for the Monterey Subbasin given that several MCWD production wells (e.g., MWCW 10, 11, 12) and other wells (e.g., USGS deep nested monitoring well, agricultural wells) have available lithologic and geophysical logs. Such an analysis would demonstrate the presence of a 200 to 300 foot thick clay layer (i.e., 400/Deep Aquitard) between the 400-Foot Aquifer and uppermost Deep Aquifer Zone. The lack of seawater intrusion in the Deep Aquifer, which has groundwater elevations on the order of 50 to 100 feet below sea level in the northern Monterey Subbasin area and a strong vertically downward gradient from the 400-Foot Aquifer, combined with high salinity in the 400-Foot Aquifer within and surrounding the northern Monterey Subbasin also shows the strong integrity of the aquitard between the 400-Foot Aquifer and Deep Aquifer. The large difference in water levels between the 400-Foot Aquifer and Deep Aquifers also provides evidence of a thick/tight aquitard separating these aquifer zones.	Boring logs from MCWD production wells MCWD-10, -11 and -12 and the USGS monitoring well informed cross sections on Figures 4-8, 4-9, and 4-11 Boring logs of MCWD-11 and MCWD-12 do show a 200 to 300 foot thick clay layer between the 400-Foot Aquifer and the Deep Aquifers. However, other wells within the subbasin (e.g. MCWD-10), show a series of thinner clay deposits between the 400 Foot Aquifer and the Deep Aquifer. The vertical gradients observed between the 400 Foot aquifer and Deep Aquifers, indicate that the series of clay deposits between these aquifer zones create substantial barriers to vertical flow.
16. The GSP describes the Reliz Fault as displaced the Monterey Formation, which is the base of the Deep Aquifer, shifted downward on the northeast side by 1,000 feet. It then states the fault does not appear to impede groundwater flow within the Dune Sand Aquifer, 180-Foot Aquifer, or 400-Foot Aquifers (Section 4.2.1.3, Structural Restrictions to Flow, p. 98). **HWG Comment:** The GSP does not comment on the possibility of the Reliz Fault altering groundwater flow within the Deep Aquifer.	There is insufficient data to evaluate the extent to which the Reliz Fault may alter flow within the Deep Aquifers. However, available water level data suggests that groundwater flows readily between the Monterey and 180/400 Foot aquifer Subbasin within the Deep Aquifer zones near the Reliz fault as shown on Figures 5-4 and 5-8. Therefore, if it does alter flow, the impacts appear to be localized.

HWG Comments	Responses
17. This section of the GSP begins, "This Section presents a general discussion of the natural fresh groundwater quality in the Marina-Ord Area, focusing on general geochemistry (Section 4.2.1.4, General Water Quality, p. 98). **HWG Comment:** Given the significance of historical and ongoing seawater intrusion in the Dune Sand Aquifer, 180-Foot Aquifer, and 400-Foot Aquifer in the Marina-Ord Area, it is unclear why this section would only describe the fresh water within the Marina-Ord Area.	As stated in the 2nd sentence of this Section 4.2.1.4, "The distribution and concentrations of specific constituents of concern, including seawater intrusion, are discussed in Chapter 5. Consistent with SGMA guidance, seawater intrusion is assessed independently from other water quality parameters within the GSP, as it is one of the six "Undesirable Results" designated under SGMA.
18. With regard to the Dune Sand Aquifer, the GSP states, "Groundwater in this aquifer is primarily fresh; minimal seawater intrusion has occurred in this aquifer (Section 4.2.1.4, General Water Quality, p. 98). **HWG Comment:** The coastal Dune Sand Aquifer is intruded by seawater, as demonstrated by monitoring wells at the MCWD office on Reservation Road (Staal, Gardner & Dunne, 1991 and 1992; Fugro West, 1996, 2001) and in the vicinity of the CEMEX site (HWG, November 2017).	Current groundwater data from over 20 monitoring wells and AEM data have been used to evaluate the extent of seawater intrusion within the Dune Sand Aquifer in 2017 (See Figure 5-24) within the Monterey Subbasin. Historical data collected from over 25 years ago has not been included in the GSP, nor is data collected from the CEMEX site which is located in the 180/400 Foot Aquifer Subbasin.
19. The GSP states, "The Dune Sand Aquifer contributes recharge to the 180-Foot Aquifer…" (Section 4.2.1.4, General Water Quality, p. 98). **HWG Comment:** It should be noted that this recharge from the Dune Sand Aquifer to the 180-Foot Aquifer is minimal (likely on the order of a few hundred acre-feet per year). This recharge has not stopped seawater intrusion from occurring in this area.	Areal recharge is the primary source of freshwater recharge to the Monterey Subbasin. Given that the Dune Sand aquifer overlies approximately 1/2 of the Marina Ord Area, Recharge to the Dune Sand Aquifer is one of the most significant sources of freshwater recharge to this portion of the Monterey Subbasin. As shown on Monterey GSP Figure 5-24 the fresh water exists in both the Dune Sand Aquifer and the Upper-180 Foot aquifer, which is recharged by the Dune Sand Aquifer across the Marina Ord Area. Further, although seawater intrusion exists within the Lower 180- Foot Aquifer and 400-Foot Aquifer in the northern portion of the Marina Ord Area, the southern portion of the Monterey Subbasin has not been seawater intruded (see Monterey GSP Figure 5-28), and is supported by recharge from the Dune Sand Aquifer. These facts support the conclusions presented in the Monterey GSP. Groundwater elevation information and estimate specific yield indicates that approximately 80,000 AF to 160,000 AF of groundwater exist within the Dune Sand and upper 180-foot aquifer (Section 8.8.3.1). Water quality and AEM data indicate that this groundwater is fresh.
Chapter 5 – Groundwater Conditions	

HWG Comments	Responses
1. The GSP notes data sources used in the GSP, which includes documents/data for Monterey Peninsula Landfill (Section 5.1.1, Data Sources, p. 6). **HWG Comment:** We note that Monterey Peninsula Landfill (MPL) is not located within Monterey Subbasin. In addition, if data from Monterey Peninsula Landfill are being used, why are data from MPWSP monitoring network not being used. Notably, later in Chapter 5, the GSP uses AEM data outside of Monterey Subbasin and within the area of MPWSP monitoring network data, yet there is no use of MPWSP data that contradicts the hydrogeologic interpretation of AEM data provided in the GSP.	The GSP incorporates information developed as part of the Monterey Peninsula Supply Project (MPWSP), to the extent that it is relevant to the GSP. However, the 8 well clusters completed as part of the MPWSP are located in the immediate vicinity of the MPWSP and are all located within the 180/400 Foot Aquifer Subbasin. None of these wells are located within the Monterey Subbasin, nor is the MPWSP the focus of this GSP.
2. The GSP states that the Dune Sand Aquifer is a Principal Aquifer and that the 180-Foot Aquifer contains two distinct layers, known as the upper- and lower- 180-Foot Aquifer (Section 5.1.2.1, MarinaOrd Area, p.7). **HWG Comment:** The Dune Sand Aquifer should not be designated as a Principal Aquifer, and is in conflict with the 180/400 Foot Aquifer Subbasin GSP in this regard. Furthermore, the splitting of the 180-Foot Aquifer into two distinct aquifers only applies in the Fort Ord area, and does not apply in northern Monterey Subbasin (HWG, November 2017). While the entire thickness of the 180-Foot Aquifer is intruded by seawater near the coast and for a significant distance inland, the presence of less saline water within the upper portion of the 180-Foot Aquifer further inland is merely a function of the nature of seawater intrusion wedges, and not a function of the presence of an intermediate aquitard within the 180-Foot Aquifer in northern Monterey Subbasin.	See response to HWG Chapter 4 Comment 5.
3. The GSP describes groundwater flow conditions in the 180-Foot Aquifer, and states, "…inflow from the Dune Sand Aquifer protects the upper 180-Foot Aquifer from seawater intrusion." (Section 5.1.2.1, Marina-Ord Area, p.8). **HWG Comment:** Any groundwater flow that may occur from the Perched/Mounded portion of the inland Dune Sand Aquifer to the underlying 180-Foot Aquifer has historically not prevented seawater	There are hundreds of wells located in the upper 180-foot aquifer that show that TDS concentrations are below 1,000 mg/L. See Monterey GSP Figure 5-24.

HWG Comments	Responses
intrusion from occurring within the 180-Foot Aquifer, which has been and remains heavily intruded with seawater. Any claims to the contrary, such as in this referenced statement from the Monterey Subbasin GSP, are incorrect. As noted above, there are not geologically distinct Upper and Lower 180 Foot Aquifers in northern Monterey Subbasin. The amount of recharge from the Dune Sand Aquifer to the 180-Foot Aquifer is small, as can easily be demonstrated by calculation of the amount of precipitation recharge in the Dune Sand Aquifer within the area west of the groundwater divide that has potential to recharge the 180-Foot Aquifer (e.g., on the order of a few hundred AFY, before subtracting Ford Ord remedial pumping). Furthermore, in order to dilute incoming seawater to a fresh water concentration, there would need to be over 30 times more fresh water than seawater in the mixing zone to create a net fresh water condition. Thus, a few hundred AFY of fresh water can effectively only dilute about 10 to 20 AFY of incoming seawater.	
4. The GSP states, "…the lower 180-Foot Aquifer is hydraulically connected to the 400-Foot Aquifer in the Marina-Ord Area due to the discontinuous nature of the 180/400-Foot Aquitard within this region…As such, groundwater elevation and gradients in the lower 180-Foot Aquifer are similar to those in the 400-Foot Aquifer in the Marina Ord Area of the Subbasin…" (Section 5.1.2.1, Marina-Ord Area, p.8). **HWG Comment:** This characterization of the discontinuous nature of the 180-400 Aquitard is not applicable to the northern portion of the Monterey Subbasin. Groundwater levels in the 180-Foot Aquifer and 400-Foot Aquifer are clearly different and distinct in the northern half of Monterey Subbasin and in the adjacent 180/400-Foot Aquifer Subbasin (HWG, November 2017). The Monterey Subbasin GSP does not demonstrate the similarity or difference in groundwater elevations to justify its characterization.	See response to HWG Chapter 4 Comment 7.
5. Figures 5-1 and 5-5 show the western extent of the FO-SVA north of Monterey Subbasin as extending to MPWSP MW-3.	These figures will be modified to remove the estimate extent of the FO-SVA outside of the Monterey Subbasin, as this is information is not relevant to the Monterey GSP.

HWG Comments	Responses
HWG Comment: The extent of FO-SVA shown on the maps is outdated and also does not incorporate more recent data and analyses based on the MPWSP borehole/well data. We also note that groundwater elevation figures for all units except the Dune Sand Aquifer extend northward across the Monterey Subbasin/180-400 Foot Aquifer Subbasin boundary, even though many Dune Sand Aquifer well locations are available and shown on the figures for the MPWSP and MPL monitoring networks. In addition, there are several monitoring wells located at the MCWD District office headquarters and treatment plant on Reservation Road near the coast (Staal, Gardner & Dunne, 1991 and 1992; Fugro West, 1996 and 2001).	
6. In describing groundwater elevations in the 400-Foot Aquifer the GSP states, "A local groundwater depression exists just north of the Monterey-Seaside Subbasin boundary where a potential connection between the 400-Foot Aquifer and the Deep Aquifers may be located ." (Section 5.1.2.1, Marina-Ord Area, p.8). **HWG Comment:** The GSP provides no geologic evidence for a potential connection at this location between the two aquifers. The GSP only cites to HLA (2001) for cross-sections in this area, but other geologic cross-sections are available to consider from previous reports (e.g., HWG, 2017; Yates et.al., 2005). The location of this depression, which is more centrally located within Monterey Subbasin than described in the GSP text, is only about 1.5 miles south of MCWD Deep wells where a thick (i.e., 200 to 300 feet) aquitard exists between the 400 Foot Aquifer and Deep Aquifer.	See response to HWG Chapter 4 Comment 13.
7. GSP Figures 5-1 and 5-5 (Groundwater Level Contours in the Dune Sand Aquifer – Fall 2017 and Spring 2018) show locations of MPWSP and MPL wells, but do not use the data to prepare groundwater level contours. **HWG Comment:** It is not clear why the GSP maps would show these MPWSP/MPL well locations but not use the data. We also note that geologic and borehole geophysical data from these wells are not used in developing geologic cross-sections or to develop an understanding of the geologic conditions	Groundwater levels for the Dune Sand Aquifer have not been extended into the 180/400 Foot Aquifer Subbasin, as they do not affect the conclusions or projects included in this GSP.

HWG Comments	Responses
for the HCM. This is particularly noteworthy in that the GSP Chapter 5 later uses hydrogeologic interpretations from the AEM data in lieu of actual borehole/well data to derive different conclusions regarding the HCM that are not supported by borehole/well data.	
8. GSP Figures 5-2 and 5-5 (Groundwater Level Contours in the 180-Foot Aquifer – Fall 2017 and Spring 2018) show locations of only three of the MPWSP wells (MW-6, MW-8, and MW-9), and do not use data from MW-8 and MW-9. **HWG Comment:** It is not clear why the GSP maps only show selected MPWSP well locations and do not use most of the data from the selected wells that are shown on the maps. We also note that geologic and borehole geophysical data from these wells are not used in developing geologic cross-sections or in developing an understanding of the geologic conditions underlying the HCM. This is particularly noteworthy in that the GSP Chapter 5 later uses hydrogeologic interpretations from the AEM data in lieu of actual borehole/well data to derive different conclusions regarding the HCM that are not supported by borehole/well data. We also note that groundwater is indicated to flow inland from the ocean to a pumping center in the north central portion of Monterey Subbasin.	The Monterey GSP focuses on wells located in the Monterey Subbasin and wells located immediately adjacent to the subbasin within the 180/400 Foot Aquifer subbasin to provide continuity with water levels in that subbasin.
9. Figures 5-3 and 5-7 (Groundwater level Contours in the 400-Foot Aquifer – Fall 2017 and Spring 2018) show a +10 feet MSL contour as the shoreline in Marina Subbasin. **HWG Comment:** There is no well control to support this +10 feet MSL contour line, or even the zero contour line. We note that groundwater elevations in the 400-Foot Aquifer for MPWSP MW-3 (very close to the shoreline) ranged from 0 to -15 feet NAVD88 during this time period. We also note that groundwater is indicated to flow inland from the ocean to a depressed area in the south central portion of Monterey Subbasin. The Fall 2017 groundwater levels show that the pumping depression in the southern central area of Monterey Subbasin contributes to a broader depression that extends to the 180/400 Foot Aquifer Subbasin. Spring 2018 groundwater levels appear to indicate	The revised draft of Chapter 5 of the Monterey GSP does not show a +10 feet contour on Figures 5-3 and 5-7.

HWG Comments	Responses
occurrence of a temporal groundwater divide around the MCWD well field.	
10. The GSP states, "…water levels in the Dune Sand Aquifer increase and decrease during extended wet and dry periods." This statement is apparently in reference to Figure 5-11: Representative Groundwater Elevation Hydrographs in the Dune Sand Aquifer (Section 5.1.3.1, Long-Term Groundwater Elevation Trends, Marina-Ord Area, p. 21). **HWG Comment:** The seven hydrographs shown in Figure 5-11 do not appear to respond to wet and dry periods. The only short-term response observed is around the year 2000 in the hydrograph for MW-OU2- 05-A. This apparent stability of groundwater levels in the Perched/Mounded portion of the Dune Sand Aquifer is quite unlike the seasonal fluctuations that occur in response to pumping in the underlying aquifers, and further confirms that the DSA is undeveloped and essentially undevelopable as a water supply and therefore not a Principal Aquifer.	See response to HWG Chapter 4 Comment 2.
11. The GSP states, "Groundwater elevations in the Lower 180-Foot Aquifer are generally equivalent to those observed in the 400-Foot Aquifer…" (Section 5.1.3.1, Long-Term Groundwater elevation Trends, 180-Foot Aquifer, Lower 180-Foot Aquifer, p. 21). **HWG Comment:** The GSP provides no evidence that groundwater elevations in the Lower 180-Foot Aquifer are equivalent to those in the 400-Foot Aquifer. In addition, no geologic evidence is provided that defines distinct Upper and Lower 180-Foot Aquifers in terms of a continuous intermediate aquifer throughout the Monterey Subbasin. MPWSP monitoring well MW-6 is a nested well cluster with separate wells in the upper and lower 180-Foot Aquifer and shows essentially identical groundwater elevations and fluctuations – it is located along Blanco Road on the border of the Monterey Subbasin with the 180/400-Foot Aquifer Subbasin.	As shown in Figure 5-13, the two multi-completion wells (MP-BW-37 and MP-BW-41) screened from 286 ft bgs to 460 ft bgs showed identical water levels, suggesting that the groundwater elevations in the Lower 180-Foot Aquifer are equivalent to those in the 400-Foot Aquifer.
12. The GSP states that groundwater elevation data for MPWMD#FO-10 and MPWMD#FO-11	See Response to HWG Chapter 4 Comment 13.

HWG Comments	Responses
suggest, "…(1) these wells are screened within sediments that connect directly to the Deep Aquifers; or (2) leakage is occurring from the 400-Foot Aquifer into the Deep Aquifers in the vicinity of these wells." (Long-Term Groundwater Elevation Trends, 400-Foot Aquifer, p. 22). **HWG Comment:** Insufficient evidence is provided to make the stated conclusions; for example, no geologic evidence is provided to support these claims. In addition, more groundwater elevation data are needed to evaluate the gradient and flow direction in this portion of the aquifer. Preliminary review of geologic data (lithologic logs and Elogs) by HWG for MPWMD FO-10 and FO-11 indicate presence of sufficient thicknesses of clay layers to serve as aquitard layers between the 400-Foot and Deep Aquifers at this location.	
13. GSP Figure 5-15 shows groundwater hydrographs for Deep Aquifer wells near the Monterey Subbasin and 180/400-Foot Aquifer Subbasin boundary. Figure 5-16 shows Deep Aquifer groundwater pumping over time. In reference to the adjacent 180/400-Foot Aquifer Subbasin, the GSP states that, "…groundwater elevations in wells located near Cooper Road and Blanco Road have declined more than 5 ft/year over the past 15 years." **HWG Comment:** We note that the three wells in the 180/400-Foot Aquifer Subbasin have data through about 2020 and generally show fluctuating but overall stable groundwater elevations from about 2015 to 2020. Several of the MCWD wells within the Monterey Subbasin shown in the figure are lacking data from about 2017 to 2020, but the overall trend from available data appears to be declining groundwater elevations within Monterey Subbasin from 2015 to 2020. We note that Figure 5-16 shows significant increases in both agricultural and urban pumping from the Deep Aquifer after 2013, with urban pumping comprising approximately half of the total Deep Aquifer pumping over that time period. Figure 5-16 shows a doubling of urban pumping between 2013 and 2018, but no discussion/explanation of the sharp jump in urban pumping is provided in the text. Overall, the characterization of recent Deep Aquifer	Figure 5-15 shows significant declining groundwater trends in the deep aquifers in the Monterey and 180/400-Foot Aquifer Subbasins. A comparison of MCWD pumping in the deep aquifer has been added to Figure 5-16, which has been stable since the 1990s.

HWG Comments	Responses
groundwater elevation trends between the two subbasins in the text appears to be inaccurate based on review of the figures.	
14. The GSP states, "These downward vertical gradients are caused by areal surface recharge, groundwater extraction from deeper aquifers, and laterally extensive aquitards, which exist in the Marina-Ord Area." (Section 5.1.4, Vertical Hydraulic Groundwater Gradients, pp. 31-32). **HWG Comment:** We note that the GSP references the presence of laterally extensive aquitards separating Principal Aquifers throughout Monterey Subbasin, a statement that we agree with, and yet the conceptual model described in GSP Chapters 4 and 5 provides for essentially no aquitard between the 180-Foot and 400-Foot Aquifers and a big hole in the thick aquitard between the 400-Foot Aquifer and Deep Aquifers.	The conceptual model presented in Chapters 4 and 5 does not imply that extensive aquitards do not exist in the Marina Ord Area. However, the data does indicate that the aquitard that is observed between the 180- and 400-foot aquifers in the 180/400 Foot Subbasin is not as prevalent in the Marina Ord Area. Further, the conceptual site model does state that a series of aquitards exist between the 400 Foot Aquifer and the Deep Aquifers, which significantly reduce vertical groundwater migration. The available data do not suggest that it is one thick continuous aquitard across the Marina Ord area.
15. The GSP states that in the central Marina-Ord Area the groundwater elevations in the upper 180-Foot Aquifer are 70 feet lower than in the Dune Sand Aquifer (Section 5.1.4, Vertical Hydraulic Groundwater Gradients, p. 32). **HWG Comment:** This 70 foot difference in groundwater elevation almost certainly reflects the presence of perched aquifer conditions in the Dune Sand Aquifer at this location, which is why the HWG refers to the portion of the so-called Dune Sand Aquifer overlying the FO-SVA as the Perched/Mounded Aquifer. This observation also begs the question of why the Dune Sand Aquifer is being classified as a Principal Aquifer in this GSP, when much of it is a thinly saturated perched aquifer.	See response to HWG Chapter 4 Comment 2.
16. The GSP states, "Within the Monterey Subbasin, seawater intrusion has been documented in the northern portion of the lower 180-Foot and 400-Foot Aquifers." (Section 5.3, Seawater Intrusion, p. 36). **HWG Comment:** As discussed other HWG comments in this letter, the designation of a geologically distinct lower 180-Foot Aquifer does not apply in the northern portion of the Monterey Subbasin. The entire thickness of the 180-Foot Aquifer is intruded at the coast and for some	See responses to: HWG Chapter 4 comments 5 and 7, and HWG Chapter 5 comment 3

HWG Comments	Responses
distance inland, with a seawater wedge having formed further inland (i.e., less saline water overlying more saline water due to density differences).	
17. The GSP describes data sources used in their analysis of seawater intrusion for the GSP, which include two airborne electromagnetic (AEM) surveys (Section 5.3.1, Seawater Intrusion, Data Sources, p. 36). **HWG Comment:** We note that the GSP utilizes an AEM profile entirely within the 180/400-Foot Aquifer Subbasin that passes through/near several MPWSP boreholes/wells, yet the GSP does not use the readily available MPWSP borehole/well data in its analysis. Furthermore, the HWG has conclusively demonstrated in previous documents (e.g., HWG, April 2019) that hydrogeologic interpretations derived from AEM data are flawed and inconsistent with borehole/well data.	Figures 5-26 and Figures 5-27 provide insights regarding the vertical profile of seawater intrusion within the Monterey Subbasin. These profiles include AEM Data, logged borehole data, and water quality data from each of the borings identified. As such, the reader can see how all of these sources of data correlate. The premise that that water quality data from well MW-7 is inconsistent with AEM data, is not correct. Detailed review of Cross Section A-A, which presents both AEM data and water quality data from well M-7, shows that TDS concentrations detected in groundwater samples collected from each well screen, reflect an average of the AEM profile that intersects the screen interval. As stated in Monterey Section 5.3.3: Cross-Section A-A', which is located immediately north of the Monterey Subbasin has been included in the GSP, to provide insight regarding the vertical delineation of seawater intrusion within the coastal areas of the Monterey Subbasin. AEM data along Cross Section B-B, which is located in the Subbasin, is sporadic due to the absence of AEM data in urban areas where high density of utilities interferes with AEM data collection.
18. The GSP devotes several pages and two figures (5-26 and 5-27) to describing AEM surveys, primarily a profile entirely outside of the Monterey Subbasin (Section 5.3.1.2, Geophysical Data, pp. 36-38, 41-42, and 45-46). **HWG Comment:** It is not clear why the GSP relies so heavily on AEM data (primarily outside the Monterey Subbasin) in its discussion of seawater intrusion (and disregards borehole/well data for the same area) – especially given the flaws in the hydrogeologic and groundwater quality interpretations made using AEM data previously described in multiple HWG documents (e.g., January, March, April 2019). The hydrostratigraphy shown on the AEM profiles (Figures 5-26 and 5-27) is incorrect; particularly with regard to its depiction of aquitards (i.e., the presence of a continuous intermediate aquitard within the 180-Foot Aquifer and absence of a 180/400 Aquitard). In essence, the GSP is inappropriately trying to apply the Fort Ord	See responses to: HWG Chapter 5 Comment 17 above.

HWG Comments	Responses
hydrogeologic conceptual model (developed for a limited area south of Reservation Road) throughout the northern Monterey Subbasin and into the adjacent 180/400 Foot Aquifer Subbasin. Field borehole/well data demonstrate that application of the Fort Ord HCM to northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin is incorrect. There is no evidence/basis to support the stratigraphic interpretations in Figures 5-26 and 5-27 related to the presence (or absence) of aquitards between various aquifers. We note that there are no control points for the majority of the cross-section in Figure 5-26, yet the figure implies an abundance of fresh water. Field water quality data from MW-7M do not match that indicated on the profile. The two profiles are inconsistent; where control points exist with a TDS color coded legend the profiles are not shaded accordingly; however, where no control points exist to validate AEM water quality the profiles are shaded.	
19. In describing the purpose of the AEM surveys, the GSP states, "The studies' goal was to evaluate the understanding of the hydrostratigraphy in the study area and to interpret that distribution of groundwater quality indicated by available well data." (Section 5.3.1.2, Geophysical Data, p. 37). **HWG Comment:** While this statement references "available well data", it does not actually cite or use available well data. Rather, the GSP interpretations of hydrostratigraphy and seawater intrusion in this section are based primarily on interpretations of AEM data that are at odds with well data (see various HWG documents such as January 2019, March 2019, and April 2019).	Well data are presented on all cross-sections and areal maps that include AEM Data within the GSP. The AEM data aid in the understanding the extent of seawater intrusion and hydrostratigraphy, however, all conclusions presented in the GSP are supported by actual well data.
20. The GSP describes how AEM data (i.e. electrical resistivity) are dependent on, "…the amount of clay, the amount of water, and/or the salinity of the water…" (Section 5.3.1.2, Geophysical Data, p. 37). **HWG Comment:** While we agree with this statement, these facts also point out the high level of uncertainty associated with interpretation of AEM	See response to HWG Chapter 5 Comment 19.

HWG Comments	Responses
data in this coastal seawater intruded setting where multiple variables are impacting recorded AEM (resistivity) values. This allows for multiple non-unique interpretations of AEM data to be made in such settings, which creates more uncertainty in those hydrostratigraphic and groundwater quality interpretations. The GSP itself acknowledges that water quality interpretation is "difficult to discern" for a wide range of AEM resistivity values. The GSP does not acknowledge that geochemical interpretation of AEM resistivity values even outside of the cited large range are still subject to uncertainties related to variation in lithologic/saturation conditions.	
21. The GSP states, "The AEM surveys have found that high salinity groundwater as a result of seawater intrusion exists within the lower 180-Foot Aquifer and 400-Foot Aquifers of the Monterey Subbasin. This volume of high salinity groundwater is overlain by fresh groundwater in the Dune Sand and upper 180-Foot Aquifers. The results of the AEM study are consistent with water quality data collected within the Subbasin (EKI, 2019)." (Section 5.3.1.2, Geophysical Data, p. 38). **HWG Comment:** Both the AEM data and borehole/well data demonstrate that the coastal Dune Sand Aquifer and essentially the entire thickness of the 180-Foot Aquifer are seawater intruded from the ocean shoreline to approximately one mile inland. At that point, the coastal Dune Sand Aquifer begins to transition to the Perched/Mounded Aquifer that overlies of FO-SVA that is generally not seawater intruded because it is an elevated thinly saturated perched aquifer further inland, and the fully seawater intruded area of the 180-Foot Aquifer transitions to a seawater intrusion wedge with less saline water overlying more saline water due to density differences. While the results of the AEM survey may be consistent with the primarily Perched/Mounded Aquifer groundwater quality data cited in EKI (2019), the AEM survey based hydrostratigraphic and groundwater quality interpretations are inconsistent with the groundwater quality data collected for the MPWSP	See responses to HWG Chapter 4 comments 5 and 7, and HWG Chapter 5 Comments 3 and 19.

HWG Comments	Responses
(e.g., HWG, April 2019) and key MCWD and Seaside Basin wells.	
22. The GSP presents an analysis (Figure 5-23) that demonstrates the definition of 500 mg/L chloride as the threshold for defining seawater intrusion is equivalent to a TDS of 1,000 mg/L. The GSP also cites the State of California upper Secondary Maximum Contaminant Level of 1,000 mg/L for TDS (Section 5.3.2, Defining Seawater Intrusion, p. 40). **HWG Comment:** We concur with the use of 500 mg/L chloride (although a good argument can be made for use of 250 mg/L chloride as a better indicator) and 1,000 mg/L TDS as an appropriate standards/thresholds for drinking water and seawater intrusion. We note that the AEM studies (study authors and study proponents) continue to argue for a drinking water and seawater intrusion threshold of 3,000 mg/L TDS, but this is at odds with GSP stated seawater intrusion and drinking water standards/thresholds of 500 mg/L and 1,000 mg/L TDS. Furthermore, due to the significant uncertainties in AEM groundwater quality interpretations, the AEM studies primarily attempt to differentiate groundwater above and below 3,000 mg/L TDS. The use of AEM data with a lower cutoff value (e.g., 1,000 mg/L TDS) results in even greater uncertainty in interpreted results than are achieved using the already uncertain AEM interpretations based on a cutoff of 3,000 mg/L TDS. We note that the GSP adopts a double standard by saying seawater intrusion has occurred when TDS exceeds 1,000 mg/L or chloride exceeds 500 mg/L in the Deep Aquifer, yet concentrations of 3,000 mg/L TDS and over 1,000 mg/L chloride represent low-TDS groundwater that is considered a source of drinking water supply in the AEM studies cited in the GSP.	The GSP selects 500 mg/L chloride to estimate the extent of seawater intrusion within the Subbasin. However, as discussed in Section 3.2.2.6, beneficial use criteria for the Subbasin are established pursuant to Water Quality Control Plan for the Central Coastal Basin, (Basin Plan) (State Water Resources Control Board (SWRCB), 2017). The Basin plan lists beneficial users, describes the water quality which must be maintained to allow those uses, provides an implementation plan, details SWRCB and Central Coast Regional Water Quality Control Board plans and policies to protect water quality and a statewide surveillance and monitoring program, as well as regional surveillance and monitoring programs. The SWRCB's Sources of Drinking Water Policy, adopted in Resolution No. 88-63 and incorporated in its entirety in the 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. As discussed in the Response to HWG Chapter 5 Comment 19: Well data are presented on all cross-sections and areal maps that include AEM Data within the GSP. The AEM data aid in the understanding the extent of seawater intrusion and hydrostratigraphy, however, all conclusions presented in the GSP are supported by actual well data.
23. In reference to the AEM profiles shown in Figures 5-26 and 5-27, the GSP states, "TDS and AEM data shown on these cross-sections confirm that seawater intrusion in the Monterey Subbasin primarily exists in the lower 180-Foot Aquifer and 400-Foot Aquifer, whereas groundwater in the Dune Sand and upper 180-Foot Aquifers remains	See Response to HWG Chapter 5 Comment 17.

HWG Comments	Responses
fresh." (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, p. 41). **HWG Comment:** While the statement refers to Monterey Subbasin, it should be noted that the Figure 526 is located entirely outside (north of) Monterey Subbasin, and Figure 5-27 contains very little data for the AEM profile within Monterey Subbasin. Furthermore, we have previously commented (in this letter and previous documents) on the flaws in the hydrostratigraphic and water quality interpretations shown on these AEM profiles (e.g., HWG, April 2019). Actual borehole/well data show the coastal Dune Sand Aquifer and entire thickness of the 180-Foot Aquifer are heavily intruded with seawater at the coast and for a significant distance inland. We recommend that AEM data only be used where results can be clearly validated with actual lithologic and water quality data. By not using this approach, the groundwater conditions are being misrepresented.	
24. In reference to the 180-Foot and 400-Foot Aquifers, the GSP states, "It appears that seawater intrusion in these two aquifers forms a unified intrusion wedge, due to the discontinuity of the 180/400 Foot Aquitard near the coast." (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, p. 41). **HWG Comment:** The HWG has previously demonstrated the flaws and inaccuracies in the hydrostratigraphic/water quality interpretations from AEM data inherent in this statement (i.e., absence of 180/400 Aquitard) (see HWG, April 2019).	See Response to HWG Chapter 5 Comment 17.
25. The GSP states, "Based on available TDS and AEM data, Figure 5-28 depicts the estimated extent of seawater intrusion within the Monterey Subbasin." (Section 5.3.3 Seawater Intrusion Maps and CrossSections, p. 41). **HWG Comment:** The area covered by Figure 5-28 does not include the AEM profile shown in Figure 5-26 and the AEM profile in Figure 5-27 provides very little data for the mapped area in Figure 5-28. Therefore, Figure 5-28 presumably is based essentially exclusively on TDS data. Furthermore,	See Response to HWG Chapter 5 Comment 17.

HWG Comments	Responses
the area covered by Figure 5-28 has separate 180-Foot and 400-Foot Aquifers separated by an aquitard, so one map is mixing data from different aquifers and should be revised to be two separate figures as is done by the MCWRA.	
26. The GSP states, "…the 180-Foot Aquifer in the Subbasin is divided by an intermediate aquitard into an upper zone and a lower zone. There is no observed seawater intrusion in the upper portion of the 180-Foot Aquifer." (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, pp. 41-42). **HWG Comment:** As discussed previously in this letter, the area covered by Figure 5-28 does not have a continuous intermediate aquitard in the 180-Foot Aquifer, does have a 180/400-Foot Aquitard, and seawater intrusion is present in a significant zone along (and inland of) the ocean throughout the entire thickness of the 180-Foot Aquifer (see HWG, 2017; Staal, Gardner & Dunne, 1992; Fugro West 1996 and 2001).	See responses to HWG Chapter 4 comments 5 and 7, and HWG Chapter 5 Comments 3 and 19.
27. In reference to Figure 5-28, the GSP states, "The figure shows that depressed groundwater elevations in the 180/400 Foot Aquifer Subbasin are creating inland groundwater gradients that are contributing to seawater intrusion within the Monterey Subbasin." (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, pp. 41-42). **HWG Comment:** It should be noted that there are also depressed groundwater elevations from groundwater pumping within the Monterey Subbasin that are contributing to inland groundwater gradients that are contributing to seawater intrusion within the Monterey Subbasin. In fact, the groundwater elevation contour map provided in Figure 5-28 indicates flow lines from the ocean end in a groundwater depression within the Monterey Subbasin. Furthermore, much greater historical pumping from Fort Ord and MCWD wells within the Monterey Subbasin created seawater intrusion within the Monterey Subbasin. Once seawater intrusion occurs, it requires many decades of maintaining seaward gradients to flush saline water back out of the aquifers.	See Response to HWG Chapter 4 Comment 14.

HWG Comments	Responses
28. GSP Figure 5-24 purports to show TDS concentrations and the extent of seawater intrusion in Monterey Subbasin (Section 5.3.3 Seawater Intrusion Maps and Cross-Sections, p. 43). **HWG Comment:** The dark blue zone in the Dune Sand Aquifer map extending approximately 0.5 miles inland from the shoreline suggests presence of fresh water coastal Dune Sand Aquifer, which is attributed to the 2018 AEM Survey report according to the map legend. The light blue zone that presumably attempts to define TDS concentrations below 1,000 mg/L includes a lobe that extends west of the FO-SVA extent that is not supported by any well data. On the contrary, available well data from the MCWD office site on Reservation Road for the Dune Sand Aquifer shows significant seawater intrusion has occurred in the area the AEM Survey report shown to be fresh water in the Dune Sand Aquifer along the coast (Staal, Gardner & Dunne, 1991 and 1992; Fugro West, 1996a and 1996b; Fugro West, 2001).	See Response to HWG Chapter 4 Comment 18.
29. The GSP states, "…seawater continues to flow across the area that is intruded towards the 180/400 Foot Aquifer Subbasin, while there is minimal migration of seawater intrusion to inland areas of the Monterey Subbasin. (Section 5.3.4, Historical Progression of Seawater Intrusion, p. 48.) **HWG Comment:** While the title of this GSP section refers to "Historical Progression of Seawater Intrusion", it fails to actually discuss the historical progress of seawater intrusion within Monterey Subbasin. As indicated in seawater intrusion maps prepared by MCWRA (Appendix 5B), a significant lobe of seawater intrusion into the 180-Foot Aquifer and 400-Foot Aquifer solely within Monterey Subbasin occurred south of Reservation Road in the 1970's and 1980's. This initial seawater intrusion into Monterey Subbasin occurred as a result of groundwater pumping from MCWD and Fort Ord wells screened in the 180-Foot Aquifer and 400-Foot Aquifer production zones, which were sequentially abandoned and moved inland and/or deeper as seawater intrusion moved inland in response to pumping of MCWD and Fort Ord production wells (Harding ESE, 2001). Most of the saline water that	See Response to HWG Chapter 4 Comment 14.

HWG Comments	Responses
was induced to flow into Monterey Subbasin in the 1970s and 1980s still resides in Monterey Subbasin aquifers, and remains part of the overall area of seawater intrusion that exists today.	
30. Figure 5-29 of the GSP (Total Dissolved Solid Concentration Trends in the Lower 180-Foot, 400-Foot Aquifer) shows historical and recent TDS concentrations in various wells, including MCWD Wells MCWD-29 and MCWD-31. (Section 5.3.4, Historical Progression of Seawater Intrusion, p. 49). **HWG Comment:** Figure 5-29 indicates TDS concentrations of approximately 400 mg/L during 2019 in MCWD-29 and MCWD-31. Review of the 2019 AEM Survey Report Table 4-1 shows that AEM based TDS concentrations in the zone screened by these wells is estimated to be greater than 1,000 mg/L (about three times the field measured concentrations). Based on analysis (AEM data is a major data source of mapping sweater intrusion in the GSP) and relationships between chloride and TDS established in the GSP (e.g., chloride concentrations of 500 mg/L equate to TDS concentrations of approximately 1,000 mg/L), it seems that MCWD wells MCWD-29 and MCWD-31 should be included within the area of mapped seawater intrusion. In fact, this discrepancy demonstrates how interpretation of AEM data with regard to water quality can result in significant errors relative to field measured data. Interpreted AEM data has also been shown to significantly underpredict TDS/chloride concentrations (e.g., HWG, April 2019) is some areas.	A comparison of AEM data and water quality data from wells MCWD-29, MCWD-30 and MCWD-31 is presented on Figure 5-27. As shown on these figures, the AEM data and water quality data from these wells is very consistent and show that these wells are primarily screened within zones that have TDS concentrations < 500 ug/L. Some of the deeper screens from these wells do extend into areas where resistivity estimates are in the moderate range and could be indicative of higher salinity groundwater or higher amounts of clay. This phenomenon is also observed at MCWD-34, where groundwater extracted from this well has lower TDS concentrations than AEM data suggest. As stated in section 5.3.1.2 Geophysical Data: "Stanford study found that very high resistivity (greater than 25 ohm/cm) or very low resistivity (smaller than 5 ohm/cm) are indicative of fresh groundwater and high salinity groundwater and, respectively. Moderate AEM resistively in the range of 5 to 25 ohm/cm can be indicative of either higher salinity or higher amount of clay in subsurface materials, thus the exact water quality associated with these resistivity values is more difficult to discern." Due to this limitation, AEM data is better at detecting areas of fresh groundwater and can over predict salinity in some areas due to the presence of clay sediments. However, as previously discussed, significant groundwater quality data exists within the Monterey Subbasin, which supports AEM results. All of these data have been integrated to develop the hydrogeologic conceptual model and map the extent of seawater intrusion within the Subbasin.
31. The GSP relies on a study conducted by WRA Environmental (2020) to conclude that 19.51 acres of aquatic and upland biological communities at six ponds are dependent upon groundwater (Section 5.7.1, Groundwater Dependent Ecosystems, Coastal Vernal Ponds within the City of Marina, p. 68). **HWG Comment:** We note that the five authors of the report by WRA Environmental are all biologists, with no apparent contribution from a hydrogeologist to help evaluate groundwater conditions and dependence of the plant communities on	The Marina ponds have been identified in DWR's NC Dataset as potential GDEs (https://gis.water.ca.gov/app/NCDatasetViewer/). Based on information from the WRA study and the NC dataset, the GSP has reasonably identified these ponds as GDEs or potential GDEs. Pursuant to the *Nature Conservancy's Best Practices for Using the NC Dataset* (dated July 2019), "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." Per the Identifying GDEs

HWG Comments	Responses
groundwater. The only investigation of groundwater in the report was digging a hole to 14 inches in depth to look for soil saturation; however, these field efforts are inadequate to determine groundwater conditions at the sites because there may be shallow fine-grained sediment layers supporting perched/saturated soils in the upper few feet of soil. The WRA report also cites the fact that their field efforts were conducted in June 2020, well after the end of the rainy season, and water was still observed in most of the ponds (implying it must be groundwater). However, review of monthly precipitation data for the 2019 and 2020 water years indicates the 2019 year was very wet (133% of normal) and the 2020 water year was wet (105% of normal). In addition, heavy rainfall occurred in March and April 2020 (about 6.5 inches or close to half the average annual rainfall) with smaller amounts of rainfall in May and June; therefore, it would be expected that surface runoff remained in the ponds with near surface saturation at the time of WRA's June 2020 site visits. We also note that the WRA Report relies on other studies such as Formation Environmental (April 2020) and the draft City of Marina GSA GSP (2020). The HWG has previously commented on these studies, and Geoscience/AECOM conducted the most recent study on the vernal pools (HWG, November 2019; Geoscience and AECOM, August 18, 2020). Summary Geoscience/AECOM comments on the Formation Environmental TM included: 1) very limited use of available groundwater data from MPWSP MW-4 and MW-7 to one point in time without considering entire record and impact of agricultural irrigation return flows in immediate vicinity; 2) relies solely on ET data to justify conclusion that Armstrong Ranch Ponds are groundwater dependent without consideration of alternative water sources such a seasonal surface water from rainfall; 3) failure to account for perched aquifer conditions underlying area; 4) failure to account for effects of urbanization surrounding six ponds in city of Marina that caused ponds to become primarily reliant of surface water runoff and leading to ponds becoming perennial. Furthermore, all six ponds in the Marina area are not hydraulically connected to the coastal Dune Sand Aquifer (thus, pumping from coastal Dune Sand Aquifer will not	under SGMA – Best Practices for Using the NC Dataset dated July 2019 provided by the Nature Conservancy.

HWG Comments	Responses
affect them); and all ponds received surface discharge from storm drains that empty into the ponds. Several ponds were found to have hardpan layers beneath them that limit percolation and likely account for WRA observations of shallow saturation. In addition, water quality data suggest that ponds are more influenced by stormwater runoff than groundwater from the perched aquifer system. Overall, it was found that the Formation Environmental study is fundamentally flawed , misrepresents potential impacts on ponds from pumping in the coastal Dune Sand Aquifer, and does not consider all available evidence concerned the nature of these pond resources and potential impacts to them from pumping. HWG comments on the City of Marina GSA Draft GSP state, "the fact that nearby GDEs are seasonally flooded and have a seasonal nature to them (and are associated with "a lens of less pervious soil") suggests a surface water source is most likely sustaining vegetation in these areas. The GSP evaluation to determine if potential GDEs are actual GDEs did not consider that shallow groundwater in these nearby potential GDE areas is saline or the likelihood that fresh surface water is the primary sustaining factor for these areas and (which means they are not GDEs)."	
32. We note that the City of Marina Draft GSP stated the following with regard to pumping from Marina Coast Water District Deep Aquifer wells, "The combined extraction from these wells was approximately 1,823 AFY in 2015, and is forecast to increase to 3,905 AFY by 2035…" (Section 3.1.8, page 3-17). **HWG Comment:** While the Monterey Subbasin GSP comments on the impacts of increasing pumping from the Deep Aquifer in the adjacent 180/400-Foot Aquifer Subbasin, it is silent on the issue of increased pumping from existing (and potential future new) MCWD Deep Aquifer wells. The cited MCWD Deep Aquifer pumping numbers represent a greater than doubling of the amount of current MCWD pumping from the Deep Aquifer, a pumping amount that already results in Deep Aquifer water levels within Monterey Subbasin on the order of 50-100 feet below sea level. Such increased pumping from the Deep Aquifer by MCWD and others is likely not sustainable.	Impacts of potential future groundwater extraction will be included in the Water Budget Chapter of the GSP.

HWG Comments	Responses
33. We note that the City of Marina Draft GSP stated, "In the Monterey Subbasin, groundwater demand from the Deep Aquifer by MCWD to supply the City of Marina is expected to increase….however, the increase is projected to be within MCWD's allocated pumping rights." (Section 3.3.10.4, page 3-69). **HWG Comment:** Regardless of the validity of allocated pumping rights (which is yet to be determined), it remains unclear if the proposed MCWD increase in pumping from the Deep Aquifer is sustainable. In addition, the increased pumping from the Deep Aquifer to the east to support agricultural expansion is based on overlying rights, not allocated (paper water) pumping rights, and are thereby presumably superior to MCWD rights.	Impacts of potential future groundwater extraction will be included in the Water Budget Chapter of the GSP. SGMA does not establish groundwater rights. HWG's apparent legal opinion regarding the MCWD's pumping rights is not relevant to the GSP.
Monterey Subbasin GSP Comment Log (Prepared by SVBGSA)	
1. In Comment 41 (dated 1/7/21) Tina Wang states, "…There is one thing we pointed out in that chapter, is the dune sand aquifer and the upper 180 foot aq is not SWI intruded, it is fresh." **HWG Comment:** As pointed out in our comments on GSP Chapters 4 and 5, the Fort Ord Site Conceptual Model (i.e., continuous intermediate aquitard within 180-Foot Aquifer and lack of a 180/400-Foot Aquitard) does not apply in northern Monterey Subbasin. Furthermore, available field data indicate that the Dune Sand Aquifer and upper portion of the 180-Foot Aquifer are seawater intruded (chloride greater than 500 mg/L) for a significant distance inland from the coast in the northern Monterey Subbasin and Southern 180/400-Foot Aquifer Subbasin. We also note that EKI's (and others) definition of fresh water in many previous documents related to the MPWSP has been TDS up to 3,000 mg/L; however, HWG have shown such levels of TDS also have greater than 1,000 mg/L chloride in the area, which is far in excess of the 500 mg/L standard applied by MCWRA for seawater intrusion. The Monterey Subbasin GSP uses AEM data outside of Monterey Subbasin (i.e., in southern 180/400-Foot Subbasin) to claim the presence of this so-called fresh water, yet actual field data show seawater intrusion has occurred at the coast and for	See responses to HWG Chapter 4 comments 5 and 7, and HWG Chapter 5 Comments 3 and 19.

HWG Comments	Responses
a significant distance inland in this area (see HWG, 2017).	
2. In Comment 44 (dated 1/7/21) Derrik Williams responds to the commenter (Bob Jaques) that, “We have discussed the AEM data with some members of the blue ribbon panel…the didn’t have too many concerns.’ **HWG Comment:** If the commenter is referring to the Hydrogeologic Working Group, this statement by Derrik Williams is incorrect. The HWG has many concerns about the hydrogeologic interpretation of the AEM data and has documented our concerns in numerous documents (e.g., HWG, 2017; HWG, 2018; HWG, January 2019; HWG, March 2019; HWG, April 2019; HWG, June 2020).	See response to HWG Chapter 4 comment 9.

11/1//2021 – Comments on Monterey Subbasin Public Draft GSP Chapter 6

"This letter is submitted on behalf of California American Water and provides comments on Chapter 6 (Water Budget) for the Public Draft Monterey Subbasin GSP Chapter 6 released on September 3, 2021. It also includes a brief review of how previous comments by the Hydrogeologic Working Group (HWG) on Monterey Subbasin GSP Chapters 4 (HCM) and 5 (Groundwater Conditions), which are attached to this comment letter, were not addressed in the recently released Public Review Draft versions of these chapters. Detailed comments are provided along with a summary of the main comments."

SUMMARY OF COMMENTS

The Monterey Subbasin GSP emphasizes in several places that subbasin sustainability is dependent on adjacent subbasins becoming sustainable. While there is some interdependence between subbasins that may impact the sustainability of adjacent subbasins, the GSAs in the Monterey Subbasin should focus on their role in making the Subbasin sustainable. This is best achieved by comparing groundwater recharge (just the vertical components of flow from the soil moisture balance, not including subsurface inflows form adjacent subbasins) in the Marina-Ord Area to groundwater pumping in the Marina-Ord Area. In addition, there needs to be excess groundwater recharge over and above total pumping for significant outflow to the ocean to prevent seawater intrusion.

A summary of several other major Chapter 6 comments includes:

- Groundwater model documentation is key to understanding the water balance, but is not included in available Public Draft GSP documents made available for review;
- Soil moisture budget accounting model documentation is key to understanding the water balance, but is not included in available Public Draft GSP documents made available for review;
- The surface water system water budget required under SGMA is not provided;
- There is a major inconsistency in estimated net subsurface inflow between the Monterey Subbasin and the 180/400 Foot Aquifer Subbasin presented in the GSPs for the two subbasins (i.e., 12,500 AFY vs. 3,000 AFY);
- The extent of seawater intrusion within the Monterey Subbasin has expanded over the historical period covered by the GSP, which is in contrast to statements/assumptions in the GSP;
- Some of the boundary conditions used in the groundwater model for future project scenarios are not realistic and are inconsistent with the 180/400 Foot Aquifer Subbasin GSP;
- The GSP Marina-Ord Area water balance indicates that increases in groundwater pumping for the future project scenario are not realistic and are not sustainable, because they exceed Marina-Ord Area groundwater recharge and do not allow for outflow to combat seawater intrusion;
- Future project scenarios should be more conservative and should not assume groundwater recharge will increase in the future by 10 to 20% due to climate change;
- Groundwater model results indicate that MTs and MOs will likely not be achieved in the Monterey Subbasin if realistic boundary conditions are applied; and
- The sustainable yield estimate of 4,400 to 9,900 AFY for the Marina-Ord Area is significantly overestimated, and will likely have detrimental impacts on adjacent subbasins (i.e., the Seaside Basin and the 180/400 Foot Aquifer Subbasin)."

<u>Please see responses below for details.</u>

LSCE Comments	Responses
Section 6.1 (Water Budget Method)	
1. The GSP states that the water budget information is based on use of a groundwater flow model developed for the subbasin (p. 6-8). **Comment:** The model documentation (Appendix 6B) was not provided for review; thus, it is not possible to provide complete comments on the water balance without being able to review documentation for the model used to produce the water balance. Without the supporting documentation, stakeholders and the public are not able to adequately comment on the relevant issues.	Appendix 6B, which contains the model documentation, has been made available. It was uploaded to MCWD's website on 11/10/2021.
2. The GSP states that a soil moisture budget (SMB) accounting model is used to estimate groundwater recharge (p. 6-10). **Comment:** While Appendix 6-A provides some tables with output data from the SMB, no model documentation is provided. Thus, it is not possible to provide complete comments on the water balance without being able to review documentation for the SMB model used to provide key input to the groundwater model and water balance. Without the supporting documentation, stakeholders and the public are not able to adequately comment on the relevant issues.	Appendix 6B, which contains the model documentation, has been made available. It was uploaded to MCWD's website on 11/10/2021.

3. The GSP states, "As discussed in Appendix 6B, the MBGWFM has been calibrated against 30,354 historical water level measurements to achieve normalized calibration error statistics of less than 2% and thus adequately represents the historical conditions of the Basin. Therefore, it is appropriate to use the MBGWFM to estimate water budgets for the Monterey Subbasin." (p. 6- 10). **Comment:** Appendix 6B was not provided for review. While good calibration to water levels is important, it does not in and of itself validate use of the model for producing a valid water balance. Other key considerations include the fact that simulated water levels and subsurface inflows/outflows can be highly variable depending on boundary conditions. Thus, various combinations of recharge, discharge, aquifer parameters, and boundary conditions can produce similarly good model calibrations to water levels (i.e., models are non-unique). For example, a groundwater model with less vertical recharge could produce a good calibration to groundwater levels with a different set of aquifer parameters and/or boundary conditions. Therefore, additional justification is needed for use of the model for water balance output, such as comparison to adjacent subbasin water balances and the amount of vertical recharge (e.g., precipitation recharge, excess irrigation recharge) per acre. For example, the 180/400-Foot Aquifer Subbasin historical water budget has vertical recharge amounting to 0.22 ft/acre compared to the Monterey Subbasin historical water budget with vertical recharge of 0.33 ft/acre, or 50% greater vertical recharge than the immediately adjacent 180/400-Foot Aquifer Subbasin.	Appendix 6B, which contains the model documentation, has been made available. It was uploaded to MCWD's website on 11/10/2021. There is inherent uncertainty in any basin water balance, especially in basins where multiple aquifers exist and where significant cross-boundary flows are known to occur between adjacent, hydraulically connected subbasins. Similarly, nearly all numerical groundwater flow models are considered to be "non-unique", as they are based on imperfect information regarding aquifer parameters and their spatial distribution, time-varying boundary conditions, and spatiotemporal stresses such as recharge and pumping. Uncertainties and limitations of the MBGWFM are described in detail in Section 6.7 and Appendix 6B. With this in mind, significant effort was expended to ensure that aquifer parameters (e.g., hydraulic conductivities and storage coefficients) were calibrated to measured values and that estimated recharge rates were consistent with other models developed for the Monterey Subbasin and surrounding areas. Section 4 of the model documentation (Appendix 6B) details the methodologies and datasets used to inform model calibration. It is unreasonable to directly compare recharge estimates from the MBGWFM to estimates provided in the 180/400-Foot Aquifer GSP because: (1) land use conditions are substantially different between the two subbasins (e.g., the Monterey Subbasin is predominantly undeveloped and low-density residential land except for in the City of Marina, whereas the 180/400-Foot Aquifer Subbasin has a large agricultural and urban footprint); (2) precipitation rates differ substantially between the two subbasins; and (3) the recharge estimates were developed using entirely different methodologies and, notably, water budgets presented in the 180/400-Foot Aquifer GSP were not informed by a numerical model (see reply to comment 6 below). As part of MBGWFM calibration, recharge rates output from the soil moisture balance model (SMB) were compared to analogous estimates produced for the Monterey Subbasin by the Farm Package of the Salinas Valley Integrated Hydrologic Model (SVIHM), which is being used to develop

LSCE Comments	Responses
	updated water budget estimates for the 180/400-Foot Aquifer Subbasin GSP. Comparison between the SMB and SVIHM indicates that average Basin-wide recharge rates calculated from the SMB are +12% higher than those calculated from the SVIHM over like timeframes. However, when looking at normalized recharge rates, it appears that the SMB and SVIHM track very closely in most areas of the Basin. For example, the SMB calculated ~25.3% of total precipitation and applied water as contributing to recharge in the Corral de Tierra Management Area, compared to ~25.6% calculated from the SVIHM. The most significant difference between the two models is within urban areas, where the SMB calculates ~11.6% recharge of precipitation and applied water compared to ~5.8% calculated from SVIHM. This discrepancy may in part be explained by the fact that SVIHM does not account for deliveries from municipal water suppliers or leakage from water conveyance systems within urban areas of the basin in its recharge calculations. Therefore, it appears the discrepancy in Basin-level recharge between the two models can be primarily explained by differences in input datasets and assumptions between the two models rather than fundamental differences in recharge calculation methodologies. See Appendix 6B for a more detailed description of the SMB and comparison of estimated recharge rates to other existing models.
4. The GSP states, "To quantify all required water budget components as specified in the GSP Emergency Regulations (CCR § 354.18(b)), this GSP presents results from both the SMB for the land surface system and the MBGWFM for the groundwater system." (p. 6-11). **Comment:** The GSP Emergency Regulations (CCR § 354.18(b.1)) require, "Total surface water entering and leaving a basin by water source type." A surface water budget is not provided in Chapter 6; this would include total streamflow and any imported water entering and leaving the Monterey Subbasin.	Comment noted. An updated version of Chapter 6 will be provided that includes a tabular summary of total surface water entering and leaving a basin by water source type over the historical and current water budget period.
Section 6.2 (Water Budget Components)	
5. The GSP states that inter-basin cross-boundary flows (e.g., between the Monterey Subbasin and the 180/400 Aquifer Subbasin) are based on model general head boundary conditions (p. 6-15). **Comment:** The details of the general head conditions used (i.e., heads, conductance) are not provided and cannot be reviewed. Presumably such details would be provided in the Model Documentation in Appendix 6B if it were made available for public review.	Appendix 6B, which contains the model documentation, has been made available. It was uploaded to MCWD's website on 11/10/2021.
Section 6.4 (Historical and Current Water Budget)	

LSCE Comments	Responses
6. GSP Table 6-1 provides historical and current groundwater water budget results (p. 6-20). **Comment:** The historical and current Monterey Subbasin water budgets show net subsurface outflows of 12,265 to 12,565 AFY to the 180/400-Foot Aquifer Subbasin. Review of the DWR-approved GSP for the 180/400-Foot Aquifer Subbasin shows historical and current water balance net subsurface inflows from the Monterey Subbasin of 3,000 AFY. Thus, there is a large discrepancy between the two GSPs regarding subsurface cross-boundary flows. If the Monterey Subbasin GSP cross- boundary flows are correct, the difference between inflows and outflows for the historical groundwater budget for the 180/400-Foot Aquifer Subbasin GSP changes from -12,900 AFY to -3,635 AFY, which has significant implications for the 180/400-Foot Aquifer Subbasin GSP. In general, this uncertainty in cross-boundary flows also points out that subbasin sustainability should be based (primarily) on balancing the vertical components of recharge and discharge. This eliminates the uncertainty regarding cross-boundary flows (and associated dependency) in evaluating projects/management actions needed to achieve sustainability.	As discussed in the Monterey GSP, a lot of care was taken to assess cross boundary flows and accurately represent conditions in adjacent subbasins. Estimated cross boundary flows between the Monterey Subbasin and the 180/400-Foot Aquifer Subbasin are significantly higher than those presented in the 180/400-Foot Aquifer GSP. This discrepancy is well founded. Due to time constraints, historical and current water budgets presented in the 180/400-Foot Aquifer GSP were developed based on data and analyses aggregated from previous reports and other available sources. No numerical modeling effort was completed to develop the historical or current water budget. The limitations of the historical water budget analyses included in the 180/400-Foot Aquifer GSP are well acknowledged within the GSP, and additional analyses are being conducted as part of the 5-year review process. In fact, as noted in the 180/400-Foot Aquifer GSP, the estimated inflow from the Monterey Subbasin of 3,000 AFY/year was taken from a Montgomery Watson document produced in 1997. This document generally looks at data that pre-dates the Historical Period evaluated in the Monterey GSP (i.e., water years 1999 through 2018). It is based on a very limited dataset and does not reflect conditions within these subbasins over the last 15 years. The MCWD GSA and SVBGSA collaborated on development of the MBGWFM including boundary conditions along the boundary of the 180/400-Foot Aquifer Subbasin and beneath the Salinas River. Additional information and documentation of collaborate efforts between the agencies as part of MBGWFM development has been added to the water budget section and as Appendix 6C.

LSCE Comments	Responses
7. A footnote to Table 6-1 states, “All seawater inflows from the ocean are presumed to leave the Monterey Subbasin across the 180/400 Foot Aquifer Subbasin boundary, as evidenced by no observed expansion of the seawater intrusion front in the Monterey Subbasin over the historical time period.” (p. 6-20). This issue is also discussed in the first bullet at the top of page 6-23, and first bullet at the top of page 6-24. **Comment:** Review of seawater intrusion maps prepared by MCWRA indicates this statement/conclusion is not correct – the seawater intrusion front in Monterey Subbasin has expanded over the historical time period.	As discussed in Chapter 5, no evidence of expansion of the seawater intrusion front has been observed in the Monterey Subbasin during the historical period (2004 to 2018). MCWRA maps are developed on the basis of chloride data which is collected intermittently from a limited number of wells (see Figure 5-27 for locations of wells with post-2015 chloride data). As part of the Monterey GSP effort, specific conductance and TDS data collected from Fort Ord Wells was analyzed and utilized to evaluate the seawater intrusion front. As presented in Appendix 5A, a very high correlation exists between TDS, chloride and specific conductance in groundwater within this subbasin.
8. GSP Figure 6-4 (p. 6-21) indicates subsurface flow occurs from the Corral de Tierra Area to the Marina Ord Area. **Comment:** Review of topography and studies by others (e.g., Geosyntec, 2007) indicates essentially no flow between the two Areas, but rather subsurface flow from the Corral de Tierra Area strictly to the 180-400 Foot Aquifer Subbasin. The water balance for Marina-Ord Area assumes such subsurface inflow amounts to 1,544 AFY, but this is likely not the case.	As indicated by the Geosyntec study, significant groundwater flow from the Corral de Tierra Area to the 180/400 Foot Aquifer Subbasin exists. The Monterey Subbasin Groundwater Flow Model estimates that, on average, approximately 3,632 AFY of groundwater flows from the Corral De Tierra Area WBZ to the 180/400 Foot Aquifer Subbasin over the historical period. Groundwater gradient map developed as part of the GSP show that some groundwater flows between the Coral De Tierra Area and the Marina-Ord Area, which is estimated at 1,544 AFY over the historical period. However, as discussed in the GSP, there are few wells along the boundaries between the Corral De Tierra Area and the 180/400 Foot Aquifer Subbasin and the Marina Ord Area. The absence of such data has been identified as a data gap. Additional wells are planned in these areas to further assess these cross-boundary flows.
9. The GSP states that outflows to the ocean occur from the Dune Sand Aquifer (p. 6-22). **Comment:** The HCM and groundwater elevation contour maps indicate that the Dune Sand Aquifer and 180- Foot Aquifer merge inland of the coast where the FO-SVA aquitard pinches out and the combined groundwater flow moves inland. The GSP presents no evidence of outflow to the ocean.	As shown on Figures 5-1 and 5-2, water levels in the Dune Sand Aquifer are above mean sea level. Although much of the water from the Dune Sand aquifer returns to the subbasin via the Upper 180-Foot aquifer as illustrated in Figure 4-19, it is anticipated that some discharge to the ocean occurs. However, the freshwater/ocean water interface is highly complex in this heterogenous environment and dual density modeling has not been conducted. The modeling that has been conducted focuses on larger basin water budget issues that are the focus of the GSP. Although relevant to the California American Water Monterey Peninsula Water Supply Project, the intricacies of this freshwater/seawater interface are not explored as part of this GSP.

LSCE Comments	Responses
10. The GSP notes that estimated net annual inflows/outflows between the Monterey Subbasin and the Seaside Subbasin are consistent with the estimates from the Seaside Basin Groundwater Flow Model. However, this same statement of consistency is not made by the GSP for estimated net annual inflows/outflows between the Monterey Subbasin and the 180/400 Foot Aquifer Subbasin. **Comment:** As noted above, there is a major discrepancy between the 3,000 AFY of net inflow to the 180/400 Foot Aquifer Subbasin from the Monterey Subbasin estimated in the 180/400 Foot Aquifer Subbasin GSP versus the 12,365 AFY of net inflow to the 180/400 Foot Aquifer Subbasin estimated in the Monterey Subbasin GSP.	See Response to Comment 6.
11. The GSP notes that the Dune Sand Aquifer has seaward gradients that result in 534 AFY of net outflow to the ocean (p. 6-23). **Comment:** The groundwater elevation contour maps presented in Chapter 5 do not include data points near the coast and provide no evidence of outflow to the ocean. In fact, other data indicate there is no outflow to the ocean from the Dune Sand Aquifer as described above.	See response to comment 9.
12. The GSP states that groundwater elevations in the 180/400 Foot Aquifer Subbasin are 40 feet below mean sea level (MSL) in the 180 and 400-Foot Aquifers and 100 feet below MSL in the Deep Aquifer (p. 6-24). **Comment:** It should also be noted here that groundwater elevations in the Monterey Subbasin are 20 to 30 feet below MSL in the 180 and 400-Foot Aquifers and 50 to 70 feet below MSL in the Deep Aquifer.	This information is presented on the figures of the GSP. The purpose of this statement is to note that water levels in the 180/400 Foot aquifer subbasin are lower than those in the Monterey Subbasin, which is consistent with the HCM and cross-boundary flow estimates presented in the GSP.

LSCE Comments	Responses
13. Figure 6-5 (p. 6-27) shows an area of seawater intrusion in Monterey Subbasin with arrows showing groundwater flow directions in this area. The text describes these arrows as, "…the general direction of presumed freshwater and seawater cross-boundary flows…" (p. 6-28). The GSP also states, "…it is difficult to predict if seawater inflows from the ocean will continue to pass through the Monterey Subbasin into the 180/400 Foot Aquifer subbasin as they did during the historical period." (p. 6-42). **Comment:** The area of seawater intrusion does not match the sea water intrusion maps prepared by MCWRA and does not distinguish seawater intrusion in the 180-Foot Aquifer vs. 400-Foot Aquifer as done by MCWRA. In addition, the groundwater flow direction arrows within the zone of seawater intrusion are incorrect and do not correlate with the groundwater elevation contours included on the map, which indicate a portion of the groundwater within the seawater intrusion zone flowing towards the middle inland portion of Monterey Subbasin. It is not clear why the groundwater flow directions shown are based on "presumed" directions rather than the flow arrows that would be derived based on actual groundwater elevation contour lines shown on the figure.	See response to comment 7.
14. The GSP states, "…pumping in the Corral de Tierra Area is estimated using the known data, and may be missing a significant amount of pumping." (p. 6-33). **Comment:** If a significant amount of pumping is not accounted for in the Corral de Tierra Area, then subsurface outflow is significantly overestimated.	This comment is correct. As stated in the GSP, the magnitude of pumping in the Coral De Tierra has been identified as a data gap and additional information will be obtained as part of ongoing GSP efforts. Such information will be incorporated into future model updates and cross-boundary flows will be reevaluated.
Section 6.5 (Projected Water Budget)	
15. Projected water demands for the MCWD service area are estimated to increase from 3,367 to 8,314 AFY, and it is assumed that increased pumping would be divided evenly between the 180 and 400 Foot Aquifers and the Deep Aquifer based on historical MCWD operations (pp. 6-37 and 6-38). **Comment:** Given the evolution of MCWD pumping distribution between the Deep Aquifer and shallower aquifers to the point where Deep Aquifer pumping has apparently increased to become more than two-thirds of total MCWD pumping in recent years, it is apparent that the 180 and 400 Foot Aquifers cannot accommodate the proposed future pumping increases stated in the GSP. The future model scenario should assign all future increases in pumping to the Deep Aquifer. This pumping distribution will likely have a major effect on future scenario model results.	Where additional pumping will occur is unknown. Simplifying assumptions have been made in the GSP. GSP updates will evaluate the impacts of additional pumping as it is proposed.

LSCE Comments	Responses
16. The GSP states that model boundary conditions used in future scenarios include: minimum thresholds (MT), measurable objectives (MO), and seawater intrusion protective boundary conditions (p. 6-38). **Comment:** The seawater intrusion protective boundary conditions are not defined in terms of what they are or how they were derived, or how likely they are to occur. Since they are not provided in GSPs for adjacent subbasins as likely to occur, they do not seem appropriate to use.	As described in Chapter 6 of the GSP, seawater intrusion protective boundary conditions represent minimum groundwater levels that would be required to stop seawater intrusion within the 180/400 Foot Aquifer subbasin, in the absence of an extraction or injection barrier. The seawater intrusion protective heads have been calculated on the basis of the Ghyben-Herzberg Relation described in Section 5.3.2 of the GSP. The actual value for each aquifer and climate scenario varies based upon the average depth of the aquifer and the estimated value of mean sea level under the assumed future climate scenario. The detailed description of freshwater equivalent heads was included in Appendix 6B. Given that groundwater extraction or injection barriers will require hundreds of millions of dollars to construct, it is very conceivable that they will not be completed and pumping reductions and in lieu recharge will used to reach sustainability. Such projects and management actions are also identified in the 180/400 Foot Aquifer Subbasin GSP Measurable Thresholds for seawater intrusion established in the 180/400 Foot Aquifer Subbasin GSP, do not allow expansion of the seawater intrusion front. As such, in the absence of injection/extraction barriers groundwater levels will need to be raised to seawater protective levels to stop further seawater intrusion and meet Measurable Thresholds for seawater intrusion in the 180/400 Foot Aquifer Subbasins. Such groundwater levels would be achieved through pumping reductions and/or in lieu recharge which are included as potential projects and management actions in the 180/400 Foot Aquifer GSP. As such, this scenario provides insights regarding the impacts of such potential future boundary groundwater conditions on the Monterey Subbasin.

LSCE Comments	Responses
17. The GSP states that for the MT Boundary Conditions in the projected model scenario run, "Groundwater levels in RMS wells located near the Monterey Subbasin are raised from 2018 model predicted values to water level MTs established in the 180/400 Foot Aquifer GSP…" (p. 6-38). **Comment:** Review of water level data from MCWRA indicates that 2015 to 2016 water levels were generally lower than 2018 water levels. The 180/400-Foot Aquifer Subbasin GSP set MTs one foot above 2015 water level elevations. Thus, it is not clear why model-predicted 2018 water levels in boundary condition areas would need to be raised to be at MT levels established in the 180/400-Foot Aquifer Subbasin unless model-predicted groundwater elevations for 2018 were substantially lower than observed values. If model-predicted values are substantially lower than observed values in boundary condition areas, the model would likely significantly overestimate groundwater outflow from the Monterey Subbasin to the 180/400-Foot Aquifer Subbasin.	Comment noted. In all cases, water levels at general head boundary cells along the northern MBGWFM boundary were adjusted from Fall 2018 levels to MT levels defined at 180/400-Foot Aquifer RMS wells. For certain wells, this may result in an increase in water levels relative to Fall 2018 conditions, while in other wells this may result in a decrease in water levels relative to Fall 2018 conditions. This sentence has been reworded to clarify that water levels "are adjusted from 2018 model predicted values to water level MTs established in the 180/400-Foot Aquifer GSP."
18. The GSP states that seawater intrusion protective elevations are, "…consistent with the MTs for seawater intrusion established in the 180/400 Foot Aquifer GSP." (p. 6-39). **Comment:** Based on this statement, it is not clear how seawater intrusion protective elevations differ from MT elevations. Several figures in the GSP suggest seawater intrusion protective elevations are much higher than MT elevations.	See response to comment 16.
19. The GSP Project Scenario calls for increased use of recycled water from 600 AFY in 2023 to 5,495 AFY in 2040, with total demand in 2040 and beyond of 10,955 AFY. **Comment:** This Project scenario assumes that recycled water can provide 50% of total water demand for MCWD, which is likely unrealistic. In addition, other documents (MCWD Urban Water Master Plan, MCWD Water Supply Master Plan) indicate future recycled water use would be limited to no more than 1,500 AFY.	This project consists of using purified recycled water for indirect potable reuse (IPR). As discussed on page 9-54 under "IPR in Monterey Subbasin", IPR includes injecting non-potable water into a groundwater aquifer for later recovery. This generates potable water that can meet a larger portion of MCWD's demand beyond irrigation needs.
20. The GSP states, "…the projected water budget results indicate that the climate scenarios have a much smaller impact on changes in storage and groundwater levels within the subbasin than the identified boundary conditions." (p. 6-43). **Comment:** While this statement may be true relative to horizontal groundwater flows, it is not true with regard to vertical groundwater recharge that increases substantially (about 10 to 20%) under future climate change scenarios. Additional projected model runs should be made using historical groundwater recharge amounts due to the significant uncertainty in future groundwater recharge increases.	Results for model runs for 2030 and 2070 climate scenarios are included in the GSP. See Chapter 6 and Appendix 6B.

LSCE Comments	Responses
21. GSP Table 6-5 (Comparison of Projected Water Budget Results Under "No Project" Scenarios with Variable Boundary Conditions and 2030 Climate Condition, Marina-Ord Area WBZ) shows 8,767 AFY of groundwater pumping versus 6,823 AFY of total groundwater recharge (p. 6-45). **Comment:** Under these scenarios groundwater pumping exceeds groundwater recharge by approximately 2,000 AFY and is not sustainable.	As discussed in the GSP under the future No Project Scenario, groundwater pumping does exceed groundwater recharge and the GSP concludes that MTs will likely not be met under this scenario. Potential projects have been identified to meet MTs and MOs within the groundwater subbasin under increased demands. The authors premise that groundwater recharge is equivalent to the sustainable yield of a groundwater subbasin is a reasonable argument, but is not articulated under SGMA.
22. The GSP states, "…ocean inflows into the basin also decrease as water levels at this boundary increase from MTs, to MOs, and to SWI protective elevations…However, there is little reduction in net ocean inflows between the historical water budget and the projected baseline water budgets under MT boundary conditions or MO boundary conditions." (p. 6-48). **Comment:** This statement would seem to indicate that ocean inflows are driven by Monterey Subbasin groundwater elevations.	This comment seems to ignore the fact that water levels in the Monterey Subbasin are impacted by water levels in the adjacent 180/400-Foot Aquifer subbasin, and vice-a-versa. While net ocean inflows are similar between the historical and projected baseline scenario water budgets, the projected baseline scenario water budget also assumes an average pumping rate of 8,767 AFY in the Marina-Ord area, compared to 4,346 AFY in the historical model. This indicates that, if the 180/400-Foot Aquifer Subbasin were able to maintain MT or MO water level conditions, MCWD could pump at least twice as much from its subbasin without causing further increases in ocean inflows as this additional pumping would instead be offset by decreased outflows to the 180/400-Foot Aquifer Subbasin.
23. The GSP states, "…projected water budgets also indicate that substantial groundwater outflows from Monterey Subbasin continue to occur into the 180/400-Foot Aquifer Subbasin under MT and MO boundary condition scenarios." **Comment:** It should be determined how much of this groundwater outflow across Subbasin boundaries is due to sea level rise.	The MBGWFM currently does not include a dual-density groundwater flow component to explicitly simulate seawater intrusion in the Basin (see Appendix 6B), thus making a detailed analysis of projected seawater intrusion rates and spatial migration patterns impractical. However, as described in Section 9.8.6, MCWD and SVBGSA plan to coordinate to convert the MBGWFM into a seawater intrusion model within the first 5-years of SGMA implementation. A more detailed analysis of seawater intrusion rates and spatial trends, including an analysis of sea level rise impacts on cross-boundary flows, will be completed upon development of this model.
24. With respect to the Marina-Ord Area, the GSP states, "…these projected water budget results indicate that this management area will not be in overdraft if adjacent basins are managed sustainably and SMCs are achieved." (p. 6-50). **Comment:** Given that pumping exceeds recharge by 2,000 AFY in in the Marina-Ord Area per Table 6-5, it is not clear how this Area can be considered to not be in overdraft under projected future conditions.	See response to comments 21 and 19.

LSCE Comments	Responses
25. The GSP states, "…it is difficult to predict if…changes in boundary conditions and increased extraction in the subbasin could cause saline groundwater from the 180/400 Foot Aquifer subbasin or ocean to flow further inland within the Monterey subbasin. It is noted that MCWD has significant operational flexibility regarding rates of extraction from its wells and could potentially modify the location and depth at which groundwater is extracted to limit such impacts." (p. 6-50 to 6-51). **Comment:** The groundwater model should be able to provide some indication of the potential for saline water from the ocean to flow further inland within the Monterey Subbasin. As discussed in other comments, MCWD does not appear to have operational flexibility on depth of extraction and additional pumping is likely to occur from the Deep Aquifer.	See response to Comment 16.
26. In reference to Figure 6-8, the GSP states, "This figure indicates that variable climate conditions have limited impacts on projected water levels in RMS wells relative to boundary condition scenarios." (p. 6-51). **Comment:** This figure and the associated statement here are misleading with regard to the impacts of variable climate conditions assumed in the future scenario. The future climate change assumptions result in an increase in groundwater recharge ranging from 10 to 20%, which is highly uncertain. A better approach would be to assume groundwater recharge in the future will be similar to historical groundwater recharge. The assumption of increased future groundwater recharge may exacerbate overdraft that is already predicted to occur even with the assumed increased in groundwater recharge (see Table 6-5 where groundwater pumping exceeds future groundwater recharge by approximately 2,000 AFY).	Per GSP regulations 23-CCR §354.18(e), *"Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow"*. As further described in Appendix 6B, EKI utilized the methodology and datasets provided in DWR's *Guidance for Climate Change Data Use During Groundwater Sustainability Plan Development* (DWR, 2018) to estimate climate change impacts to ET and precipitation, which directly informed corresponding estimates of projected recharge rates under the 2030 and 2070 climate change scenarios. This comment's suggestion to use historical recharge rates for projected water budgets does not constitute best available information and science and does not meet the requirements of a GSP outlined by 23-CCR §354.18.

LSCE Comments	Responses
27. The GSP states, "…these results suggest that projects and/or management actions may be required to consistently maintain water levels above MTs and to achieve MOs within the Marina-Ord Area unless SWI protective boundary conditions are achieved in the adjacent subbasins." (p. 6-51). **Comment:** The 180/400 Foot Aquifer Subbasin GSP is approved by DWR with the MO/MT included in the GSP. It is not reasonable to evaluate/assume boundary conditions could be at the apparently much higher "SWI protective boundary conditions". Thus, it should be assumed that projects/management actions will be required in Monterey Subbasin to maintain water levels above MTs and achieve MOs within the Marina-Ord Area.	See response to comment 16.
28. GSP Figure 6-8 indicates that Monterey Subbasin does not meet its MT when using MT boundary conditions for adjacent basins and does not meet its MO when using MO boundary conditions for adjacent basins in future project model runs for "No Project" conditions (p. 6-52). **Comment:** These results demonstrate that projects/management actions will be necessary to meet MT and MO in Monterey Subbasin. The GSP Project with water supply augmentation by recycled water of 5,500 AFY far exceeds any other current projections of available recycled water (less than 1,500 AFY in MCWD UWMP).	See response to Comments 16 and 19.
Section 6.6 (Historical, Current, and Projected Overdraft and Sustainable Yield)	
29. The GSP presents three methods of calculating sustainable yield of the Marina-Ord Area (p. 6-59 to 6-60). **Comment:** Two of the three methods are based on comparing historical and current overdraft to groundwater pumping during these time frames, with resulting sustainable yield ranging from 2,714 to 3,294 AFY, or an average of approximately 3,000 AFY. This estimate is likely reasonable given that historical and current pumping amounts ranging from 3,503 to 4,346 AFY have resulted in groundwater basin overdraft and seawater intrusion. The third method of calculating sustainable yield in the GSP erroneously concludes that the projected water budget results support an estimated sustainable yield of 9,870 AFY, which is three times the amount of groundwater pumping that has already resulted in overdraft and seawater intrusion. Furthermore, this sustainable yield estimate is on the order of 50% greater than total groundwater recharge. While the GSP claims a sustainable yield of up to 9,900 AFY, it is clear from historical and current data that the sustainable yield of the Marina-Ord Area is likely no greater than about 3,000 AFY.	It should be noted that on average -9,307 AFY of groundwater flowed inland from the Monterey subbasin into the 180/400 Foot Aquifer Subbasin in Water Year 2015-2018 where groundwater levels are well below sea level and lower than the Monterey Subbasin. The projected water budget analysis is also based on data inputs that best reflects future conditions, including climate change and boundary conditions assuming adjacent subbasin would achieve sustainability under SGMA.

LSCE Comments	Responses
30. The GSP states that under the "no project" scenario RMS well groundwater levels "…are generally higher than MTs during non-drought periods under all identified boundary conditions and climate scenarios…" and that RMS well groundwater levels "…reach MOs if SWI protective boundary conditions are achieved in adjacent subbasins." (p. 6-60). **Comment:** Review of Figure 6-7 indicates that groundwater levels are below the MTs more than 50% of the time after 2040 under MT boundary conditions, which is contrary to statements in the GSP. In addition, the DWR-approved 180/400 Foot Aquifer Subbasin GSP does not propose to achieve SWI protective groundwater levels; therefore, Monterey Subbasin RMS wells will not achieve proposed MOs.	See response to Comment 16.
31. The GSP states that the future projected sustainable yield ranges between 4,400 and 9,900 AFY if adjacent subbasins are managed sustainably and the 180/400 Foot Aquifer Subbasin reaches its SMCs (p. 6-60). **Comment:** While there is some interdependence between subbasins that may impact the sustainability of adjacent subbasins, each subbasin in the Salinas Valley needs to be managed sustainably on its own to make the entire Salinas Valley sustainable. The 180/400 Foot Aquifer Subbasin GSP has been approved by DWR as doing its part to achieve sustainability. Seaside Basin has been adjudicated and is doing its part to be sustainable. Monterey Subbasin cannot rely on inflows from other subbasins (e.g., from Seaside Basin) nor simply blame other subbasins (e.g., the 180/400 Foot Aquifer Subbasin) for its own inability to reach sustainability. The Monterey Subbasin should do its part to become sustainable by balancing its vertical inflows and outflows (i.e., do not include adjacent subbasin inflows and outflows), including a sufficient allowance for outflows to the ocean to avoid seawater intrusion. Alternatively, Monterey Subbasin GSAs may choose to work with the adjacent 180/400 Foot Aquifer Subbasin to develop other means of achieving sustainability such as by implementing a coordinated groundwater extraction barrier to address seawater intrusion.	Estimated groundwater recharge in the Monterey Subbasin is approximately 10,055 AFY, which far exceeds historical estimated rates of groundwater extraction (i.e., 5,274 AFY), yet the subbasin is in overdraft. If all subbasins were held to the criteria proposed by the author (i.e. simply by balancing its vertical inflows and outflows), the Monterey Subbasin would not be in overdraft and would not require that an extraction barrier be built.
32. The GSP states with regard to the projected sustainable yield range for the Marina-Ord Area of 4,400 to 9,900 AFY, that that ability to conduct this amount of pumping without inducing seawater intrusion needs to be verified (p. 6-60). **Comment:** It is not clear why pumping amounts in excess of historical pumping amounts that induced seawater intrusion would be proposed in a GSP without first verifying that they would not be expected to induce seawater intrusion. The groundwater model developed for the GSP should be applied to address this issue.	Seawater intrusion is the result of the combined effects of groundwater pumping within the greater Salinas Valley Groundwater Basin. As articulated in the GSP, a coordinated approach is required to reach sustainability in the Monterey Subbasin and other subbasins in the greater Salinas Valley Groundwater Basin.

LSCE Comments	Responses
Other General Comments	
33. The HWG previously reviewed Draft GSP Chapters 4 and 5 for the Monterey Subbasin, and provided comments dated April 5, 2021 (attached to this letter). While the HWG comments were acknowledged as being received by the GSA, the Public Draft versions of Chapters 4 and 5 include no significant changes to the text or figures related to the HWG comments. Furthermore, unlike responses provided to other comments submitted on the draft GSP chapters, there have been no responses to the HWG comments. Given that GSP development is a public process that is required include substantial public and stakeholder participation, and given that GSPs must be based on the best available science, the GSP should be revised to address the HWG's comments and the comments set forth herein. If the GSAs disagree with any of the subject comments, the GSAs should at the very least provide responses to the comments as they did for other comments.	Responses to these comments will be provided in the final draft of the GSP scheduled to be published on December 13, 2021.
33. Chapter 6 of the GSP makes several references to details of the groundwater model being described in Appendix 6B; however, Appendix 6B had not been provided for review as of October 29, 2021, and comments were due on November 1, 2021. Given that the entire Chapter 6 is essentially based on the groundwater model developed for the GSP, the GSAs' failure to provide this model documentation precludes stakeholders and the public from being able to adequately review and comment on a foundational element of the entire GSP. The GSP cannot undergo adequate review until a sufficient review period is provided for Appendix 6B Model Documentation, and additional time should be provided to comment on Appendix 6B once it is provided to the public.	Appendix 6B, which contains the model documentation, has been made available. It was uploaded to MCWD's website on 11/10/2021.

11/19/2021 – Comments on Monterey Subbasin Public Draft GSP Appendix 6B (Monterey Subbasin Groundwater Flow Model Documentation)

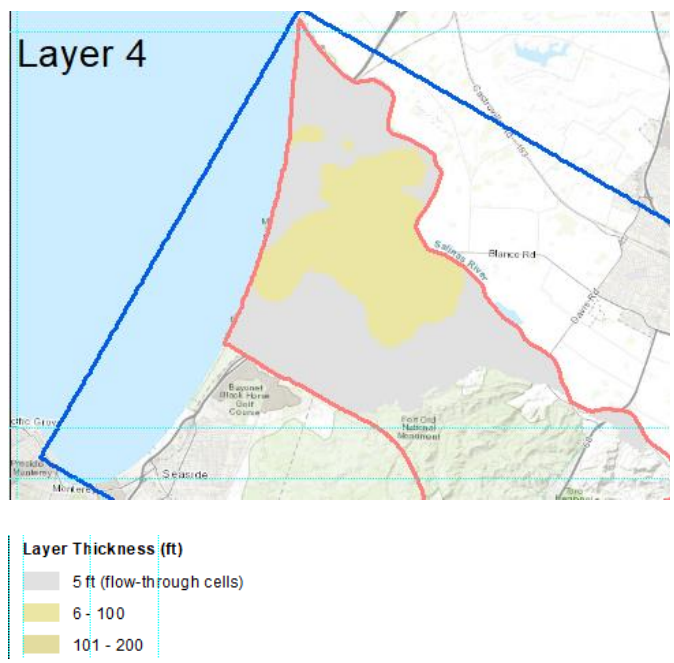
"This letter is submitted on behalf of California American Water and provides comments on Appendix 6B (Monterey Subbasin Groundwater Flow Model Documentation) for the Public Draft Monterey Subbasin GSP updated appendices released on November 10, 2021. Detailed comments are provided along with a summary of the main comments. Overall, given the number of significant deficiencies identified in these comments, the Monterey Subbasin groundwater model as currently configured does not provide reliable model results for use in GSP implementation."

SUMMARY OF COMMENTS

Although limited by the available time frame for review of Monterey Subbasin GSP Appendix 6B, many detailed comments are provided above. A few of the major takeaways from this review include the following:

- The HWG previously reviewed Draft GSP Chapters 4 and 5 for the Monterey Subbasin GSP and provided comments dated April 5, 2021. While the HWG comments were acknowledged as being received by the GSA, the Public Draft versions of Chapters 4 and 5 included no significant changes to the text or figures related to the HWG comments. Furthermore, these previous comments have direct bearing on the groundwater model development documented in Appendix 6B, and it is apparent that these previous HWG comments were not considered in Monterey Subbasin groundwater model development. In particular, the HCM in northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin is fatally flawed (in terms of model layering and boundary conditions) to the extent it will impact model results and lead to inaccurate future predictions of groundwater elevations and seawater intrusion in this area of the model domain.
- Although the allowed review time was insufficient to conduct a review of model calibration for Model Layers 3 through 7, review of calibration hydrographs and associated calibration statistics for Model Layers 1 (Dune Sand Aquifer) and 8 (Deep Aquifer) indicate model calibration is not within acceptable limits for the Marina Ord portion of the model domain.
- The historical challenges in achieving acceptable calibration for the Dune Sand Aquifer have not been resolved in the Monterey Subbasin groundwater model. The Kv for the underlying Model Layer 2 had to be set at unrealistically low values even to achieve the relatively poor calibration of Model Layer 1 documented in this comment letter. Utilizing a realistic Kv value for Model Layer 2 presumably would have resulted in an even worse model calibration for Model Layer 1.
- It is not clear why a No Flow boundary condition at the ocean shoreline would be used for the Deep Aquifer. This choice of boundary condition will likely lead to inaccurate future predictions of groundwater elevations and seawater intrusion.

LSCE Comments	**Responses**
Section 2 (Methodology and Approach)	
1. Appendix 6B states the model western boundary ends at the Pacific Ocean (section 2.2.1, p. 7). **Comment:** The Principal Aquifers (180-Foot Aquifer, 400-Foot Aquifer, Deep Aquifer) extend out beneath the ocean several miles beyond the Pacific Ocean shoreline. More representative model results would be obtained by extending the model domain further out beneath the ocean.	There is very limited data and information available regarding principal aquifer depths/geometry, aquifer properties, and historical water level observations to support extending the active model domain offshore of the Monterey coastline at this time. As described in Appendix 6B, general head boundary (GHB) cells were assigned along the coastline to simulate subsurface exchange with the Pacific Ocean. Freshwater equivalent sea levels were assigned to GHB cells based on estimated offshore distances and depths at which principal aquifers contacted the seafloor, which were informed by previous hydrogeologic investigations (*Feeney, 2003*).

LSCE Comments	Responses
2. Appendix 6B states the model is discretized vertically into eight layers that include Layer 3 representing the Upper 180-Foot Aquifer, Layer 4 representing the 180-Foot Aquitard, Layer 5 representing the Lower 180-Foot Aquifer (Section 2.2.3, p. 8). **Comment:** While this model layering may apply in the southern part of the Monterey Subbasin in the Fort Ord area, it does not apply in the northern Monterey Subbasin or the southern 180/400 Foot Aquifer Subbasin included in the model domain, where there is no aquitard within the 180-Foot Aquifer. This comment relates to the Hydrogeologic Conceptual Model (HCM) that forms the basis of the groundwater model and was noted in previous Hydrogeologic Working Group (HWG) comments on GSP Chapters 4 and 5 (April 5, 2021). This incorrect portrayal of the stratigraphy in the model layering in the northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin results in inaccurate model predictions in terms of groundwater levels and seawater intrusion.	See response to comments 7, 10, 11, and 15 of the HWG Chapter 4 comment letter (dated 04/05/2021). The MBGWFM <u>does</u> represent a gap in the 180-Foot Aquifer in the northwestern and central portions of the Monterey Subbasin and in the southwestern portion of the 180/400-Foot Aquifer Subbasin. In these areas, Layer 4 cells are assigned a thickness of 5 feet and parameterized using the aquifer properties from Layer 3 such that they function as "flow-through" cells and allow for hydraulic connectivity between Layers 3 and 5. This approach was used to avoid a no-flow condition in Layer 4 cells with zero thickness, as MODFLOW-NWT cannot directly simulate pinched out layers (see Section 2.2.3 of Appendix 6B for further details). However, we have noticed an error in Figure 6 that does not correctly show the "flow-through" portions of Layer 4 as described above. This error has been corrected and will be reflected in the final MBGWFM documentation. A screenshot of Layer 4 thickness is provided below, where "flow-through" cells are delineated in light grey: 

LSCE Comments	Responses
3. Appendix 6B states that as part of GSP development, a 3-D hydrostratigraphy model was developed to, "…provide for a more accurate representation of Principal Aquifer and Aquitard geometries and to facilitate MBGWFM grid development. The Leapfrog hydrostratigraphy model of the Basin was originally developed as part of two Airborne Electromagnetic (AEM) geophysical surveys conducted by Marina Coast Water District (MCWD) in 2017 and 2019…to help characterize seawater intrusion within the Basin." (Section 2.2.3, p. 9). **Comment:** Previous HWG Comment letters (e.g., August 2018, April 2019, June 2020) have repeatedly demonstrated the significant uncertainties and flaws in the hydrostratigraphic interpretations derived from the two AEM surveys. These errors in hydrostratigraphic interpretation have been incorporated into the Monterey Subbasin groundwater model and will result in inaccurate predictions of future groundwater levels and seawater intrusion. One example of the flawed stratigraphic interpretation for the northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin is provided in Figure 2 of Appendix 6B 2, which displays a thick and continuous aquitard in the middle of the 180-Foot Aquifer and no Aquitard between the 180-Foot Aquifer and 400-Foot Aquifer. These two aquitards are misrepresented (and essentially reversed) in this area of the model domain.	See response to comment 2 above.
4. Appendix 6B states, "…it is assumed the Deep Aquifer is not hydraulically connected to the Pacific Ocean." (Section 2.4.1, p. 12). **Comment:** The lack of seawater intrusion in the Deep Aquifer at the present time is insufficient basis for adopting a No Flow boundary in the groundwater model. It is possible the Deep Aquifer is connected to the Pacific Ocean at the Monterey submarine canyon. At the very least, the Deep Aquifer likely extends out beneath the ocean floor for many miles offshore.	Representation of the Pacific Coast as a no-flow boundary within the Deep Aquifer (Layer 8) is consistent with previous numerical models developed for the region, including the Seaside Model and SVIGSM. Boundary condition assumptions within the Deep Aquifer will be revisited in a future model update (e.g., for the seawater intrusion model currently under development) as more information becomes available.

LSCE Comments	Responses
5. Appendix 6B describes the historical groundwater level measurements used as input for the general head boundaries on the northern edge of the model domain as including, "…seven wells in the Upper 180-Foot Aquifer (Layer 3), 12 wells in the Lower 180/400-Foot Aquifer (Layers 5 and 7)…". There is a footnote associated with this text that reads, "MCWRA water levels records classify wells in a grouped "Lower 180/400-Foot Aquifer" system, and thus specified heads from these wells were assigned to both Layer 5 and Layer 7 of the MBGWFM." (Section 2.4.2.1.1, p. 12). **Comment:** This assignment of historical water levels to general head boundaries along the northern edge of the model domain is flawed for the reasons described above related to an inaccurate HCM stratigraphy. MCWRA maps of groundwater elevations clearly show distinct (different) groundwater elevations in the 180-Foot and 400-Foot Aquifers. The footnote relative to MCWRA category of wells in a "Lower 180/400-Foot Aquifer" system likely refers to wells screened in both aquifers and does not mean both aquifers have the same water levels as is assumed in the Monterey Subbasin groundwater model.	We recognize that MCWRA does not explicitly distinguish between the Upper 180-Foot and Lower 180-Foot Aquifers within most of the Salinas Valley Basin. However, within the Monterey Subbasin, the Upper 180-Foot Aquifer and Lower 180-Foot Aquifer are defined as distinct Principal Aquifer Units due to notable differences in water levels caused by the local presence of the 180-Foot Aquitard. Along most of the northern MBGWFM boundary, the 180-Foot Aquitard is present while the 180/400-Foot Aquitard is absent (see Figures 6 & 7 of Appendix 6B). Historical water level observations collected in this area indicate that groundwater elevations within the Lower 180-Foot Aquifer closely resemble water levels in the 400-Foot Aquifer along the northern basin boundary. Furthermore, water level contour maps for the Lower 180-Foot Aquifer created by EKI closely resemble MCWRA contour maps of the 400-Foot Aquifer along the boundary. As such, we chose to assign heads to GHB cells in MBGWFM Layers 5 and 7 using water levels collected from MCWRA wells characterized in the "180/400-Foot Aquifer." We agree there is considerable uncertainty in water level conditions within each Principal Aquifer unit along the northern MBGWFM boundary and have committed to coordinate with SVBGSA in revisiting northern boundary condition assumptions in a future model update as more information becomes available.
6. Appendix 6B states, "The final network of SGMA monitoring wells used for projected simulations includes seven wells in the Upper 180-Foot Aquifer (Layer 3), 10 wells in the Lower 180/400-Foot Aquifer (Layers 5 and 7)…" (Section 2.4.2.1.2, p. 13). **Comment:** This assignment of future water levels to general head boundaries along the northern edge of the model domain is flawed for the reasons described above related to an inaccurate HCM stratigraphy. MCWRA maps of groundwater elevations clearly show distinct (different) groundwater elevations in the 180-Foot and 400-Foot Aquifers.	See response to comments 2 and 5 above.

LSCE Comments	Responses
7. In describing the southern model domain boundary of the Monterey Subbasin groundwater model, Appendix 6B describes notable differences in "hydrogeologic conceptualization and geometry between the two models that will result in imperfect matching of head conditions and unique estimates of cross-boundary flows. Notably, the Seaside Model defines aquifer units differently than the MBGWGM and includes a different number of layers." (Section 2.4.2.2.1, p. 15). **Comment:** Although not described or acknowledged in Appendix 6B, this same issue of significantly different hydrogeologic conceptualization and geometry also applies along the northern model domain of the Monterey Subbasin groundwater model. This is due to the previously described flawed HCM and stratigraphy that served as the basis for model layering in northern Monterey Subbasin and southern 180/400-Foot Aquifer Subbasin.	See response to comments 2 and 5 above.
8. Appendix 6B Table 2 provides a comparison of Seaside Model Layers to MBGWFM Layers (Section 2.4.2.2.1, p. 16). **Comment:** A similar table showing the disagreement with the HCM and previous models of the 180/400-Foot Aquifer Subbasin are not provided. A table comparing the Monterey Subbasin groundwater model aquifer layers with the 180/400-Foot Aquifer Subbasin is provided below. This table shows the discontinuities and offset of aquifer units between the two subbasins, which is quite problematic for evaluation of groundwater levels and sea water intrusion between the two subbasins.	See response to comments 2 and 5 above.

Table from Comment 8:

Monterey Subbasin Aquifer Unit	180/400 Foot Aquifer Subbasin Aquifer Unit	Comments
Dune Sand Aquifer	Dune Sand Aquiferand Perched "A"Aquifer	The Dune Sand Aquifer is perched and mounded on top of SVA and cannot be readily represented in MODFLOW. Appendix6B does not explain how this unit was simulated.
Upper 180-Foot Aquifer	180-Foot Aquifer	The grouping of lower 180 and 400-Foot Aquifers in MBGWFM is inconsistent with all previous and existing models of the 180/400-Foot Aquifer Subbasin.
Lower 180-Foot Aquifer And 400-Foot Aquifer	400-Foot Aquifer	
Deep Aquifer	Deep Aquifer	

LSCE Comments	Responses
9. Appendix 6B describes how similar estimates of cross-boundary flows were obtained along the southern model domain boundary for both the Seaside Basin model and the Monterey Subbasin groundwater model (section 2.4.2.2.1, p. 16). **Comment:** Similar cross-boundary flows were not obtained across the northern model domain boundary compared to the 180/400-Foot Aquifer Subbasin GSP, which was approved by DWR.	See response to comment 6 of LSCE comment letter #1 (dated 11/1/2021)

LSCE Comments	Responses
10. Appendix 6B states, "Various studies and projects have been proposed (see GSP Section 9) or are already being implemented by water management entities in both subbasin to better characterize and model local groundwater conditions and cross-boundary flows in the Laguna Seca area and across the entire Monterey-Seaside boundary." (Section 2.4.2.2.2, p. 17). **Comment:** A similar statement regarding additional studies to address discrepancies in cross-boundary flows along the northern model domain boundary does not appear to be provided Appendix 6B or the remainder of the GSP.	Comment noted. A statement will be added to Appendix 6B.
11. Appendix 6B states, "More recent investigations of seawater intrusion conditions within the Basin…also indicate that the Deep Aquifer is not currently seawater intruded along the Monterey coastline. As such, GHB cells were assigned along the Pacific Ocean boundary for all layers in the MBGWFM apart from layer 8 (i.e., the Deep Aquifer), which was modeled as a no-flow boundary at the Monterey coastline."." (Section 2.4.2.3, p. 18). **Comment:** The Deep Aquifer is certain to extend many miles out beneath the ocean, possibly ultimately outcropping in the submarine Monterey Canyon. While it would be best to extend the model domain extent out beneath the ocean, the next best choice is to assign a general head boundary. The selected choice to assign a no-flow boundary to the Deep Aquifer is flawed and is likely to result in erroneous predictions of future groundwater levels and seawater intrusion.	See response to comments 1 and 4.
12. Appendix 6B describes texture maps based on borehole log lithologic descriptions for model layers 1, 3, 5, 7, and 8, which represent the various aquifers. (Section 2.5.1, p. 21). **Comment:** It is just as important (maybe more important) to develop such texture maps for the aquitard model layers 2, 4, and 6, but apparently this was not done or is not presently described.	Interval-based lithology data collected from borehole logs are generally insufficient in detail to assign spatial texture classifications to the aquitard units using the method described in Appendix 6B. Typically, aquitards are identified from borehole logs based on the presence of relatively consistent fine-grained deposits. Therefore, assigning a "coarse fraction" to aquitard units is impractical using the lithology interval data alone, as it will almost always result in a 0% coarse fraction throughout the entirety of the aquitard. Rather, the MBGWFM accounts for local variations in aquitard transmissivity by assigning unique thicknesses and extents to each aquitard layer at a cell level. Where gaps or missing sections of the aquitards are known to occur, these are represented in the MBGWFM using a "flow-through" cell approach to allow for direct exchange between overlying and underlying model layers. See response to comment 2 and Section 2.3.3. of Appendix 6B for further details.
Section 3 (Stresses)	

LSCE Comments	Responses
13. Appendix 6B states, "…it was assumed that 25% of total projected deliveries would be applied for outdoor uses between April – September, while the remainder of deliveries would be used to meet potable and non-potable indoor demands." (Section 3.1.2.3, p. 27). **Comment:** While this assumption seems reasonable, it is inconsistent with the primary proposed future project of meeting 50% of future water demands with recycled water (see Table 8 on page 28 of Appendix 6B), which would require extensive indoor use of recycled water.	The author is correct. Recycled water would be used to meet indoor as well as outdoor demands. This would be accomplished through IPR (injection of recycled water into the aquifer) as described in in GSP Section 9.4.6 (project M3) cited in Appendix 6B, Section 3.2.2
14. Appendix 6B states, "For both scenarios, pumping was distributed within individual MCWD wells based on historical monthly and total pumping rates at each well." (Section 3.2.2, p. 28). **Comment:** As noted in the GSP Chapter 6 comment letter submitted on November 1, 2021, future pumping of MCWD wells based on historical pumping patterns does not accurately reflect pumping trends towards a greater amount of pumping from the Deep Aquifer.	See response to comment 15 of LSCE comment letter #1 (dated 11/1/2021).
15. Appendix 6B Table 8 (Projected MCWD Pumping Rates) shows total water demand in 2040 of 9,584 AFY with 5,495 AFY provided by recycled water and 4,089 of actual groundwater pumping. In addition, water demand is projected to increase from 3,367 AFY in 2020 to 6,001 AFY in 2025, with the vast majority of that increase being covered by increased groundwater pumping (Section 3.2.2, p. 28). **Comment:** It is not clear how recycled water can realistically provide 57% of total water demand in 2040. Near term, an increase in groundwater pumping from 3,367 AFY to 5,401 AFY in 2025 is likely to exacerbate seawater intrusion that is already occurring with 3,367 AFY of groundwater pumping by MCWD.	See response to Comment 13. Groundwater monitoring will be used to verify that SMCs are met.
Section 4 (Calibration)	

LSCE Comments	Responses
16. Appendix 6B states that the discrepancy in cross boundary groundwater flow estimates between the Monterey Subbasin GSP and 180/400 Foot Aquifer Subbasin GSP is due to 180/400 Foot Aquifer Subbasin GSP estimates being made by non-modeling methods, and that the 180/400 Foot Aquifer Subbasin GSAs plan to do additional studies of cross-boundary flows for the 5-Year Update. It is noted that the estimates in the 180/400 Foot Aquifer Subbasin were derived from, "…aggregating data and analyses from previous reports and other available sources. No numerical modeling was completed to develop the historical or current water budget." (Section 4.4, p. 31). **Comment:** The implication of the Appendix 6B text is that the non-modeling methods of determining water budgets and cross- boundary flows must be wrong. However, water budgets are commonly done using non-modeling methods, even if ultimately being used as input to a numerical model from which the final water budget is determined. For example, the 180/400 Foot Aquifer Subbasin describes using stream gage data at multiple stations to determine streamflow percolation, which likely is better than a model estimate. Furthermore, the historical and current estimates of groundwater inflow/outflow for the 180/400 Foot Aquifer Subbasin are based in part on the Salinas Valley IGSM groundwater model. In addition, the 180/400 Foot Aquifer Subbasin GSP notes that future water budgets were based on the SVIHM groundwater model developed by USGS. Overall, both subbasins estimated groundwater inflow/outflow amounts using groundwater models.	See response to comment 6 of LSCE comment letter #1 (dated 11/1/2021).
17. Appendix 6B states that, "SVIHM does not accurately reflect hydrologic conditions in the Monterey Subbasin." (Section 4.4, p. 31). **Comment:** This statement is used to help justify Monterey Subbasin GSP cross-boundary groundwater flow estimates being more reliable than those provided in the 180/400 Foot Aquifer Subbasin GSP. However, as noted above in this comment letter and in the previous HWG comment letter on Monterey Subbasin GSP Chapters 4 and 5, the HCM used as the basis for the Monterey Subbasin groundwater model is flawed in the northern Monterey Subbasin and southern 180/400 Foot Aquifer Subbasin portions of the model domain and does not accurately reflect geologic or hydrologic conditions along the northern Monterey Subbasin groundwater model domain boundary. Thus, the basis for Monterey Subbasin GSP estimates for cross-boundary flows are likely less valid than those provided in the 180/400 Foot Aquifer Subbasin GSP that has already been approved by DWR.	See response to comments 2 and 5 above, and comment 6 of LSCE comment letter #1 (dated 11/1/2021).

LSCE Comments	Responses
18. Appendix 6B states, "SVBGSA is in the process of developing a dual density groundwater model for the coastal regions of the greater Salinas Valley Basin. This model will incorporate the MBGWFM and be used to further assess volumetric exchanges between the ocean and the Salinas Valley groundwater basin. It will also aid in evaluating flows across subbasin boundaries and will be used evaluate impacts of potential regional projects that have been proposed in this GSP and other GSPs to address seawater intrusion in the Salinas Valley groundwater basin." (Section 4.4, p. 31). **Comment:** Given that the MBGWFM is expected to be expanded and have uses much greater than and beyond the scope of the Monterey Subbasin GSP, it is critical that the hydrostratigraphic misrepresentation and flawed model layering (and model boundary conditions) outlined above be addressed for this broader effort (and preferably for use in the Monterey Subbasin GSP itself).	See response to comments 2 and 5 above, and comment 6 of LSCE comment letter #1 (dated 11/1/2021).

LSCE Comments	Responses
19. Appendix 6B Table 10 indicates the Normalized RMSE for Model Layer 1 is 5.7% based on a range in elevations of 198.4 feet; and that the Normalized RMSE for Model Layer 8 is 2.9% based on a range in elevations of 728.4 feet. The text states, "A generalized rule of thumb in model calibration is that the model is considered well-calibrated when the normalized RMSE is less than 10%. The low normalized RMSEs are therefore an indicator that the model is well-calibrated as a whole and within individual layers given the range of observed data." (Section 4.7, p. 33). **Comment:** Review of the hydrographs indicates the range in elevations for Model Layer 1 is not more than 115 feet, resulting in a Normalized RMSE of about 10%. Even if there were an outlier somewhere in the hundreds of hydrographs provided, it would be an extreme outlier that artificially increased the range of elevations and lowered the RMSE to 5.7 %. Overall review of hydrographs indicates the calibration of the Dune Sand Aquifer is not particularly good and is no better than previous models of the area. The extreme range in elevations of 728.4 feet for Layer 8 is apparently mixing data from near the ocean in the Marina-Ord area with the highest elevations of the Corral de Tierra area, which artificially lowers the Normalized RMSE by a large amount. A more realistic groundwater elevation range of about 95 feet for the Marina Ord area for which hydrographs show an RMSE of about 14.5 feet yields a Normalized RMSE of about 15%. There was insufficient time to do similar checks on other model layers, but results for Model Layers 1 and 8 indicate a relatively poor overall calibration for the Marina-Ord area. It is also noted that while the Monterey Subbasin modeling effort appeared to use practically all available monitoring well data for model calibration (with notable exception of MPWSP data); however, the monitoring well hydrograph for MW-OU2-29-A is missing from the dataset for the Dune Sand Aquifer, which is noteworthy because it was a particularly challenging hydrograph to match with previous models.	This comment appears to make a generalized statement about MBGWFM calibration by focusing on a subset of wells and layers within a local area of the model domain that is of particular interest to CalAm. There is no actionable recommendation provided in the comment. As mentioned in previous replies, the focus of MBGWFM is to provide a reasonably calibrated, Basin-level model of the Monterey Subbasin that serves as a starting point for coordinated regional model development and/or refinements. Appendix 6B demonstrates that model calibration, both within individual layers and as a whole, falls within acceptable performance criteria and reasonably recreates Basin-level groundwater conditions. Model performance within CalAm's area of interest in the Basin was not a primary focus of MBGWFM development or calibration.
20. Appendix 6B provides a map (Figure 29) of calibration hydrograph locations (Section 4.7, p. 33). **Comment:** It is not clear why nested monitoring well data from the Monterey Peninsula Water Management Project (MPWSP) are not being used in the model calibration. These wells are located in key data gap areas of the model domain.	MPWSP monitoring wells were installed in 2015. Therefore, data from these wells begins in year 18 of the 20 year historical calibration period which extends from (WY 1999 through WY 2018). As such, they were not selected for incorporation into the calibration data set for the historical period. However, data from these wells will be incorporated into future model updates that focus on future time periods.
Section 5 (Sensitivity and Uncertainty Analysis)	

LSCE Comments	Responses
21. Appendix 6B states the final calibrated Kv of Model Layer 2 was 2 x 10-4 ft/d (Section 5, p. 34). **Comment:** A Kv of 2 x 10-4 ft/d is equivalent to 7 x 10-8 cm/s. This is an extremely low and unrealistic Kv value for a regional clay layer. Such an unrealistically low calibrated Kv value was likely driven by trying to achieve a better calibration within the overlying Model Layer 1. Previous studies indicate that accurately representing (from a hydrogeologic standpoint) the Dune Sand Aquifer (Model Layer 1) is extremely difficult because it contains perched and mounded water on top of a sloping clay layer and numerical models have trouble accurately representing such hydrogeologic conditions. The text of Appendix 6B provides no discussion of this issue and how it was addressed in the Monterey Subbasin groundwater model. The consultants that prepared Appendix 6B are quite familiar with the issue and have critiqued previous models in the area regarding this issue, yet they provide no explanation of how the issue was addressed in their own model. Regardless, it is clear from detailed inspection of calibration hydrographs for Model Layer 1 and the use of an unrealistically low Kv value for Model Layer 2 that these model challenges for simulating the Dune Sand Aquifer remain unresolved for the Monterey Subbasin groundwater model.	A Kv value of 2E-4 ft/d is well within the range of hydraulic conductivity values for clay layers presented in relevant literature, and in most cases, represents the upper limit of the range. For example, *Freeze and Cherry, 1979* presents a range in hydraulic conductivity of 8E-13 m/s (2E-7 ft/d) to 2E-9 m/s (6E-4 ft/d) for unweathered marine clays. For silt/loess, the range is higher, from 1E-9 m/s (2E-4 ft/d) to 2E-5 m/s (5.7 ft/d). Furthermore, the calibration metrics presented in Appendix 6B indicate the model is reasonably well calibrated in Layer 1, with RMSE of 11.5 ft (5.7%) and a mean residual of -0.4 ft. The model was set up with the properties of the Dune Sand and underlying Salinas valley aquitard (SVA) in mind. As indicated above, the SVA model layer 2 was parameterized to reflect the low permeability associated with marine layer deposits. The model is also set up to be fully convertible in each layer to allow representation of varying degrees of confinement and saturation within each aquifer unit. It also allows for rewetting to accommodate situations where certain layers and/or cells go dry during the simulation.
Section 6 (Model Limitations and Suggested Future Refinements)	
22. Appendix 6B states, "…the model calibration error is within acceptable bounds…As demonstrated by the calibration error statistics summarized in Section 4.7 the MBGWFM reasonably represents historical groundwater conditions within the Subbasin using a set of parameters that are within real- world observations and established scientific principles." (Section 6, p. 35). **Comment:** As discussed previously: 1) A limited review of the calibration data indicates Model Layers 1 and 8 are poorly calibrated (time did not permit for checking calibration of other model layers); 2) the HCM forming the basis for model layering and general head boundary conditions on the northern portion of the model domain are flawed; and 3) the calibrated Kv for Model Layer 2 is unrealistically low by at least two orders of magnitude. These findings indicate the statements in Section 6 about model calibration being acceptable and the model being based on realistic model parameters are inaccurate.	See responses to comments 2, 5, 19, and 21 above.

LSCE Comments	Responses
23. Appendix 6B notes that, "…only a small number of wells exist in the Deep Aquifers within the 180/400 Foot Aquifer Subbasin with observed water level data spanning the full duration of the historical Period. As such, simulated Deep Aquifers heads along the northern model boundary are subject to the limitations in available data to the north of the boundary, which may impact resulting calculations of 180/400 Foot Aquifer Subbasin exchanges within the water budget." (Section 6, p. 35). **Comment:** It should be noted that the same limitations on available data are equally applicable south of the boundary.	Comment noted.
24. Appendix 6B notes that there is a lack of water level calibration data outside of certain areas such as the MCWD service area and former Fort Ord Site (Section 6, p. 36). **Comment:** While this statement is generally correct, there is no explanation as to why an extensive monitoring well data set for the MPWSP is not used in the model calibration – particularly given it is located in a data gap area.	See response to comment 20 above.
25. Appendix 6B notes there is significant uncertainty with the climate change predictions provided by DWR that are the basis for future scenarios in the GSP (Section 6, p. 37). **Comment:** Given the uncertainty in climate change predictions related to precipitation, it would be more prudent for future water management to assume that groundwater recharge will not increase in the future due to climate change (as has been assumed in the GSP) and assume instead it will remain consistent with historical data.	See response to comment 26 of LSCE comment letter #1 (dated 11/1/2021).

LANDWATCH COMMENTS ON DRAFT MONTEREY SUBBASIN GROUNDWATER SUSTAINABILITY PLAN, CHAPTER 8

"I write on behalf of LandWatch Monterey County to comment on draft Chapter 8 of the Monterey Subbasin Groundwater Sustainability Plan (GSP).

The sustainable management criteria (SMCs), including the minimum threshold (MT) and measurable objective (MO) for chronic lowering of groundwater levels for the Monterey Subbasin may suffer from the same defect as in the 180/400-Foot Aquifer

Subbasin Groundwater Sustainability Plan. That defect is that the groundwater level SMCs are not supported by consideration of their effects on other sustainability indicators, in particular, seawater intrusion. There appears to be no evidence that the groundwater level SMCs and their associated interim milestones will support attainment of the seawater intrusion threshold, particularly since the interim milestone would permit continued declines in historic groundwater levels and would not reach the SMCs for almost 20 years.

Furthermore, setting Corral de Tierra subarea groundwater level SMCs at historic levels would cause chronic lowering of groundwater levels in the neighboring Seaside Subbasin. According to the Seaside Basin Watermaster, pumping reductions and groundwater level increases are required in the Corral de Tierra subarea to remedy falling groundwater levels in the Laguna Seca Subarea.

Finally, the water quality sustainable management criteria should not be limited to effects caused by "direct GSA action" through GSA projects. The GSA must also limit excessive third party extractions that cause undesirable water quality results."

LandWatch Comments	Responses
Chapter 8 – Hydrogeologic Conceptual Model	
A. Groundwater level sustainable management criteria and interim milestones fail to support the seawater intrusion criteria.	
1. The groundwater level minimum threshold must support the seawater intrusion minimum threshold. SGMA requires that each minimum threshold must avoid each undesirable result because SGMA 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.	The Monterey Subbasin GSP contains groundwater level minimum thresholds that support the seawater intrusion minimum thresholds. As described in Landwatch comment number 4 below. Chap. 8, p. 8-29 states: The observed lateral extent of seawater intrusion within the Subbasin appears to have been generally stable within the 180- and 400-Foot Aquifers between 1995 and 2015. As such, minimum thresholds have been set based upon minimum groundwater elevations observed between 1995 and 2015 in the 180- and 400 Foot aquifers. Seawater intrusion is additionally monitored and managed pursuant to seawater intrusion SMCs (Section 8.9 below) to verify seawater intrusion does expand within the Subbasin due to sea-level rise and/or changes in the groundwater gradient. (Chap. 8, p. 8-29.)

LandWatch Comments	Responses
	As stated by LandWatch ("LW") in Comments 2, 3, and 4 the Monterey GSP calls for no further seawater intrusion and identifies sustainable management criteria based upon historical conditions to meet this measurable objective. Although the GSP allows for interim declines in water levels in the 400-foot aquifer in inland portions of the subbasin, it does not allow declines in wells located along the known seawater intrusion front within the northern portion of the subbasin (see response to LW comment 5). It also calls for installation of additional wells in the southern portion of the subbasin to better track water levels and seawater intrusion in this portion of the subbasin. This new data will be used to identify appropriate SMCs and interim milestones for groundwater levels in this area. Annual induction logging is also proposed to assess vertical migration of the seawater intrusion front between the 400-foot aquifer and the Deep Aquifers, where no seawater intrusion has been detected to date. These data will be reviewed, and interim milestones will be adjusted if needed. MCWD has significant flexibility to change extraction rates between in its production wells and increase water levels in selected areas in the event that seawater intrusion is identified. Annual and 5-year reports required under SGMA will be used to identify changes to water level SMCs and interim milestones if required. The interim milestones included in the Monterey GSP reflect the reality that it will take time to implement projects and management actions to stop groundwater levels from falling. As discussed in the GSP, rates of groundwater extraction within the Monterey Subbasin are significantly lower than total recharge, and large volumes of groundwater are flowing into the 180/400 foot groundwater basin. As such, sustainability with the Monterey Subbasin will require the implementation of both local and regional projects and management actions to reach sustainability. Such regional solutions will inevitably take time to implement. The Monterey GSP is consistent with SGMA, which acknowledges this reality and allows 20 years to reach sustainability. Further, in the event that such monitoring indicates expansion of the seawater intrusion

LandWatch Comments	Responses
	front, prior to reaching SMCs local projects such as IPR could be implemented to raise water levels in selected areas through injection of recycled water (i.e., IPR project) or in lieu recharge as identified in Chapter 9 . In the event that monitoring data indicate rapid vertical downward migration of the seawater intrusion front, interim water level SMCs may be adjusted to address this issue. Annual and 5 year reports required under SGMA will be used to identify such changes if required.
2. The proposed seawater intrusion SMCs do not permit any additional intrusion. The draft Monterey Subbasin Chapter 8 sets the MT and MO for seawater intrusion for the "lower" 180-Foot Aquifer and the 400-Foot Aquifer at the line of advancement as of 2015. (Monterey Subbasin GSP, draft Chap. 8 ("Chap. 8."), p. 8-55 to 8-56.) Chapter 8 sets the MT and MO for seawater intrusion to the Deep Aquifers at Highway 1, based on the observation that there is limited intrusion in these aquifers. (Id., pp. 8-51, 8-55 to 856.) In effect, Chapter 8 commits the GSP not to permit any additional seawater intrusion in these aquifers. This is a proper goal in light of the clear impacts to beneficial users.	As stated in LW Comment 2, the proposed seawater intrusion SMCs identified in Chapter do not permit any expansion of the seawater front.
3. The groundwater level SMCs and groundwater level interim milestones are set based on their effects on seawater intrusion. The draft Monterey Subbasin Chapter 8 acknowledges that the MT and MO for groundwater levels must support attainment of the seawater intrusion MT and MO because it identifies the primary consideration in setting the groundwater level MT and MO is the effect on seawater intrusion: As discussed in Section 3.1.6, groundwater use within the Marina-Ord Area is almost exclusively limited to generation of municipal supplies by MCWD. Groundwater elevations are significantly higher than municipal production well screen elevations in all aquifers in the Marina-Ord Area, and there is limited concern regarding the potential dewatering of groundwater production wells. Therefore, groundwater levels that could cause undesirable results associated with other locally relevant sustainability indicators, such as the lateral or vertical expansion of the existing seawater intrusion extent and/or eventual migration of saline	As stated in LW Comment 3, the intent of Chapter 8 is to establish MTs and MOs for groundwater levels that support attainment of the seawater intrusion MTs and MOs.

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water into Deep Aquifer wells, have been used to define groundwater level minimum thresholds in the Marina-Ord Area. (Chap. 8, p. 8-16, emphasis added.) Chapter 8 also provides that . . . undesirable results caused by chronic lowering of groundwater levels in the Marina-Ord Area are primarily associated with the expansion of seawater intrusion and other locally relevant sustainability indicators. These sustainability indicators have been considered when defining groundwater level minimum thresholds in the Marina-Ord Area. (Chap. 8, p. 8-18, emphasis added.)	
4. Setting the groundwater level SMCs at historic 1995-2015 conditions is purportedly justified by the stability of the lateral extent of seawater intrusion in the Monterey Subbasin during that historic period. Chapter 8 contends that setting the groundwater level MT and MO for the 180- and 400Foot Aquifers on the basis of the 1995 to 2015 groundwater levels is justified because the lateral extent of seawater intrusion in the Monterey Subbasin has been "generally stable" in that period: As discussed in the preceding sections, the potential effects of undesirable results caused by chronic lowering of groundwater levels in the Marina-Ord Area are primarily associated with the expansion of seawater intrusion. The observed lateral extent of seawater intrusion within the Subbasin appears to have been generally stable within the 180- and 400-Foot Aquifers between 1995 and 2015. As such, minimum thresholds have been set based upon minimum groundwater elevations observed between 1995 and 2015 in the 180- and 400 Foot aquifers.. Seawater intrusion is additionally monitored and managed pursuant to seawater intrusion SMCs (Section 8.9 below) to verify seawater intrusion does expand within the Subbasin due to sea-level rise and/or changes in the groundwater gradient. (Chap. 8, p. 8-29.)	As stated in LW comment 4, and GSP chapter 8 "available data indicate that the lateral extent of seawater intrusion front in the 180/400 Foot Aquifer in Monterey Subbasin has been stable between 1995 and 2015. As such, minimum thresholds have been set based upon minimum groundwater elevations observed between 1995 and 2015 in the 180- and 400 Foot aquifers. Seawater intrusion is additionally monitored and managed pursuant to seawater intrusion SMCs (Section 8.9 below) to verify seawater intrusion does expand within the Subbasin due to sea-level rise and/or changes in the groundwater gradient."
5. The "stability" rationale for setting groundwater level SMC's based on historic conditions is undercut by Chapter 8's projections that groundwater levels will	In order to limit migration of the seawater intrusion front; MT, MO, and interim milestones in 180/400 Foot aquifer RMWs located near the

LandWatch Comments	Responses
actually continue to decline and remain below historic conditions and by the interim milestones that permit such declines. First, the contention that groundwater level SMCs are justified by historic conditions ignores the GSP's own projection that groundwater levels will continue to decline until at least 2033 and will not attain the MO until 2042. Chapter 8 documents and projects in its "Example Trajectory for Groundwater Elevation Interim Milestones" that groundwater levels for a Marina-Ord well fell below the MT in 2019, will continue to fall until 2033, will not rise above the MT until 2039, and will not attain the MO until 2042. (Chap. 8, pp. 8-40 to 8-41, Figure 8-12.) The interim milestones for wells in the 400-Foot Aquifer and the Deep Aquifers assume and permit that groundwater levels will remain below historic levels and the MT for most of the next 20 years: Within the Monterey Subbasin, for wells in the 400-Foot Aquifer, Deep, and El Toro Primary Aquifer System Aquifers where groundwater levels have been declining, groundwater elevation interim milestones are defined based on a trajectory informed by current (fourth quarter of 2020) groundwater levels, historical groundwater elevation trends [footnote], and measurable objectives. This trajectory allows for and assumes a continuation of historical groundwater elevation trends during the first 5-year period of GSP implementation, a deviation from that trend over the second 5-year period, and a recovery towards the measurable objectives in the third and fourth (last) 5- year period. (Chap. 8, p. 8-40.) The proposed interim milestones for wells in the 180-Foot and Deep Aquifers permit substantial declines in groundwater levels from 2020 conditions in the years 2027 and 2032. (Id., p. 8-43, Table 8-3.) Allowing groundwater levels to fall below historic levels is purportedly justified because "there are large volumes of freshwater in the Subbasin that provide additional time and flexibility to reach identified SMCs while projects and management actions are implemented." (Id.) However, the draft GSP provides no evidence to suggest that groundwater levels that fall and remain below the historic conditions in the Marina-Ord area will not induce further seawater intrusion in the interim,	seawater intrusion front have all been set at minimum groundwater elevations observed between 1995 and 2015. These RMWs include: MCWD-29, 30, and 31, MPWMD#FO-10S and 11S, MW-12-12-180L, MW-BW-04-180, MW-OU2-07-400, MW-OU2-66-180, TEST2, and two multi-completion wells (MP-BW-42* and MP-BW-50*). No interim water level decreases in these wells are incorporated in the interim milestones for these RMWs. Nor is any interim decrease in water levels included in the proposed interim milestones for Dune Sand RMWs near the coast, where seawater intrusion is most likely to occur. Interim declines in water levels have been incorporated into SMCs for inland 400-foot wells and Deep Aquifer Zone wells, where no seawater intrusion has been observed to date. As such, proposed declines in interim milestones at these locations are not inconsistent with Seawater SMCs. The need for additional wells and monitoring to further assess the potential for lateral and vertical migration of seawater are proposed in Section 7.5.2 of the GSP: This work includes: 1. The completion of an additional 400-foot aquifer monitoring well in the southern portion of the Monterey Subbasin between the coast and wells FO-10 and FO-11, where water levels are falling. This well will be used to further evaluate the extent of if seawater intrusion in this area and evaluate groundwater levels. SMCs in this additional RMW will be established accordingly. 2. Annual induction logging at Deep Aquifer monitoring wells to assess potential vertical migration of seawater from the 400 Foot Aquifer into the Deep Aquifer. Data from these additional investigations will be utilized to inform future annual and 5-year reports to the GSP. If needed, groundwater level interim milestones and/or SMCs may be modified to achieve the Seawater intrusion SMCs.

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resulting in a failure to meet the seawater intrusion SMCs. The historic "stability" rationale cannot be extrapolated to claim that groundwater levels well below the historic record will continue to result in a stable areal extent of seawater intrusion. It makes no sense to contend that setting the MT and MO on the basis of historic conditions will not result in seawater intrusion when the GSP would effectively fail to maintain those historic conditions for the next twenty years during which the GSP is supposed to attain sustainability. The historic stability rationale also ignores the fact that Deep Aquifer groundwater levels began dropping in 2014, have continued to drop, and are projected to continue to drop due to increased levels of extractions. MCWRA reported in 2020 that Deep Aquifer groundwater levels have been falling since 2014, are well below sea-level, and that induced vertical migration of contaminated water to the Deep Aquifers themselves is in fact occurring: > As is the case with the 180-Foot and 400-Foot Aquifers, groundwater levels in the Deep Aquifers are predominantly below sea level. Beginning around 2014, groundwater levels in the Deep Aquifers began declining and are presently at a deeper elevation than groundwater levels in the overlying 400-Foot Aquifer based on comparisons of multiple well sets at selected locations, meaning that there is a downward hydraulic gradient between the impaired 400-Foot Aquifer and the Deep Aquifers (Figure 16 and Figure 17). This decrease in groundwater levels coincides with a noticeable increase in groundwater extractions from the Deep Aquifers (Figure 16 and Figure 17). The potential for inducing additional leakage from overlying impaired aquifers is a legitimate concern documented by previous studies and is something that would be facilitated by the downward hydraulic gradient that has been observed between the 400-Foot Aquifer and Deep Aquifers. > Seawater intrusion has not been observed in the Deep Aquifers. However, the Agency has documented the case of one well, screened in the Deep Aquifers, that is enabling vertical migration of impaired groundwater into the Deep Aquifers. The	

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Agency is working with the well owner on destruction of this well.[12] In addition to the threat to contaminate the Deep Aquifers, the induced vertical migration of upper aquifer groundwater to the Deep Aquifers aggravates seawater intrusion in those upper aquifers. A 2003 study for MCWD concluded that increasing pumping of the Deep Aquifers from the 2002 baseline level of 2,400 AFY to just 4,000 AFY would (1) induce further seawater intrusion into the upper aquifers (the 180-Foot and 400-Foot Aquifers), which were vertically connected, and (2) risk contamination of the Deep Aquifers themselves.[3] Deep Aquifer pumping is now in excess of 10,000 AFY.[4] And, in fact, Chap 8 admits that falling groundwater levels in the Deep Aquifer threatens to contaminate the Deep Aquifers and to induce seawater intrusion in the upper aquifers: Seawater intrusion has not been observed in the Deep Aquifer to date. However, groundwater elevations have been declining and are significantly below sea level. The declining groundwater elevations in the Deep Aquifer may be causing groundwater elevations to fall within the 400-Foot Aquifer in the southwestern portion of the Marina-Ord Area (i.e., near wells MPMWD#FO-10S and MPMWD#FO-11S). Although there is some uncertainty whether the Deep Aquifer is subject to seawater intrusion from the ocean, continued decline of groundwater elevations in the Deep Aquifers could increase the risk of seawater intrusion and may eventually cause vertical migration of saline water from overlying aquifers into the Deep Aquifers. As such, minimum thresholds for the Deep Aquifers are set to historically observed minimum groundwater	

1 Monterey County Water Resources Agency (MCWRA), Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin:
2 Update, May 2020, p. 31, https://www.co.monterey.ca.us/home/showdocument?id=90578

3 WRIME, Deep Aquifer Investigative Study, May 2003, pp. 4-7, 4-11 to 4-12, pdf available upon request.
4 Monterey County Water Resources Agency (MCWRA), Well Permit Application Activities Update, prepared for May 17, 2021 MCWRA Board of Directors meeting, https://monterey.legistar.com/View.ashx?M=F&ID=9381226&GUID=34ED34CD3A39-4851-87A3-298BE70D383C

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elevations between 1995 and 2015, which is equivalent to the groundwater elevations observed in 2015 for most Deep Aquifer wells. (Chap. 8, p. 8-40.) Again, setting the groundwater level MT and MO to historic levels but then allowing 20 years to pass before the interim milestones actually require attainment of these historic levels cannot demonstrably ensure that there is no further advancement of seawater intrusion. However, that is precisely what is required by the seawater intrusion MT and MO.	
6. Chapter 8 fails to assess the effects on other subbasins of setting groundwater level SMCs based on historic conditions or allowing groundwater levels to decline further through relaxed interim milestones. As Chapter 8 acknowledges, the interconnectivity between the 180/400-Foot Aquifer Subbasin and the Monterey Subbasin requires coordination of the sustainable management criteria for both subbasins. (Id., p. 8-35.) Coordination is required in order to meet SGMA's requirement that the SMC's for one subbasin do not prevent another subbasin from meeting its sustainability goal. Setting the groundwater level MT and MO at historic levels and then effectively ignoring these criteria through use of relaxed interim guidelines for 20 years may very well impair attainment of the seawater intrusion criteria for the 180/400-Foot Aquifer GSP, which are also set at a level that permits no further advancement of the seawater intrusion front. However Chapter 8 provides no analysis of that possibility. Chapter 8 proposes to defer the assessment of the impact of the Monterey Subbasin's groundwater level MTs on the Deep Aquifers in the neighboring 180400-foot Aquifer Subbasin until after completion of the long-delayed Deep Aquifers Study and the eventual establishment of Deep Aquifer SMCs for the 180400-foot Aquifer Subbasin. The Deep Aquifer Study, recommended almost four years ago, has neither been funded nor initiated. Furthermore, there is no reason that an assessment of the effects of the Monterey Subbasin's groundwater level MTs should be limited to its effects on the Deep Aquifers in the 180/400-Foot Subbasin. The assessment should also include an assessment of the effects of the	As discussed in the GSP, rates of groundwater extraction within the Monterey Subbasin are significantly lower than total recharge, and large volumes of groundwater are flowing into the 180/400-foot groundwater basin. As such, sustainability with the Monterey Subbasin will require the implementation of both local and regional projects and management actions to reach sustainability. Such regional solutions will inevitably take time to implement and will require coordination with adjacent subbasins and of SMCs. The Monterey GSP is consistent with SGMA, which acknowledges this reality and allows 20 years to reach sustainability.

LandWatch Comments	Responses
Monterey Subbasin's groundwater level MTs on seawater intrusion of each of the principle aquifers in that neighboring subbasin. The Monterey Subbasin GSP argues that pumping in the 180/400-Foot Aquifer Subbasin has caused seawater intrusion in the Monterey Subbasin. In turn, the Monterey Subbasin GSP must assess the reciprocal effects of its own pumping, SMCs, and interim milestones on the 180/400-Foot Aquifer Subbasin. SGMA's mandate to use the best available science is not an invitation to let the perfect be an enemy of the good pending completion of the Deep Aquifer study. Chapter 8 must use the whatever science is now available to provide some discussion and assessment of the effect on the neighboring subbasins of allowing continued reductions in Monterey Subbasin groundwater levels below historic conditions through relaxed interim thresholds. Again, it is not reasonable to extrapolate beyond the historic data to assume that lower than-historic groundwater levels in the Monterey Subbasin will not impair adjacent basins. The purported stability of the lateral extent of seawater intrusion in the Monterey Subbasin from 1995 to 2015 was certainly not matched in the 180/400-Foot Aquifer Subbasin. Chapter 8 provides no evidence to justify the assumption that allowing lowerthan-historic groundwater levels in the Monterey Subbasin will not contribute to the continuing seawater intrusion in the neighboring subbasin.	
7. Finally, the Monterey Subbasin GSP must also evaluate and address the effects of reduced groundwater levels in the Corral de Tierra Subarea on the Seaside Subasin. Again, there is no evidence in the record that merely maintaining historic groundwater levels is sufficient to support groundwater levels in the Seaside Subbasin. To the contrary, comments by the Seaside Basin Watermaster indicate that chronic lowering of groundwater levels in the Laguna Seca Subarea of the Seaside Subbasin can only be corrected by reducing existing pumping in the Corral de Tierra, i.e., increasing groundwater levels above historic levels. (Robert Jacques, PE, email to Sarah Hardgrave, et al., March 22, 2021.) Setting Monterey Subbasin groundwater level SMC's at historic levels violates SGMA because it will prevent attainment of groundwater level objectives in the adjacent Seaside Subbasin.	SVBGSA and the Seaside Watermaster are in close coordination to monitor, model, and discuss water levels in the Corral de Tierra area for SMC and GSP development. While the hydrologic connection is clear, the future impacts as predicted by modeling are less clear. Modeling teams are in close contact to resolve discrepancies and develop improved predictions that meet the needs of all stakeholders.

<table>
<tr><th>LandWatch Comments</th><th>Responses</th></tr>
<tr><td colspan="2">B. Water quality sustainable management criteria should not be limited to effects caused by "direct GSA action;" the GSP must also limit extractions that cause undesirable results.</td></tr>
<tr><td>Chapter 8 purports to limit significant and unreasonable conditions related to groundwater quality degradation to "[l]ocally defined significant and unreasonable changes in groundwater quality resulting from direct GSA action." (Chap. 8, p. 8-56, italics added.) Thus, Chapter 8 contends that the GSP need only address water quality degradation that is a "direct result of projects or management actions conducted pursuant to GSP implementation:"

For the Subbasin, any groundwater quality degradation that leads to an exceedance of MCLs or SMCLs in potable water supply wells or a reduction in crop production in agricultural wells that is a direct result of GSP implementation is unacceptable. 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:

Any exceedances of minimum thresholds during any one year as a direct result of projects or management actions conducted pursuant to GSP implementation is considered as an undesirable result.

(Id., underlining added.)

This language does not define what constitutes "a "direct result" of GSP implementation or "direct GSA action." Elsewhere, Chapter 8 gives three examples of conditions that may lead to an undesirable result and that the GSA is presumably prepared to address:

• 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 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 constituents</td><td>The water quality SMC primarily focuses on a 'do no harm' approach, whereby groundwater management implemented by SVBGSA will be evaluated for negative impacts to water quality, but no groundwater management implementation will not be evaluated for negative impacts. The phrase 'direct GSA action' has been removed, and replaced with different language after consulting with legal counsel. Existing water quality programs and standards are included in the GSPs to highlight partnership and authority over different groundwater management aspects.</td></tr>
</table>

LandWatch Comments	Responses
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 could lead to an undesirable result. (Chap. 8, p. 8-57.) Significantly, none of these three conditions that might trigger GSA action include excessive pumping by other parties that may cause water quality degradation; each condition includes only the secondary effects of the GSA's own projects. The GSA's failure to take management action, e.g., its failure to restrict excessive extractions, may also cause water quality degradation. Chapter 8 should be revised to acknowledge that the GSA has both the authority and duty to address groundwater quality degradation caused by excessive pumping. Chapter 8 contends that because other agencies have authority over groundwater quality, the GSA's role is somehow limited: The powers granted to GSAs to effect sustainable groundwater management under SGMA generally revolve around managing the quantity, location, and timing of groundwater pumping. SGMA does not empower GSAs to develop or enforce water quality standards; that authority rests with the SWRCB Division of Drinking Water and Monterey County. Because of the limited purview of GSAs with respect to water quality, and the rightful emphasis on those constituents that may be related to groundwater quantity management activities. Therefore, this GSP is designed to avoid taking any action that may inadvertently move groundwater constituents already in the Subbasin in such a way that the constituents have a significant and unreasonable impact that would not otherwise occur. (Id., pp. 8-59 to 8-60.) The fact that the County and the RWQCB also have authority and responsibility to address water quality degradation demonstrates that the statutory scheme does not rely on the regulatory actions of any single agency. Nothing in SGMA's mandate that the GSP address water quality degradation permits the GSA to consider only the direct effect of GSA projects and only those projects that move pollutants. The GSP	

LandWatch Comments	Responses
must also address the effects of its regulatory omissions, including omissions that move or concentrate existing pollutants by permitting excessive extractions. DWR has made it clear in its imposition of corrective actions on the 180/400-Foot Aquifer Subbasin GSP that “groundwater management and extraction” may result in degraded water quality: RECOMMENDED CORRECTIVE ACTION 5 Coordinate with the appropriate groundwater users, including drinking water, environmental, and irrigation users as identified in the Plan, and water quality regulatory agencies and programs in the Subbasin to understand and develop a process for determining if groundwater management and extraction is resulting in degraded water quality in the Subbasin. Accordingly, the GSP cannot limit its concern to the effects of its own projects without taking responsibility for the effects of unregulated extractions on water quality degradation. For example, if, in the Corral de Tierra Subarea, there is evidence that arsenic concentrations are increased by excessive extractions, then the GSP must manage extractions to avoid undesirable results from increased concentrations. Chapter 8 cannot simply state that “no clear correlation that can be established between groundwater levels and groundwater quality at this time” as if that disposes of the matter. (Chap. 8, p. 8-57.) Indeed, at the July GSA Board meeting, staff acknowledged that lowering groundwater levels could cause water quality degradation, specifically referencing Corral de Tierra. The GSA must investigate, apply the best available science, and manage the resource to prevent undesirable contaminant concentrations caused by excessive extractions.	

Responses to Seaside Watermaster's Comments on the Monterey Subbasin Groundwater Sustainability Plan

Comments Provided on 17 November 2020

Comments from Georgina King of Montgomery & Associates on behalf of the Seaside Watermaster

"I have reviewed and plotted up the water quality data and parts of reports EKI provided. I also looked at MCWRA's recent maps of seawater intrusion (2017). I have pasted some maps and charts into a Word document Essentially, what we see is that:"

Comments	Responses
1. There is Salinas Valley seawater intrusion quite far south and into the Seaside Basin in the 180 ft aquifer equivalent to formations shallower than the Shallow Aquifer (Paso Robles) in the Seaside Basin. But we know this from the induction logs in the northern Sentinel Wells. The data available and included on our map is from Fort Ord monitoring – all of which is very shallow (180-ft aquifer) and not in our Shallow (Paso Robles) aquifer. As reference for depth, the FO-9 shallow aquifer in the Paso Robles is screened from 610-650 ft below ground.	As discussed in the GSP, available data indicates that there is no observed seawater intrusion in the upper portion of the 180-Foot Aquifer. Therefore, MCWRA's maps are only consistent with data collected from the lower 180-Foot Aquifer.
2.The 400 ft aquifer which is equivalent to the Shallow Aquifer (Paso Robles) in the Seaside Basin has a similar southern extent to what we have included in the SIAR mostly because there is no data/wells available to update the extent. There has been considerable inland advancement. <u>There are no 400-foot Fort Ord monitoring wells that have data more recent than 2008. Perhaps we should find out if some of these wells can start being sampled by the GSA in that area? [Underline text are the items that Seaside Watermaster would like the GSP to address.]</u>	There is a large amount of total dissolved solids (TDS) data that was collected from Ford Ord monitoring wells in 2018 that has been used in the seawater intrusion analysis in Chapter 5 (Figure 5-28). As discussed in Chapter 5, there is a high correlation between TDS and chloride results in groundwater in the subbasin, and therefore TDS measurements are a good indicator of seawater intrusion. As discussed in Chapter 7, the area between MCWD-09 and MPMWD#FO-10S remains a data gap. MCWD plan to fill the data gap during GSP implementation by drilling a new well.
<u>3. FO-10 shallow and deep have had almost 15 feet of groundwater level drop over the past 11 years, most of which has been since the start of the drought in 2012. There must be some pumping in this area that is causing this. I do not have the data to help me figure this out. The GSA is going to have to address this.</u>	The decline in groundwater levels in FO-10 is discussed in the GSP. Two possible explanations for the decline are identified in the GSP since there is no identified pumping in this area: (1) these wells are screened within sediments that connect directly to the Deep Aquifers where groundwater levels are declining; or (2) leakage is occurring from the 400-Foot Aquifer into the Deep Aquifers in the vicinity of these wells.
4. To concude, <u>the lack of data available for the 400-ft aquifer (equivalent to Paso Robles aquifer) means we still have a large data gap between the</u>	The GSP identifies this as a data gap and plans to address the data gap by either utilizing an existing well or drilling a new one.

Comments	Responses
400-ft aquifer seawater intrusion and the Seaside Basin.	

Comments Provided on 8 January 2021

Chapter 5 comments

Comments	Responses
1. There are a huge number of acronyms in this Chapter. Please include near the front of the Chapter a list of acronyms and their meanings.	An abbreviations list is provided in the front of the GSP.
2. I am confused by the many names given to the various aquifers. For example in the Seaside Basin we have 3 aquifers: Aromas Sands, Paso Robles, and Santa Margarita. In the adjacent Monterey Subbasin Marina Management Area there are the upper and lower 180' and 400', the Dunes Sands, and the Deep Aquifers. In the Monterey Subbasin Corral de Tierra Management Area there are the El Toro Principle aquifers. I'm sure many of these are hydrogeologically interconnected and thus, in essence, the same aquifer. Near the front of this Chapter please include a table that gives the corresponding name of the aquifers in each of the Management Areas and the adjacent Seaside Subbasin and the 180/400-foot Subbasin, and a cross-section figure that graphically depicts the aquifers across each of these Management Areas and Subbasins.	Text added under Section 4.2.2.
3. Page 7 - This para includes language indicating that there is a data gap in the southern portion of the Marina-Ord area Dune Sand Aquifer. Language should be added to say that this data gap needs to be filled as part of the GSP.	As discussed in Chapter 4, the SVA pinches out in the southwestern portion of the Marina-Ord Area and therefore the Dune Sand Aquifer is likely hydraulicly connected to the underlying aquifers there. The GSAs' near-term plan to fill-in these data gaps is to install monitoring wells in the 400-Foot and Deep Aquifers in this area, as discussed in Section 7.3.2 and Section 10.2.3.1.
4. Page 8 – This para states that the Dune Sand Aquifer protects the upper 180' aquifer from SWI. Please elaborate on how this protection is provided.	See discussion in Section 5.1.2.1: "Groundwater elevations are near sea level at the coastline and are below sea level further inland. This inland gradient allows high salinity water to flow into the Subbasin (see Section 5.3 Seawater Intrusion). However, inflow from the Dune Sand Aquifer protects the upper 180-Foot Aquifer from seawater intrusion."

Comments	Responses
5. Page 8 – Please explain what is causing the local groundwater depression just north of the boundary between the Seaside Subbasin and the Marina-Ord area. The Watermaster is very concerned that we are starting to see increasing chloride levels in our monitoring well FO-10 which is in that area and also in our monitoring well FO-9 which is inside the Seaside Subbasin not too far south and west of FO-10. For more detail on this please refer to page 33 of the Watermaster's 2020 Seawater Intrusion Analysis Report (SIAR) which is posted at this link: http://www.seasidebasinwatermaster.org/ Other/2020%20Seawater%20Intrusion%20 Analysis%20Report%20Final%2012-3-20.pdf	The local depression is explained in Section 5.1.3 on page 22, which states: "Two CASGEM wells in the southwestern portion of the Marina-Ord Area, MPWMD#FO-10 and MPWMD#FO-11, show consistent decreasing trends over the past 15-years. Additionally, groundwater elevations in these wells are significantly lower than those to the north near the City of Marina and to the south in the Seaside Subbasin. When water levels in these wells are plotted in conjunction with other 400-Foot Aquifer wells in the Marina Ord Area, they indicate the presence of in a localized depression in the groundwater potentiometric surface of the 400-Foot Aquifer. However, there is no known extraction in the Monterey Subbasin in the vicinity of these wells and groundwater elevations observed in these wells are similar to those measured in the Deep Aquifers. These data suggest that (1) these wells are screened within sediments that connect directly to the Deep Aquifers; or (2) leakage is occurring from the 400-Foot Aquifer into the Deep Aquifers in the vicinity of these wells." MCWD will collect additional data in the vicinity of FO-10 and FO-11 during GSP implementation to future understand the cause of groundwater declines and potential seawater intrusion in this area.
6. Figure 5-3 – The depression referred to on page 8 is clearly shown in this Figure so the response to the comment above about this should also refer to this Figure.	See response above.
7. Figure 5-7 – The groundwater contours for the 400-foot aquifer shown in this Figure extend into the Seaside Subbasin. We do not have a 400-foot aquifer in the Seaside Subbasin. Presumably this is either the Paso Robles or the Santa Margarita aquifer, so the legend of this Figure should make that clarification.	The 400-Foot Aquifer in the Monterey Subbasin is likely connected to the Paso Robles Aquifer in the Seaside Subbasin. Note added to figure for clarification.
8. Figure 5-8 – The groundwater contours for the Deep Aquifers shown in this Figure extend into the Seaside Subbasin. We do not have a Deep Aquifer in the Seaside Subbasin, and the aquifers	The Deep Aquifers in the Monterey Subbasin are likely connected to the Santa Margarita Aquifer in the Seaside Subbasin. Note added to figure for clarification.

Comments	Responses
we do have, with the exception of the Aromas Sands, are all much deeper than the contours that are shown.	
9. Figures 5-9 and 5-10 – There are groundwater level contours in the Laguna Seca Subarea of the Seaside Subbasin that should also be plotted on this Figure, since they correspond to the same aquifers that are part of the El Toro Primary Aquifer. Those contours are contained in the Watermaster's 2017 Seawater Intrusion Analysis Report on pages 54 and 55. For 2017 the link to the SIAR is: http://www.seasidebasinwatermaster.org /Other/2017%20Seawater%20Intrusion%20 Analysis%20Report_Final.pdf	The data and groundwater level contours will be included in future versions of the GSP. Groundwater level data from the Laguna Seca wells are included in the creation of the Corral de Tierra contours. Future maps will extend these contours in this portion of the Corral de Tierra into the Laguna Seca as both an acknowledgement of the hydrogeological connectivity, as well as the importance of collaboration regarding cross-boundary flows..
10. Page 21 – The word "the" is missing in the first sentence of this bulleted para, right before the word "large".	Updated.
11. Page 23 – When the term "El Toro Primary Aquifer System" is first introduced please describe the aquifers that comprise it, and if they are not the Paso Robles and Santa Margarita aquifers, explain how they correspond to those aquifers, which are the ones we monitor in the Laguna Seca Subarea of the Seaside Subbasin.	Addressed in the text. The term El Toro Primary Aquifer System is initially defined in Chapter 4, and includes the Paso Robles Formation, the Santa Margarita Sandstone, and the Aromas Sands (if/where they occur in the Corral de Tierra area). The principal aquifers in the Monterey Subbasin, and neighboring subbasins are derived from the same geologic materials. In the Seaside Subbasin, the principal aquifers are named based on the Paso Robles and Santa Margarita geologic Formations. These two geologic formations are grouped together to form the El Toro Primary Aquifer System in the Corral de Tierra area as many wells are screened across both formations. The hydraulic connection between the Corral de Tierra area and the Laguna Seca area is relatively well established with production wells screened in the Paso Robles and Santa Margarita Formations with "shallow" designations generally correlating to wells completed in the Paso Robles formation and "deep" designations generally correlating to wells completed in the Santa Margarita formation.
12. Figure 5-13 – The plots in this Figure of MPWMD#FO-10 and MPWMD#FO-11S show	See response to Comment 5.

Comments	Responses
falling groundwater levels, whereas the other plots in this Figure should stable levels. The reason for the falling levels in these wells, which are in the southwestern portion of the Marina-Ord area, should be explained in the text.	
13. Figure 5-14 – This Figure shows groundwater levels in the Deep Aquifers. The plot for MPWMD#FO-10D shows groundwater levels in the Santa Margarita aquifer, not the Deep Aquifer. I am not sure, but the same may be true of MPWMD#FO-11D.	As discussed in Section 4.2.2.1.7 Deep Aquifers (page 35 of Chapter 4): "Within the Monterey Subbasin, the Deep Aquifers comprise the middle and lower portions of the Paso Robles Formation, the Purisima Formation and the Santa Margarita Sandstone (Hanson et al., 2002; Yates, 2005). The Deep Aquifers are also likely connected to the deep Santa Margarita aquifer in Seaside Subbasin (Yates, 2005)." Therefore, groundwater levels in MPWMD#FO-10D and MPWMD#FO-11D are plotted with other Deep Aquifers within the Monterey Subbasin.
14. Figure 5-18 – The text should discuss the dramatic decline in groundwater elevations occurring since 1998, and a trend line for that portion of the data would be helpful to highlight the rate of decline.	The average rate of decline in groundwater levels in these wells will be added to figure.
15. Figure 5-20 – There is considerably more groundwater level measurement data in the Seaside Subbasin than is depicted in this Figure. That data is available in the Watermaster's annual SIARs and should be added to this Figure, just as the data in the 180/400-foot Aquifer Subbasin is shown.	Noted. The GSP focuses on creating contours for the Monterey Subbasin, and therefore this map only includes wells located in the portion of the Seaside Subbasin that is adjacent to the Monterey Subbasin.
16. Page 37 – A paragraph should be added within the discussion of the AEM data describing the comments and concerns about the reliability of the AEM data which were raised by the Blue Ribbon Panel that reviewed the Cal Am Slant Well reports.	The 2017 AEM Study[1] and 2019 AEM Study[2] for the Monterey Subbasin and surrounding area were performed by highly regarded professors of Geophysics and California Licensed Geophysicists including: • Dr. Rosemary Knight, Ph. D.: Professor of Geophysics at Stanford University,

[1] Stanford/Aqua Geo Frameworks, 2018. *Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA*, Ian Gottschalk, Rosemary Knight, Stanford University, Stanford, CA; Ted Asch, Jared Abraham, Jim Cannia, Aqua Geo Frameworks, Mitchell, NE, dated 15 March 2018.

[2] Aqua Geo Frameworks, 2019. *Final Report on the 2019 Airborne Electromagnetic Survey of Selected Areas Within the Marina Coast Water District*, dated 14 November 2019.

Comments	Responses
	• Theodore H. Asch, CA GP#1038; California Licensed Professional Geophysicist with Aqua Geo Frameworks, LLC. • Jared D. Abraham CA GP#1089: a California Licensed Professional Geophysicist with Aqua Geo Frameworks, LLC. The 2017 AEM study has been peer reviewed and has been validated against lithologic and water quality data within the Monterey Subbasin[3]. Both studies have also been provided to California Department of Water Resources (DWR) for review as part of a large new AEM Study that is being conducted by DWR across California. One of the primary authors of the 2017 AEM study, Dr. Ian Gottschalk, Ph. D., is one of the geophysicist working on DWR's study.
17. Page 41 (Next to last para) – A sentence should be added at the end of this para stating that there is also a data gap in the southwestern portion of the Marina-Ord area, which prevents knowing the location of the SWI front in that area as well.	Two Fort Ord monitoring wells that screen the 400-Foot Aquifer near the seawater intrusion front in Figure 5-28 were sampled for total dissolved solids and chloride in 2018, which indicates no sign of seawater intrusion. Thus, data gap in the southwestern portion of the Marina-Ord area was not discussed here. However, Chapter 7 identifies this area as data gap to monitor future seawater intrusion, and this data gap will be filled during GSP implementation 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.
18. Figure 5-24 – In the legend the "Note" pertaining to the Groundwater with TDS <1,000 mg/L is missing.	Note 2 is updated in the latest figure.
19. Figure 5-28 – The text where it discusses this Figure should note that the Watermaster's Sentinel Well SBWM-1, which is located next to the coast just north of the Seaside-Marina-Ord boundary has not shown any indication of SWI in any of the aquifers that it penetrates, which include the Paso Robles and Santa Margarita	Although water quality results from SBWM-1 did not indicate seawater intrusion, its well screens are located greater than 1,000 ft bgs. Induction logs from SBWM-1 showed low resistivity and possible seawater intrusion around 400-700 ft bgs which corresponds to the approximately depth of the 400-foot aquifer and the depths of

[3] Gottschalk, I., Knight, R., Asch, T., Abraham, J. and Cannia, J., 2020. Using an airborne electromagnetic method to map saltwater intrusion in the northern Salinas Valley, California. Geophysics, 85(4), pp.B119-B131. https://library.seg.org/doi/full/10.1190/geo2019-0272.1

Comments	Responses
aquifers. Therefore, it is not clear why the extent of the "Area of Known Seawater Intrusion" is shown going into that area. Due to the lack of monitoring well data in that area (as mentioned in some of the comments above) it is not clear how the extent of the SWI front can be accurately depicted in that part of the Marina-Ord area. This is supported by the MCWRA SWI mapping in Appendix 5B which has "???" shown in that area due to lack of data. This comment also applies to Figure 5-29 which also shows the "Area of Known Seawater Intrusion".	the inland MPMWD#FO-10S well screen (650 ft bgs). These data indicate that seawater intrusion potentially exists in the 400-Foot Aquifer (or shallow Paso Robles Aquifer) at this location. The seawater intrusion extent for the remainder of the Subbasin is drawn based on data shown on this figure, including a 2018 sampling event conducted by MCWD from FO monitoring wells to fill data gaps, in addition to wells that are regularly monitored by MCWD and MCWRA.
20. Page 48 – Next to last para - A sentence should be added at the end of this para stating that Wells MPWMD#FO-9 and FO-10 have also been showing increasing TDS levels in recent years.	The following text has been added: "One CASGEM well in the southwestern portion of the Marina-Ord Area, MPWMD#FO-10, showed a recent increase in TDS concentration in 2020. Induction logging at this well suggested that the increase in TDS concentration was no due to casing leakage. However, the exact cause of the elevated TDS/chloride concentration is unknown. The GSAs will collect additional data in the vicinity of this well during GSP implementation in collaboration with the Seaside Basin Watermaster. "
21. Page 48 – Last Para - Provide a para here that discusses the apparent migration of SWI from the Marina-Ord area, south toward the Seaside Subbasin, as discussed in the Watermaster's 2020 SIAR.	See response above. The GSA is making a priority to conduct future investigation of the seawater intrusion extent in the southern portion of the Marina-Ord Area, west of FO-10S.
22. Figure 5-29 – Add an inset plot of TDS levels from well MPWMD#FO-9 to this Figure	Per the Geophysical Investigation Fort Ord Monitoring Wells FO-9 and FO-10 – Preliminary Findings Memo provided by the Seaside Basin Watermaster on April 22, 2021, recent water quality results from MPWMD#FO-09 were impacted by a structural flaw in the casing, which suggests that the samples taken in recent years are not representative of the in-situ aquifer water from the screened interval at this well.
23. Page 50 – Add MPWMD and the Watermaster as entities from which data was collected.	Added.

Comments Provided on 22 April 2021

Monitoring Well FO-10 Induction Logging Results and Request

Comments	Responses
1. Attached is the Tech Memo prepared by Martin Feeney after the recent completion of induction logging of monitoring wells FO-9 and FO-10. As his Memo reports, he does not have an explanation for the findings in FO-10 in which the logging showed high conductivity over nearly the entire depth of the well, whereas the E-log from the original construction of this well did not show this. One theory, that there is leakage in this casing just as is believe to be the case in the casing of FO-9, does not bear out, since there are clearly different water level readings in the different depth wells at FO-10. That indicates that these wells are not cross-connected through casing leakage. Our TAC asked that you please include investigating the cause of these findings in the GSP for this portion of the Monterey Subbasin, and developing any response action that the investigation finds should be taken.	Additional language has been added to the latest draft, under Section 5.3.4 Historical Progression of Seawater Intrusion.
2. With regard to FO-9 Shallow, MPWMD plans to video inspect this well to confirm the suspected casing leakage in FO-9 Shallow and to determine the structural integrity of FO-10 Shallow. They plan to do that work in the next couple of weeks and I will share with you the results of that inspection. If it is found that the casing in FO-9 Shallow is leaking, and that it is not feasible to repair it, MPWMD said that as the owner of the well they plan to destroy it to avoid having it be a cross-aquifer contamination source. Since water level and water quality data from that part of the Seaside Basin is important not only to the Watermaster and MPWMD, but also to MCWD to provide information for your development of the Monterey Subbasin GSP, if the well needs to be destroyed we would like to discuss with you a cost-sharing arrangement to have a replacement monitoring well installed near that location. "One correction. The District is planning to video FO-09 shallow and deep and not FO-10."	Noted.

Comments Provided on 10 May 2021

Comments on Chapter 7

Comments	Responses
1. Section 7.3 – This section states in part "The sustainability indicator for chronic lowering of groundwater levels is evaluated by monitoring groundwater elevations in designated monitoring wells." The list of entities that monitor the 39 wells mentioned here does not include the Watermaster. The Watermaster has numerous wells that are adjacent to the Corral de Tierra subarea, and some that are adjacent to the Marina- Ord subarea. Those should be included in order for the GSP to be able to see how its management actions are affecting the adjacent subbasin.	The 39 wells identified in Chapter 7 are Representative Monitoring Site (RMS) wells. As described in Section 7.1.2, RMSs are a subset of the monitoring network and are focused on monitoring groundwater condition relative to SGMA compliance. The GSAs are required to limit RMS to wells located within the Monterey Subbasin. However, groundwater level data from the wells outside the Monterey Subbasin are included in the creation of the GSP's analysis, e.g. groundwater elevation contours, and development of the basin numerical model. MCWD GSA and SVBGSA will continue coordinating with the Seaside Basin Watermaster to monitor groundwater elevations and water quality in the Seaside Subbasin. These data will be included in future version of the GSP and in annual reporting. Chapter 7 focuses on discussing monitoring network within the Monterey Subbasin. Clarifying language has been added to Section 7.1.
2. Section 7.3 – The 3rd bullet on this page states "RMS wells should facilitate monitoring along the existing seawater intrusion front to verify that water levels in these areas are not declining and increasing the risk of seawater intrusion." Monitoring Well FO-9 is within the Seaside subbasin, just south of the boundary with the Monterey subbasin, and is near the known seawater intrusion front. Therefore, it should be included as an RMS well.	See response to Comment 1.
3. Figure 7-12 and Figure 7-13 – Figures 7-4 and 7-5 should include Monitoring Well FO-9 Shallow and/or FO-9 Deep for the reasons stated above.	See response to Comment 1.
4. Figure 7-6 – Figure 7-6 should include adjacent monitoring wells in the eastern portion of the Laguna Seca subarea of the Seaside subbasin to see how Corral de Tierra management actions are affecting the adjacent subbasin. Montgomery &	The data and groundwater level contours will be included in future versions of the GSP. The groundwater level data from the Laguna Seca wells are included in the creation of the Corral de Tierra contours. Future maps will extend these

Comments	Responses
Associates has maps showing the names and locations of those wells.	contours in this portion of the Corral de Tierra into the Laguna Seca as both an acknowledgement of the hydrogeological connectivity, as well as the importance of cross-boundary collaboration.
5. Section 7.3.2 – The statement from one of the reports cited in this section that 0.2 to 10 wells per 100 square miles is the recommended monitoring well density is ridiculous for purposes of performing any type of reliable groundwater modeling. Far greater well density is necessary for that purpose.	The current monitoring network include 35 wells in the Marina-Ord Area and 13 wells in the Corral de Tierra Area, which is at far greater density than what the reports suggested.
6. Section 7.3.2 – On this page there is the statement "…additional wells are necessary to provide additional groundwater elevation data near the ocean in areas subject to sea water intrusion." It also states that the generalized locations for monitoring wells was based on "Demonstrating conditions at Subbasin boundaries." For the reasons stated above Monitoring Well FO-9 should be included.	See response to Comment 1.
7. Section 7.3.2 – On this page it states "A higher density of monitoring wells is recommended near residential areas or other locations where groundwater withdrawal is significant" and that this is the case in the Corral de Tierra subarea. Per the comment above on page 7-14 the adjacent monitoring wells in the Laguna Seca subarea should be included.	The data and groundwater level contours will be included in future versions of the GSP. The groundwater level data from the Laguna Seca wells are included in the creation of the Corral de Tierra contours. Future maps will extend these contours in this portion of the Corral de Tierra into the Laguna Seca as both an acknowledgement of the hydrogeological connectivity, as well as the importance of cross-boundary collaboration. The Laguna Seca Monitoring wells will be included in the monitoring network, but will not be included in the RMS network, which must use wells within the subbasin boundaries.
8. Figure 7-7 – Although not within the area identified on Figure 7-7 as a "data gap" area, Monitoring Well FO-9 Shallow should be included to help fill that gap.	See response to Comment 1.
9. Figure 7-8 – Although not within the area identified on Figure 7-8 as a "data gap" area, Monitoring Well FO-9 Deep should be included to help fill that gap.	See response to Comment 1.
10. Figure 7-9 – Per the comment above on page 7-14, the adjacent monitoring wells in the Laguna Seca subarea should be included in Figure 7-9.	See response to Comments 4 and 7.

Comments	Responses
11. Section 7.3.3 – In the top para on this page it appears that the word "parallel" should be "perpendicular." In the 2nd para after the words "…Monterey Subbasin…" the words "…or into any adjacent subbasins…" should be inserted. In that same para the word "southeastern" should be replaced with the word "southern." In the last para on this page, after the words "Monterey Subbasin" the words "…and in the adjacent Seaside Subbasin…" should be inserted.	Latest draft has been updated per this comment except replacing the word "parallel" with "perpendicular". As shown on Figure 5-28 in Chapter 5, the current hydraulic gradient and groundwater flow direction is parallel to the seawater intrusion front. Therefore, only minimal migration of seawater intrusion within the Monterey Subbasin was observed during the past two decades.
12. Figure 7-10 – In Figure 7-10 in the Legend this is a symbol for "Area of Potential Seawater Intrusion." It would be helpful to discuss in the text how that area was determined.	Figure 7-10 shows the same extent as Figure 5-28, please see Chapter 5 for details. A note was added to Figure 7-10 for clarification.
13. Section 7.5 – In the top para the words "…and the Seaside Groundwater Basin Watermaster…" should be added after the word "MPWMD." In that same para it states "Additional sites are added to the RMS network to facilitate monitoring of significant and unreasonable groundwater conditions…" This supports the need to add monitoring wells in the adjacent Seaside subbasin.	Language added, and see response to Comment 1.
14. Section 7.5 – The Seaside Groundwater Basin Watermaster should be added to the list of monitoring agencies on this page. Per comments above Monitoring Well FO-9 Shallow should be added to Figure 7-15. Per comments above Monitoring Well FO-9 Deep should be added to Figure 7-16. Per comments above Monitoring Wells FO-9 Shallow and Deep should be added to Table 7-4.	See response to Comment 1.
15. Section 7.5 (Page 7-37) – Sentinel MW#1 is also monitored by the Seaside Groundwater Basin Watermaster via induction logging and datalogger groundwater elevation monitoring.	Noted and added to the latest draft.
16. Section 7.5.1 – In the 2nd bullet in this section correct the wording to read "The Seaside Basin Watermaster Monitoring and Management Program…"	Updated.
17. Section 7.5.2 – In the 1st and 2nd bullets in this section add that Monitoring Well FO-9 should be included.	See response to Comment 1.
18. Section 7.6 (Figure 7-17) – In Figure 7-17 monitoring wells in the eastern portion of the	See response to Comments 4 and 7.

Comments	Responses
Laguna Seca subarea should be added to the wells in the groundwater quality monitoring network.	
19. Section 7.6.2 – The statement that the network cannot be expanded by drilling new wells (i.e. monitoring wells) does not make sense.	This sentence was rephrased.

Comments Provided on 13 July 2021

Comments on Chapter 8

Comments	Responses
1. Section 8.4 – The 3rd para on this page talks about SMCs in this subarea and their potential to impact SMCs in adjacent subbasins (in this case the Seaside subbasin). It goes on the say that SMCs for the Monterey subbasin will be set so as to be consistent with SMCs in those adjacent subbasins, so that adjacent subbasins will be able to be sustainable. For this reason it would be appropriate (as mentioned in other comments below) for the monitoring network of the Monterey subbasin to include some monitoring and/or production wells in the Seaside subbasin that are near the border between the two subbasins. Data from those wells can be provided to the SVBGSA at no cost, so the SVBGSA can determine what impact the Monterey subbasin's SMCs are having on the Laguna Seca subarea of the Seaside subbasin, which is the portion of the Seaside subbasin that abuts the Corral de Tierra subarea. This para also mentions that modeling will be one of the means of determining the impacts of the Corral de Tierra SMCs on the adjacent subbasin. The Monterey subbasin model being developed for the MCWDGSA by its consultant EKI should incorporate modeling information from the Seaside Watermaster's Seaside Basin Model (prepared by HydroMetrics) to ensure that the two models are consistent at the boundary between the subbasins.	The data and groundwater level contours are included in the Monterey Subbasin Model, and future data from the Laguna Seca area will continue to refine the model during implementation, as well as for monitoring over the GSP planning period. The GSP has been developed in coordination with vested stakeholders, including those in neighboring basins. Projects have been developed, and will be included in future modeling scenarios and as implementation data are collected. Modelers are continuing to collaborate to improve the understanding of the relationship between Laguna Seca and the Corral de Tierra. As described in detail in Appendix 6B, there are notable differences in hydrogeologic conceptualization and geometry between the MBGWFM and the Seaside Model. a few simplifying assumptions had to be made to effectively link head outputs from the Seaside Model to general head boundary cells along the Seaside boundary within the MBGWFM. The basin GSAs will continue to collaborate with the Seaside Subbasin to further rectify the discrepancies between the two models in a future update to the MBGWFM, and/or to integrate both models into a regional model that covers both subbasins.
2. Table 8-1 – The Corral de Tierra area MT and MO groundwater elevations (2015 and 2008) are believed, based on modeling performed for the Watermaster by HydroMetrics, to be so low that they are causing water to (1) be drained out of	The current model shows approximately 400 AF/yr. flowing from the Corral de Tierra area into the Laguna Seca area.

Comments	Responses
the Seaside subbasin's Laguna Seca Subarea by creating an eastward sloping hydraulic gradient and/or (2) preventing the natural westward flow of groundwater from replenishing the Laguna Seca Subarea, resulting in falling groundwater levels in that subarea. The GSP should mention this and ensure that its SMCs prevent this adverse condition from continuing.	It is important to note that multiple projects need to be implemented in the Corral de Tierra area in order to meet the sustainability goals. Declining water levels have been observed in this area since the early 1990's. The effort to raise groundwater levels in the Corral de Tierra area and neighboring Laguna Seca area will be a sustained and coordinated effort among managers and stakeholders. Additionally, modelers are continuing to collaborate to improve the understanding of the relationship between Laguna Seca and the Corral de Tierra areas. The modeling performed by HydroMetrics in 2016 has a different set of assumptions and boundary conditions than the modeling performed by EKI. These models will be revised through a series of meetings with the modelers to better align assumptions, boundary conditions, and predictions over time.
3. Section 8.7.1 – Reword the first bullet on this page to read "Groundwater elevations at or below those observed in 2015. Lower groundwater elevations could lead to inadequate water production in a significant number of domestic and small water system wells, <u>not only in the Corral de Tierra subarea but also in the Laguna Seca subarea of the adjacent Seaside subbasin.</u>	Updated.
4. Section 8.7.1 – This Section discusses a minimum threshold of 20% exceedances of groundwater levels. As mentioned in the comment above on page 8-8, some monitoring wells in the Laguna Seca subarea, which is directly impacted by groundwater levels in the Corral de Tierra subarea, should be included in Representative Monitoring Sites for the Corral de Tierra subarea when making the 20% calculation.	The Seaside data and groundwater level contours will be included in future versions of the GSP. The groundwater level data from the Laguna Seca wells are included in the development of the Corral de Tierra contours. Future maps will extend these contours in this portion of the Corral de Tierra into the Laguna Seca as both an acknowledgement of the hydrogeological connectivity, as well as the importance of cross-boundary collaboration. The Laguna Seca Monitoring wells will be included in the monitoring network, but will not be included in the RMS network, which must use wells within the subbasin boundaries. The effort to monitor groundwater levels in the Corral de Tierra area and neighboring Laguna

Comments	Responses
	Seca area will be a sustained and coordinated effort among managers and stakeholders.
5. Section 8.7.2.3 – The bottom para on this page mentions undesirable results caused by chronic lowering of groundwater levels within the Corral de Tierra subarea. The following language should be inserted at the appropriate place in this para "These same undesirable effects will occur in the adjacent Laguna Seca subarea from chronic lowering of groundwater levels in the Corral de Tierra subarea."	Language added with modifications.
6. Section 8.7.2.3 – The top para on this page mentions the term "clustering". A better explanation of what would constitute "clustering" should be added to this para, since this is apparently going to be one of the criteria to determine if a significant and unreasonable effect is occurring.	Comment noted.
7. Table 8-2 – Many of the wells in this table also have common names which appear on maps in various reports that have been prepared for the Corral de Tierra and Laguna Seca subareas. A column should be added to this Table titled "Well Common Name" to include that information for the reader's ease of knowing which well in located at the Monitoring Site. Also, as mentioned in the comment above on page 8-8, some monitoring wells in the Seaside subbasin should be included in this Table. Suggested wells for inclusion are: MPWMD#FO-5S, MPWMD#FO-5D, MPWMD#FO-6S, MPWMD#FO-6D, Seca Place, MPWMD#FO-9S, MPWMD #FO-9D,	Table 7-1 in Chapter 7 contains the common name of the RMS wells. This table lists SMCs established in RMS wells pursuant to SGMA. The Seaside monitoring wells will be included in the monitoring network, but not be included in the RMS network, which must use wells within the subbasin boundaries. MCWD GSA and SVBGSA will continue coordinating with Seaside Basin Watermaster to monitor groundwater elevations and water quality in the Seaside Subbasin and will include data from Seaside monitoring wells in annual reporting. The long-term sustainability goal strives to raise water levels and not adversely impact the Seaside Subbasin.
8. Figures 8-4 and 8-5 – The wells suggested for inclusion in the comment on page 8-21 (MPWMD#FO-9S and MPWMD #FO-9D) should be added to these figures to monitor the effectiveness of the SMCs in the Marina-Ord subarea on preventing seawater intrusion from flowing into the Seaside Subbasin.	See response to Comment 7.
9. Figure 8-6 – The wells suggested for inclusion in the comment on page 8-21 (MPWMD#FO-5S, MPWMD#FO-5D, MPWMD#FO-6S, MPWMD#FO-	See response to Comment 7.

Comments	Responses
6D, and Seca Place) should be added to these figures to monitor the effectiveness of the SMCs in the Corral de Tierra subarea on preventing chronic lowering of groundwater levels in the Seaside Subbasin.	
10. Section 8.7.3.1 – The next to the last para on this page states "The declining groundwater elevations in the Deep Aquifer may be causing groundwater elevations to fall within the 400-Foot Aquifer in the southwestern portion of the Marina-Ord Area (i.e., near wells MPWMD#FO-10S and MPWMD#FO-11S)." An explanation to support this hypothesis should be included as this is not intuitively apparent.	This is discussed under Section 5.3.1 (see response to Comment 5 for Chapter 5, provided on January 8, 2021). Additional languages were included in the GSP to provide clarification.
11. Section 8.7.3.1 – In the top two paras there are two small typos to correct: (1) in the first para the word "elevations" should be singular; (2) in the second para the last sentence should be reworded in part to read "…Deep Aquifer's wells as well as…"	Updated.
12. Section 8.7.3.1 – The second bullet on this page mentions historical groundwater elevation data from wells monitored by MCWRA. This language should be expanded to include historical groundwater elevation data from wells monitored by the Seaside Basin Watermaster.	Updated.
13. Section 8.7.3.5 – Add at the end of the first sentence at the top of this page the following wording "…including the occurrence of "Material Injury" (as defined in the Seaside Basin adjudication decision) in the Laguna Seca subarea due to lowered groundwater levels."	Updated.
14. Section 8.7.4.1 – Correct "MPWMD" to read "MPWMD" for the wells mentioned in this Section and the footnote at the bottom of this page. Also, update the language in the footnote to read as follows: "Chloride concentration measured from MPWMD#FO-10S and MPWMD#FO-09S in September 2020 were 89.9 mg/L and 90.4 mg/L, respectively. <u>An investigation performed by MPWMD into the cause of this in mid-2021 concluded that there was leakage in the upper portion of the casing that was allowing salty shallow dune sand water to flow downward in this well, thus causing these increases in chloride readings.</u> As part of	"MPWMD" has been corrected. It is our understanding that the leakage in the casing was only confirm in MPWMD#FO-09, and the cause for elevated chloride in MPWMD#FO-10 was still unknown.

Comments	Responses
GSP implementation, the Subbasin GSAs intend to investigate possible seawater intrusion near the southwestern portion of the Marina-Ord Area in collaboration of the Seaside Watermaster."	
15. Section 8.7.4.2 – In the 2nd para on this page there is discussion about groundwater elevation trends continuing to fall in the early part of the implementation period and then recovering in the latter part of that period. It would helpful to the reader to have an explanation included as to how the rate of recovery of the fallen groundwater levels was determined, and what the level of confidence is in these projections. In other words, is it certain that the projects that will be included in Chapter 9 of the GSP will be able to bring groundwater levels up as shown in the figures in Appendix 8B?	The interim milestones for wells with declining groundwater elevations are determined based on the anticipation that time will be required to implement these projects and management actions. The GSA plans implement projects and management actions, including those listed in Chapters 9 and 10, to achieve these goals. As shown by the water budget and projected groundwater elevation change results in Sections 6.5 and 9.6. As such, a coordinated and sustained approach to sustainable groundwater management will be required between subbasins within the Salinas Valley Basin.
16. Section 8.8.3.1 – There is a table showing estimated groundwater storage in the Marina-Ord area, but I did not see a similar table for the El Toro area.	SVBGSA has chosen to leave this out and focus instead on working towards/attaining the SMC in the GSP. An estimation of groundwater storage may distract from the work on sustainability, and does not include the nuance of accessible groundwater storage.
17. Section 8.8.3.4 – This para discusses the setting of minimum thresholds to avoid dropping below recent levels of storage. The existing groundwater levels in the Corral de Tierra subarea are already causing a loss of groundwater in the Laguna Seca subarea of the Seaside subbasin. Therefore, the Corral de Tierra groundwater levels need to be raised, not just kept from falling further.	The long-term sustainability goal strives to raise water levels and not adversely impact the Seaside Subbasin. The minimum thresholds were set by the Subbasin Committee. The effort to raise groundwater levels in the Corral de Tierra area and neighboring Laguna Seca area will be a sustained and coordinated effort among managers and stakeholders. The long-term sustainability goal will strive to raise water levels and not adversely impact the Seaside Subbasin.
18. Sections 8.10.1 and 8.10.2 – Question: If a water quality problem already exists and therefore the affected part of the subbasin is not sustainable as a potable water supply due to that problem (example of arsenic) doesn't SGMA require GSPs to include projects and management actions to remedy the problem in order to achieve sustainability?	Based on inputs collected from stakeholders including those from the Corral de Tierra committee, current water quality conditions in the Subbasin have not be determined as significant and unreasonable. In addition, SGMA does not require addressing water quality impacts that existed prior to the establishment of SGMA, such as the arsenic issues mentioned here.

Comments	Responses
19. Section 8.10.3.1 – Small typo to correct in the first para of this Section: put a comma rather than a period after “Monterey County” and make the word “because” not be capitalized.	Updated.
20. Section 8.10.3.1 – Under the “Public water system supply wells regulated by the SWRCB DDW” shouldn’t the smaller private systems that are not regulated by DDW, of which there are many in the Corral de Tierra subarea, also be included in the development of the SMCs because of their cumulative impact on the subbasin?	The pumping for *de minimis* and small system wells was approximated based on number of households using land use type, acreage, and parcels.
21. Figure 8A-9 and 8A-10 in Appendix A – The wells suggested for inclusion in the comment on page 8-21 (MPWMD#FO-9S and MPWMD #FO-9D) should be added to these figures to monitor the effectiveness of the SMCs in the Marina-Ord subarea on preventing seawater intrusion from flowing into the Seaside Subbasin.	See response to Comment 1.
21. Figure 8A-11 and 8A-12 in Appendix A – The wells suggested for inclusion in the comment on page 8-21 (MPWMD#FO-5S, MPWMD#FO-5D, MPWMD#FO-6S, MPWMD#FO-6D, and Seca Place) should be added to this figure to monitor the effectiveness of the SMCs in the Corral de Tierra subarea on preventing chronic lowering of groundwater levels in the Seaside Subbasin.	See response to Comment 7.

Comments Provided on 30 July 2021

Draft Chapter 8 – Supplemental Comments from Seaside Basin Watermaster 7-30-21

These are comments provided by the Watermaster's hydrogeologic consultant, Montgomery & Associates. They supplement the Watermaster's comments dated 7-13-21.

Comments	Responses
1. Figure 8-6 – The Robley wells are the ones to focus on to understand what would happen in the Seaside Basin than the wells on Figure 8-6 that are much farther away from the Seaside Basin. The minimum threshold for the Robley wells are just above record lows in 2020 on the hydrographs (levels this year are undoubtedly going to be even lower!). The GSA has 20 years to get levels at or above the minimum threshold, so levels can still fall lower than they are now between now and 2042.	Comment noted.
2. Figures 8-9 and 8-10 – We don't find the contours on Figures 8-10 and 8-11 very useful because we don't have contours generated the same way for the Seaside Basin (i.e., based on an assumed future condition). The flow direction from the contours is similar to current conditions (see Chapter 5, Figures 5-9 and 5-10) so there is no expected change in flow directions to what has happened in the past. What I found more informative was Figure 8-6 which shows historical hydrographs for the Robley wells together with minimum threshold (elevation that they should not really be going below) and the measurable objective (elevation where they would like to be). Note that the measurable objective is not enforceable but the minimum threshold is.	Comment noted.
3. Figure 8-12 – The example well in Figure 8-12 shows a continuing drop in groundwater levels, with levels only increasing to measurable objectives after 2030 when project benefits are projected to kick in.	The interim milestones included in the Monterey GSP reflect the reality that it will take time to implement projects and management actions to stop groundwater levels from falling and increase levels. As discussed in the GSP, rates of groundwater extraction within the Monterey Subbasin are significantly lower than total recharge, and large volumes of groundwater are flowing into the 180/400-Foot Aquifer Subbasin. As such, sustainability with the Monterey Subbasin will require the implementation of both local and regional projects and management actions to reach sustainability. Such regional solutions will inevitably take time to implement.

Comments	Responses
	The Monterey GSP is consistent with SGMA, which acknowledges this reality and allows 20 years to reach sustainability.
4. Table 8-3 – Table 8-3 provides interim milestone every five years to show how they project levels will eventually meet measurable objectives. This all indicates that groundwater levels in the Laguna Seca subarea will continue to fall for at least the next 10 years.	See response to Comment 3. The long-term sustainability goal will strive to raise water levels and not adversely impact the Seaside Subbasin.
5. Section 8.7.3.5 – Effect of Minimum Thresholds on Neighboring Basins and Subbasins is an important section to look at – I do not feel they have adequately addressed effects on the Seaside Basin from the minimum thresholds. They do not mention the ongoing declines in the Laguna Seca subarea and what the minimum thresholds will do for that nor the impacts that will occur when levels are allowed to fall lower than the minimum threshold over the next 10 years. There is only one sentence addressing Seaside Basin and it reads "The Seaside Subbasin is an adjudicated basin and not subject to SGMA. The subbasin GSAs have and will continue to coordinate closely with the Seaside Watermaster to ensure that the Monterey Subbasin minimum thresholds do not prevent the Seaside basin from meeting its adjudication requirements."	See response to Comments 3 and 4.
6. There is still the ongoing issue in the Coral de Tierra subarea of poor pumping records. This means they still don't understand exactly what is causing the ongoing declines. Derrik mentioned that they are talking about expanding the County groundwater extraction monitoring (GEMS) into the Corral de Tierra subarea, but that section of the GSP has not been posted yet (probably Chapter 10).	Corral de Tierra groundwater pumping demands were estimated for small water systems and domestic wells by SVBGSA using extraction reported to MCWRA and SWRCB where available, and approximated based on number of households to account for small water systems connections and *de minimis* pumpers using land use type, acreage, and parcels. During Implementation, the GEMS program will be expanded and enhanced to collect more data. This data will continually be refined over the implementation period.

Comments Provided on 23 August 2021

Draft Chapter 9 – Comments from Seaside Basin Watermaster 8-23-21

Comments	Responses
1. Section 9.1 – In the next to last sentence in the first para of this Section please insert after the words “Corral de Tierra Management Areas” the words “and the adjacent Seaside Subbasin”.	“Chronic lowering of groundwater levels sustainability indicator” is a term for the SGMA Act, and since MCWD SGA and SVBGSA do not have the authority to monitor wells located in the Seaside Subbasin, the proposed language will not be added to this paragraph. However, MCWD GSA and SVBGSA will continue coordinating with Seaside Basin Watermaster to monitor groundwater elevations and water quality in the Seaside Subbasin and will include data from MPWMD#FO-9 in the annual reporting.
2. Table 9-1 – Multi-basin project R3 states that multi-basin benefits have not been quantified. Without some indication of the level of benefit a Project may be able to provide, decision-makers will not know which ones are the most desirable projects to pursue.	Though the multi-basin benefits have not been quantified in Table 9-1, Section 9.4.3.2 quantifies benefits including evapotranspiration reduction and additional recharge from four recharge basin. Additional benefits would be quantified through further investigation.

3. Table 9-1 – General comment and recommendation: Many of the Projects and Management Actions do not have estimated Costs or estimated Unit Costs provided for them. Recognizing that some projects are essentially only conceptual at this point, nevertheless, an effort should be made, even if it is as simple as "rule of thumb," to estimate what the range of unit costs might be for each project. Without estimated costs it will be impossible for an operating budget for the GSP to be developed, or for fees or water-use related charges to be developed. As was commented on, and I believe correctly so, by some in the SWIG when Derrik presented a summary of the comments received from the TAC for the SWIG when they discussed various projects that would help mitigate seawater intrusion, it is appropriate to do a "reality check" on projects in terms of getting a sense of how financially feasible they may be. Something like a cost-benefit ratio for example. Without sufficient estimated costs and benefits for each project, time and effort will be wasted evaluating projects that have such high cost-to-benefit ratios that they should be dropped out of the Project list early-on. As a corollary, years ago when projects that could help to solve the water-shortage problem of the Monterey Peninsula were being discussed, and no project was supposed to be rejected out-of-hand even if it seemed extremely unlikely, a project to tow icebergs from the Arctic to Monterey Bay so the water could be melted and used as a water supply for the Peninsula was proposed. Time and effort was spent coming to the conclusion that it was simply economically and/or logistically infeasible. The same can be said about a number of the proposed projects which have very high implementation costs and very little water-savings benefit, resulting in very high unit costs. I recommend that a separate table showing just: • P/MA # • Project Name • Quantity of water that will be saved from being pumped • Implementation and O&M costs • Unit Cost	Comment noted. Cost for all projects and management actions are estimated under each of the project descriptions and summarized in Table 9-1 under the "cost" column, including capital costs, O&M costs, and unit costs if applicable. Project benefit and capacity are summarized under the "Project Benefits / Quantification of Benefits" column. As further discussed in Section 10.5, the basin GSAs will further assess project benefit and feasibility during the first two years of GSP implementation. The GSAs will continue to collaborate with the Seaside Watermaster and key agencies during that process.

• A priority ranking column (which would be filled in by the GSP Committee based on the data in the other columns of this table)	
4. Table 9-1 – The Pumping Allocation and Control Management Action will almost certainly be an action/project that will have to be implemented to achieve Corral de Tierra subbasin sustainability. This Management Action will have to achieve the greatest amount of pumping reduction, since all of the other Projects and Management Actions combined, especially after those that are financially infeasible are eliminated, will fall far short of achieving the necessary pumping reduction. Therefore, instead of saying "Decreased extraction; range of potential benefits" in the "Project Benefits/ Quantification of Benefits" column, an amount of pumping reduction should be shown for this Management Action, so the reader can see clearly the magnitude of pumping allocation and control that will be needed.	A "No Pumping" Project scenario was run with the model, and is described along with the results in Section 9.9.2. This project scenario shows that even if all pumping were replaced with alternative supplies and pumping was eliminated, the Corral de Tierra Area would still need recharge projects to reach sustainability. The quantification of benefits for decreased extraction are dependent on the degree of pumping reductions or allocations. As the GSP is implemented, these benefits will be further analyzed and quantified based on the actions taken by the GSAs in coordination with other partner entities and local stakeholders.
5. Section 9.3.4 (page 9-18) – In the last para of this Section it mentions that capital costs were annualized over 25 years. The interest rate for this calculation should be stated, and for what revenue source(s) that rate pertains.	Several of the project scenarios have cost explanations in Appendix 9X, and they show their respective, assumed interest rates.
6. Section 9.4.2.2 (page 9-27) – The first sentence of this Section states that 15,000 AFY of desalinated water could be produced for the "Salinas Valley," and the Section goes on to say that a portion of this would go to the Monterey Subbasin. Since the Seaside Subbasin is also part of the Salinas Valley Groundwater Basin, and since this Section is discussing a "Regional Municipal Supply Project," language should be added saying that a portion of the water supply might also go to the Seaside Subbasin which is also in need of a supplemental water source to achieve sustainability.	The text was reworded into "The proposed plant would produce up to 15,000 AFY of desalinated water for the Salinas Valley. A portion of that would go to the Monterey Subbasin, while others would go to other Subbasin within the Salinas Valley Basin." The GSAs would like to focus on Monterey Subbasin in the text.

7. Section 9.4.6 (page 9-51 to 9-54) – This Section discusses the use of recycled water. Thought needs to be given to the limitation on the volume of recycled water that M1W's Salinas Valley Reclamation Plant or its Pure Water Monterey AWT Plant can produce. The feedwater source for both of those plants is M1W's Regional Treatment Plant, and its flow is currently only about 19 MGD. Water conservation and other factors have nearly eliminated increases in wastewater flows to that plant in recent years. With the CSIP being proposed for expansion in the 180/400-foot Aquifer Subbasin's GSP, with a Pure Water Monterey Expansion Project being proposed for the Seaside Subbasin, and now with the Monterey Subbasin GSP proposing obtaining recycled water from M1W, there appears to be a real risk that the amount of recycled water that can be produced may be over-subscribed.	As described on page 9-53, first paragraph, "MCWD's sewer flows will increase over time as MCWD's water demand increases and could be used as source water for a MCWD expansion of the AWPF." The indirect potable use (IPR) option of this project includes a proposed expansion to the M1W Advanced Treatment Purification Facility that could utilize future sewer flow generated by MCWD.
8. Section 9.4.6 (page 9-52) – The PWM Project currently is only sized to deliver 3,500 AFY to the Seaside Subbasin, not 3,700 AFY as stated in the 4th para on this page. Also on this page it states that the AWPF will be expanded. The word "may" should be used in lieu of the word "will" as there are still obstacles to the proposed expansion project.	Clarification added. The AWTF and regional transmission pipeline was constructed with a capacity of 3,700 AFY for the PWM project to deliver 3,500 AFY to the Seaside Subbasin.
9. Section 9.4.6 (page 9-53 to 9-54) – On these pages it mentions "a MCWD expansion of the AWPF." That should read "a M1W expansion of the AWPF."	Updated.
10. Section 9.4.6 (page 9-54) – The last para in this Section on this page starts out with "The current operation frequency of MCWD's productions generally ranges from 10% to 40%." Please clarify what this statement means.	Text was updated to "The current operation frequency of MCWD's production wells generally ranges from 10% to 40% (i.e., these wells are being operated 10% to 40% of the time)."
11. Figure 9-7 – The RUWAP pipeline is shown extending down General Jim Moore Boulevard clear through Del Rey Oaks and then easterly into Ryan Ranch. Please verify that this pipeline has already been constructed that far. I was of the understanding that it only went part of the way down General Jim Moore and not even as far as South Boundary Road.	The pipeline extends to near South Boundary Road in GJMB but is not constructed within South Boundary Road (the portion that heads east at the southern part of the diagram). The extension of the recycled line down South Boundary road is planned but not yet constructed.

12. Section 9.4.8 (page 9-65) – The para in the middle of this page states in part "…if pumping needs to be reduced to meet sustainable yield…". It is not "if" but simply "will" need to be reduced. Calculations in earlier GSP chapters identify the estimated sustainable yield, and the amount of overpumping that will have to be eliminated to achieve sustainable yield. In addition, sustainability will also necessitate raising groundwater levels in this Subbasin, not just having extractions equal natural replenishment. The reader should clearly be informed that pumping reductions will be necessary, and not misled into thinking that somehow the other Management Actions and Projects will achieve sustainability. In this Section (or elsewhere in this Chapter) there should be a discussion of how users will be able to achieve the necessary level of pumping reduction and still meet the water demands of their customers. This is a problem already being faced in the Seaside Subbasin, specifically with the City of Seaside's Municipal Water System. That System's only source of water is groundwater from the Seaside Subbasin. If further pumping reductions affecting that Water System were to be imposed, it would be unable to supply its customers water needs.	Text described this type of allocation structure, not the current conditions of the Corral. However, to address the comment text has been edited to say "To reduce pumping to meet the sustainable yield, all users would reduce water usage by the same percentage, except for de minimis users." Even though this is a preferred method to reach sustainability, since it is only one of the options for reaching sustainability, this is not the place to discuss the necessity of pumping reductions. A section has been added to the end of Chapter 9 that discusses project scenarios with modeling to assess the need to meet sustainable yield requirements for the Subbasin. Within this section, the following text has been added that specifically addresses this comment: "This project scenario shows that even if all pumping were replaced with alternative supplies and pumping was eliminated, the Corral de Tierra Area would still need recharge projects to reach sustainability."
13. Section 9.4.8 (page 9-65) – In the bottom para on this page it states in part "If the sustainable yield is lower than current extraction…". Earlier chapters in this GSP have clearly shown that current extractions exceed the estimated sustainable yield. So it is not "if" the sustainable yield is lower than current extraction. This sentence should be rewritten to correct this misstatement, and to not leave the reader with the impression that pumping reductions may not be necessary.	See response to Comment 12.
14. Section 9.4.8.2 (page 9-66) – The second para in this Section states that the network of monitoring wells is monitored by MCWRA. The Seaside Basin also monitors wells which my earlier comments (on Chapter 8) recommended be included in the monitoring well network for the Corral de Tierra Subbasin. Language should be added here to point this out.	MCWD GSA and SVBGSA will include monitoring data from Seaside Subbasin in the future annual reporting as appropriate. Since similar language has been added to Chapter 8, the GSAs intend to focus on Monterey Subbasin in Chapter 9.

15. Section 9.4.8.8 (page 9-67) – The word "Subbasin" is missing after the word "Monterey" in the first sentence of the para at the bottom of this page.	Update has been made.
16. Section 9.4.9 (page 9-68) – I commented at one of the earlier GSP Committee meetings that any reduction in flows in any of the creeks in the Corral de Tierra Subbasin that flow westward toward the Seaside Subbasin might reduce the natural replenishment of the Seaside Subbasin. This needs to be pointed out in this Section, and that a hydrogeological evaluation of the impacts of any such projects be prepared to determine if such reductions would adversely impact the Seaside Subbasin.	There is currently no knowledge of westward flowing creeks from the Corral de Tierra Area towards the Laguna Seca area. The Canyon Del Rey watershed overlaps small portions of the western edge of the Corral de Tierra area, however previous reports indicate the majority of the runoff that may occur in this watershed come from the southern boundary of the watershed, south of Highway 68. Additionally, previous reports indicate this watershed has high infiltration of precipitation due to soils composition. During implementation, as data are collected, more analysis will be included to determine surface water relationships between the Corral de Tierra Area and the Laguna Seca area.
17. Section 9.4.11 (page 9-78) – The second sentence in this Section on this page states in part "This water will be disinfected tertiary levels…". It would be clearer and more correctly stated that "This water will be treated to a tertiary level…".	Update has been made.
18. Section 9.5.6 (page 9-102) – The last sentence in the first para on this page mentions effects on groundwater levels in the Monterey Subbasin. Wording should be added to this sentence that effects on groundwater levels in the adjacent Seaside Subbasin should also be evaluated using this model.	Text was updated to "It is anticipated that this model may be expanded to include the coastal area of the 180/400 Foot Subbasin and will aid in evaluating the potential effects of regional projects on seawater intrusion and groundwater levels in the Monterey Subbasin and adjacent subbasins including Seaside and 180/400 Foot Aquifer Subbasins."

19. Section 9.5.7 (page 9-103) – This Section includes a statement that "SGMA does not allow metering of de minimis well users…". SGMA Section 5202 states that the requirement to file an annual report of groundwater extraction does not apply to de minimis extractors. It says nothing about "not allowing metering", nor does it say anything that would prevent a jurisdiction, such as Monterey County or the Monterey County Water Resources Agency, from imposing such a reporting requirement separate from the requirements of SGMA. This language should be corrected to more accurately state what SGMA says. Section 10730(a) of SGMA states in part "A groundwater sustainability agency shall not impose a fee…on a de minimis extractor unless the agency has regulated the users pursuant to this part." It is not clear to me what "regulated the users pursuant to this part" means. It would be good to have a legal review made of the issue of imposing a requirement for de minimis extractors to file annual extraction reports to see if such reporting could be required and not be in conflict with SGMA. This could be very helpful in managing the Subbasin, since there are so many de minimis extractors.	~~The SVBGSA will solicit further legal advice early during GSP implementation and potentially partner with MCWRA and/or the County on addressing *de minimis* extraction.~~ A GSA may not require de minimis users (as defined) to meter or otherwise report annual extraction data. Other public agencies such as the County or Water Resources Agency may have such authority. SGMA allows a GSA to implement regulations to achieve sustainability, including the regulation of extractions, even from de minimis users. If the GSA implements such regulations applicable to de minimis users, it can charge a fee to the de minimis user if the fee is imposed as required by SGMA. The SVBGSA will consult with the County and the Water Resources Agency on addressing the issue of reporting by de minimis users, as they each may have such authority.

Comments Provided on 6 September 2021

Draft Chapter 6 – Comments from Seaside Basin Watermaster 9-6-21

Comments	Responses
1. Section 6 – Just above the bullet list on this page it states there are Three budget time periods, however the chart below the bullet list shows Four time periods. I did not see the value of showing the "Historical Model" bar in the chart since it seemed like only the 15-Year Historical bar was used. Also, I did not understand footnote number 2 on this page – please clarify what is meant by a "five-year equilibration period".	Please see the footnote below the bar chart for details. The five-year equilibration period (WY 1998-2003) allows the model to stabilize from initial conditions, prior to simulations during the 15-year historical period (WY 2004-2018). Please see Section 6.1 for the model calibration discussion.
2. Section 6.1 – The last bullet on this page discusses pumping from various wells. Wouldn't pumping from wells in the Seaside Basin affect ground water levels, and therefore need to be included in the MBGWFM due to the hydrogeologic interconnection between the Seaside Basin and both subareas of the Monterey Subbasin?	The current MBGWFM does not expand to the Seaside Subbasin; however, the boundary condition should have captured the effects of pumping in the Seaside Subbasin. MCWD will continue to with the Seaside Basin to further rectify the discrepancies between the two models in a future update to the MBGWFM, and/or to integrate both models into a regional model that covers both subbasins.
3. Section 6.1.1 – Same comment as on page 6-10 (Comment 2) pertaining to <u>Pumping Records</u>.	See response in Comment 2.
4. Section 6.2.2 – Same comment as on page 6-10 (Comment 2) pertaining to <u>Groundwater pumping</u>.	See response in Comment 2.
5. Section 6.3.3 – Don't understand why there are three bullets shown on this page with each bullet saying the same thing.	The three "analog periods" were created from 20 years-worth of historical information (WY 1999-2018), which maintained the long-term average hydrologic conditions on average. The first two periods, analog years 1-20 and 21-40, repeats hydrology of actual years 1999-2018; while the third period, analog years 41-50, repeats hydrology of the 10-year period 1999-2008.
6. Table 6-1 – Footnote (a) would be good to add to each of the tables in the Appendix in which water budgets are shown, to clarify what a positive or negative value means.	Updated

7. Figures 6-4 to 6-6, and Tables 6-4, 6-6, and 6-7 – Under future anticipated pumping conditions, the outflow from the Corral de Tierra subarea into the Laguna Seca Subarea of the Seaside Subbasin shown in these Figures and discussed in these Sections is projected to start reversing in the future as groundwater levels in the Corral de Tierra continue to fall. The reversal would result in water starting to flow out of the Laguna Seca Subarea and into the Corral de Tierra subarea. This was the finding of Watermaster modeling performed by HydroMetrics in 2016 in their Technical Memorandum dated January 27, 2016 titled "Groundwater Flow Divides within and East of the Laguna Seca Subarea." That report is contained in Attachment 12 of the Watermaster's 2016 Annual Report which can be viewed and downloaded at this URL: [http://www.seasidebasinwatermaster.org/Other/2016%20 Final%20Annual%20Report%2012-8-16a.pdf](http://www.seasidebasinwatermaster.org/Other/2016%20Final%20Annual%20Report%2012-8-16a.pdf). This should be discussed and addressed in Chapter 6 of the GSP.	Seaside, MCWDGSA, and SVBGSA modelers have begun collaborating to collaborate to improve the understanding of the relationship between Laguna Seca and the Corral de Tierra. The modeling performed by HydroMetrics in 2016 has a different set of assumptions and boundary conditions than the modeling performed by EKI. The MBGWFM does not show that the groundwater flow will reverse and flow out of the Laguna Seca area under future conditions. These models will be revised through a series of meetings with the modelers to better align assumptions, boundary conditions, and predictions over time.
8. Section 6.4.1.1.2 – In the 2nd para of this Section the typo "and" should be corrected to read "an."	Updated
9. Section 6.4.1.1.3 – In the upper bullet of the group of bullets in the center of this page it mentions an inflow from the Seaside Subbasin into the Monterey Subbasin, the majority of which is between the Seaside Subbasin and the Marina-Ord subarea of the Monterey Subbasin. There is a flow divide between that subarea and the Seaside Subbasin which I understood would prevent this. That should be discussed in this Section. This comment also pertains to Table 6-2, Also in this same para the typo "and" should be corrected to read "an."	The magnitude of inflow from the Seaside Subbasin into the Monterey Subbasin is consistent with prior water budgets prepared for the Seaside Subbasin, such as those presented in CH2M (2004) and Yates (2005). As discussed in 6.2.2, this inflow is calculated by the MBGWFM based on modeled groundwater head outputs at the Seaside boundary from the historical Seaside Basin Groundwater Flow Model (Hydrometrics 2009 & 2018) and lateral hydraulic conductivities at boundary cells. Typo had been corrected.

10. Section 6.4.3.1.2 – In this Section there are typos in the 3rd sentence which does not make sense. The statement in this Section regarding a significant amount of pumping data being missing because *de minimis* pumpers do not have to report pumping data provides support to my comment made on the Comment website and at the August 25th GSP Committee meeting that a legal look should be made into whether/how *de minimis* pumping reporting could be required.	The SVBGSA will partner with MCWRA to develop a plan to address *de minimis* extraction.
11. Section 6.5.2.2 – An explanation is warranted regarding the statement in this Section that "No project scenarios were run for the Corral de Tierra area at this time."	Since this comment, a 'project' scenario was run for the Corral de Tierra and added to Section 9.9, as it relates to projects and management actions.
12. Section 6.5.3 – The top para on this page discusses the potential for expansion of the seawater intrusion front in the Monterey Subbasin. This should be considered a significant concern and should be discussed in the Plan Implementation Chapter 10.	This paragraph discusses that change in the magnitude or direction of inter-basin flows could cause expansion of the seawater intrusion front in the Monterey Subbasin. Therefore, MCWD GSA has established a set of wells to monitor the protective groundwater gradient as described in Section 7.3.3. Section 10.2.4.2 states "Spatial data gaps within the seawater intrusion monitoring network in the Marina-Ord Area are located in the same general area as the data gaps identified within the groundwater elevation network. Therefore, the aforementioned new monitoring wells to be constructed in the Marina-Ord Area will be monitored for both groundwater elevation and seawater intrusion." The GSAs plan to monitor seawater intrusion closely by installing monitoring wells, gathering water quality data, and completing an annual report.
13. Section 6.5.5 – In the 1st sentence of the 2nd para of this Section the word "scenario" should be inserted after the word "project."	Updated.

14. Section 6.6.1 – I concur with the discussion on this page that "…simply reducing pumping to within sustainable yield is not proof of sustainability under SGMA, which must be demonstrated by avoiding undesirable results for all 6 sustainability indicators." I also agree with the statement at the bottom of this page that "…confirmation that these quantities could be extracted without inducing seawater intrusion has to be verified." To augment this discussion it would be good to add some language explaining that in order to prevent inducing seawater intrusion, ground water levels near the coast need to be at or above protective elevations. This may necessitate replenishing a basin in order to raise its groundwater levels, not just pumping at the estimated sustainable yield level to stabilize groundwater levels if they would still be below sea level.	The groundwater elevation MTs are set at historic groundwater elevation in the intruded 180-Foot and 400-Foot Aquifers as there has been no observed expansion of the seawater intrusion front over the historical period. This criteria is consistent with the Minimum Thresholds established for the 180/400-Foot Aquifer Subbasin, where a seawater intrusion barrier is considered. In the absence of an injection/extraction barrier, groundwater elevation may need to raise to seawater protective levels to stop further seawater intrusion and meet Measurable Thresholds for seawater intrusion. The basin GSAs will continue to monitor seawater intrusion and fill data gaps in the seawater intrusion monitoring network. In the event that monitoring indicates expansion of the seawater intrusion front, local projects such as IPR could be implemented to raise water levels in selected areas through injection of recycled water (i.e., IPR project) or in lieu recharge as identified in Chapter 9. In the event that monitoring data indicate rapid vertical downward migration of the seawater intrusion front, SMCs may be adjusted to address this issue. Annual and 5 year reports required under SGMA will be used to identify such changes if required.

15. Section 6.6.2 – I concur with the discussion on this page that "…simply reducing pumping to within sustainable yield is not proof of sustainability under SGMA, which must be demonstrated by avoiding undesirable results for all 6 sustainability indicators." I also agree with the statement at the bottom of this page that "Further analysis is necessary to refine estimates of where pumping should be reduced to address all sustainability indicators." To augment this discussion it would be good to add some language explaining that in order to enable the adjacent Seaside Subbasin (specifically the Laguna Seca subarea thereof) to achieve sustainability it will be necessary for ground water levels in the Corral de Tierra subarea to be raised, not just stabilized at 2008 levels. This would necessitate replenishing that subarea of the Monterey Subbasin in order to raise its groundwater levels, not just pumping at the estimated sustainable yield level to stabilize groundwater levels.	The long-term sustainability goal is to raise water levels and maintain them to both meet the objectives of the GSP as well as not adversely impact the Seaside Basin. These objectives will be met through a combination of projects and management actions described in Chapter 9.
16. Section 6.7 (Page 6-64) – My comment on page 6-33 also pertains to the discussion in the top bulleted para on this page. Comment on Page 6-33: "In this Section there are typos in the 3rd sentence which does not make sense. The statement in this Section regarding a significant amount of pumping data being missing because *de minimis* pumpers do not have to report pumping data provides support to my comment made on the Comment website and at the August 25th GSP Committee meeting that a legal look should be made into whether/how *de minimis* pumping reporting could be required."	See response to Comment 10.
17. Section 6.7 (Page 6-64) – With regard to the language in the 2nd bulleted para on this page, my understanding is that the Deep Aquifer is not present in the Seaside Subbasin.	The Deep Aquifers are not in the Seaside Basin, but the geologic formations that comprise the Deep Aquifers are present in the Seaside Basin. This bulleted paragraph highlights the differences in the conceptualization of principal aquifers in the Seaside model versus the MBGWFM.

18. Section 6.7 (Page 6-65) – In the next-to-last bulleted para on this page there is mention of monitoring network expansion in the Corral de Tierra subarea. In previous comments I have asked that the monitoring network be expanded to include some of the near-boundary monitoring wells in the Laguna Seca subarea of the Seaside Subbasin. Including those wells should be mentioned in this para.	Laguna Seca wells will be included in the monitoring network, with revised maps being developed post-DWR submittal. They will not be included in the RMS network.

Draft Chapter 10 – Comments from Seaside Basin Watermaster 9-6-21

Comments	Responses
1. Section 10.2 (Page 10-5) – In the 3rd sentence of the top para on page 10-5 the wording "as well" is repeated. In the 3rd para there is discussion of data collection by other agencies. The Seaside Basin Watermaster should also be listed as it collects monitoring well data that will be useful.	These two comments were addressed.
2. Section 10.2.2 (Page 10-6) – In the 2nd para of this Section there is discussion of data collection by other agencies. MPWMD and the Seaside Basin Watermaster should also be listed as they collect monitoring well data that will be useful.	Updated.
3. Section 10.2.4.5 – There is the statement in this Section that "…monitoring wells outside the Monterey Subbasin cannot be included in the Subbasin's monitoring well network…" I believe thisis an incorrect statement. I could find no such prohibition anywhere in SGMA. Also in this Section there is discussion regarding monitoring well FO-9 shallow. That language should be edited to read as follows: *Within the Seaside Subbasin, ~~the Watermaster is proposing to replace~~ monitoring well FO-09 Shallow where casing leakage has been identified is likely to be replaced. The monitoring well is located nearthe coastline just south of the Seaside-Monterey Subbasin boundary. It is used to (a) monitor groundwater levels relative to seawater intrusion protective groundwater elevations and (b) monitor ~~chloride concentrations~~ water quality in groundwater to detect occurrences of seawater intrusion into both Subbasins*	Per the DWR document (Draft Best management Practices for the Sustainable Management of Groundwater – Sustainable Management Criteria Dated November 2017), "Representative monitoring sites are a subset of a basin's complete monitoring network, where minimum thresholds, measurable objectives, and interim milestones are set." Thus, only wells within the Monterey Subbasins are selected for RMS wells. This section has been edited accordingly.
4. Section 10.2.5 (Page 10-10) – In the next-to-last bullet on this page the word "the" should be inserted before the word "boundary."	Updated
5. Section 10.3 (Page 10-11) – In the first para of this Section "the Seaside Basin Watermaster" should be inserted just before the word "other."	Rephrased it to state "In addition, the basin GSAs have and will continue to coordinate with other entities (including the Seaside Basin Watermaster) on water management efforts that involve the larger Salinas Valley Basin."

6. Section 10.5 (Page 10-12) – At the end of the 3rd para in this Section the words "and the Seaside Basin Watermaster's Seaside Basin Model" should be added. In the 4th para in this Section please clarify what is meant by the words "standing up" as it pertains to the Dry Well Notification System.	Updated. It is a typo which has been corrected.
7. Table 10-1 – My comment on page 10-9 about including monitoring wells outside of the Monterey Subbasin seems to be addressed in the line-item titled "Voluntary monitoring of non-RMS wells." Please clarify in the text if that is correct.	This item, as described in the "Assumptions" column, primarily includes specific conductivity monitoring of non-RMS monitoring wells within the Subbasin. However, as described in Section 10.2.4.5, the Seaside monitoring wells will be included in the monitoring network and will inform future SGMA-related analyses.
8. Table 10-1 – In the line-item titled "Improving Monitoring Networks" the same language that is contained in Table 10-2 on page 10-21 "Add Seaside Subbasin wells to monitoring GWL network" should be added.	See response to Comment 7.
9. Figure 10-1 – Is there a statutory allowance of 2 years for DWR to review GSPs? This seems inordinately long and could cause problems for the GSAs if DWR took that look to provide its feedback.	Yes, the DWR has two years to review the submitted GSP. *GSP Regulations Sec 355.2(e) The Department shall evaluate a Plan within two years of its submittal date and issue a written assessment of the Plan, which shall be posted on the Department's website.*

Appendix 2-F

SVBGSA Subbasin Committee Comment Table

COMMENTS RECEIVED FROM JULY 7, 2020 to December 10, 2021										
Number	**Chapter**	**Table**	**Page**	**Figure**	**Comment Type**	**Date**	**Commenter**	**Comment**	**Response**	**Action**
1					Meeting	7/7/2020	Bob Jaques	Will you please say something about Seaside Subbasin?	Emily: Yes, the other 6 generally fall under the SVBGSA jurisdiction. Seaside does not because it is adjudicated.	Meeting comment - noted.
2					Meeting	7/7/2020	Bob Jaques	When do you anticipate releasing the initial set of draft chapters?	Emily: As soon as we're ready. We are reviewing and will release them as soon as humanly possible.	Meeting comment - noted.
3					Meeting	7/7/2020	Janet Brennan	Will those elements you mention be a part of each GSP? So we will be looking to do something similar as the 180/400?	Emily: Yes	Meeting comment - noted.
4					Meeting	7/7/2020	Sarah Hardgrave	With respect to the chapters and topics, given that we're coordinating with MCWD, will there be a single description of the plan area and the HCM? Or will there be two separate descriptions?	Emily: I will defer to Derrik Williams. We are still figuring out how to put this together. We will end up with one GSP, but how the chapters will look is yet to be determined. DW: As Emily points out, we will write one GSP, so the description will be for one basin. If we decide on management areas, there will be those descriptions. However, these additional descriptions need to add up to one basin. I went over the regulations this morning, and	Meeting comment - noted.
5					Meeting	7/7/2020	Sarah Hardgrave	Patrick will you have separate stakeholder engagement outreach? Will we be invited?	Patrick Breen: We are planning on having separate stakeholder meetings for the Marina-Ord area, and we will send out notice soon. Patrick: It will be a separate group, but it will be a public meeting so everyone here is welcome to join. We are working it out this month. Donna: We are working under a framework agreement. We have our own process, but we are very much coordinating and working under the framework agreement.	Meeting comment - noted.
6					Meeting	7/7/2020	Sarah Hardgrave	Is that framework agreement posted?	We can send it to the subcommittee	Meeting comment - noted.
7					Meeting	7/7/2020	John Farrow	I was interested in hearing about the coordination with MCWD. I think the framework agreement should be posted for the public to view.		Meeting comment - noted.
8					Meeting	7/7/2020	Bob Jaques	I think it would be important to include the Seaside Model developed by HydroMetrics, in addition to the SVIHM and SVOM listed.		Meeting comment - noted.
9					Meeting	7/7/2020	Sarah Hardgrave	Are these workshops meant to be for all subbasins?	Emily: Yes they are. Bob, we have talked about your suggestion. We are planning for the Monterey Subbasin to have a specific Seaside meeting, possibly early in the process (Aug, Sept). Could we cover the model in that Bob: I think that's a good idea, and I'd like to make a presentation. I spoke with M&A, September is looking good and I think it would fit in well with GSP development. Sarah H: I think that's a good plan.	Meeting comment - noted.
10					Meeting	7/7/2020	Jon Farrow	First, want to make sure there's an opportunity for comment on the drafts; I assume you will proceed similar to 180/400 and post the chapters on the website. 2nd, I'm interested in how you'll coordinate with 180/400 subbasin. Coordination with projects and water charges framework. Not clear to me how that coordination will work out, especially with the integrated plan. Third, you mentioned there would be an opportunity for this committee to provide steering on the drafts before the drafts are written. The SMCs presentation describes options, but how to pick which option will be more suitable. I see the recommendations are not planned for September, but you won't in fact be seeking guidance or in the workshop later this month, on how to focus on one option or another. Those options need to be informed by data and information which is not available yet.	Emily: As the draft chapters are available, they will be included in the agenda packets and posted on the website. They will be very accessible. To the third question about when we will seek input, it's scheduled for September, but we can push it depending on if we're ready. Today is mainly Donna: We will be tracking all the subbasin planning efforts against the 180/400. The 180/400 is kind of the foundational GSP, and was required by the state to be completed first due to its condition. The ISP committee will be looking at the technical aspects of each GSP to see how they will work. The SWIG had its first meeting this month, filled with technical experts and various agencies and groups. The SWIG is looking at developing agreement and how to define SWI and conditions. As we move through the planning process we will look at the integrative parts as well.	Meeting comment - noted.

11					Meeting	7/7/2020	Janet Brennan	It was recommended that we use a consensus process to make decisions for the GSP plans. This is a different process than what we used in the 180/400. Can you explain this?	Emily: This process of finding consensus is what Gary intended as well, since I used his slides. What we'll be asking for is strategic direction. The board will look at accepting the plan. We need strategic direction from you.	Meeting comment - noted.
12					Meeting	7/7/2020	Sarah Hardgrave	You did identify we would be making motions and taking votes. There is a goal to achieve consensus, but we will be making motions and taking votes also?	Emily: Exactly. If there is a wide variety of opinions, we'll document that too.	Meeting comment - noted.
13					Meeting	7/7/2020	Janet Brennan	Will each GSP go to the board for approval?	Emily: Our plan is for the comments we receive to be incorporated into the drafts and then go to the board.	Meeting comment - noted.
14					Meeting	7/7/2020	Sarah Hardgrave	With the MCWD agreement, will they have their own committee member for the ISP?	Donna: For the ISP Committee, we would have one represenative from this subbasin committee. The goal is to have one representative from each subbasin. Emily: This is the next agenda item. Within the framework agreement, there are several subcommittees; our committee here, the MCWD committee, a technical committee, a steering committee which will include the GSA manager from each GSA and will provide another layer of alignment to create one GSP. We're looking for one person on this committee to volunteer to be on the ISP and one	Meeting comment - noted.
15					Meeting	7/7/2020	John Farrow	I have a question about how the technical and steering committees relate to the ISP.	Emily: Technical committee is really to do the work, and make sure the GSP is done in a coordinated fashion with the nuts and bolts of the plan. The steering committee will (as defined in framework agreement) review daft chapters and elevate issues to advisory committee. Any issues to be worked out between the two GSAs will happen here. Donna: To clarify, the genesis of the technical and steering committees really come out of 2018 framework agreement. As each GSA does its work, we wanted to be clear and create as much coordination and communication as	Meeting comment - noted.
16					Meeting	7/7/2020	Gary Peterson	As we think about techical committee, M&A and EKI are meeting to work through technical issues, and the plan is aligned on a technical level. The framework agreement is now 3 years and one GSP old; may be revised. We didn't know what it all would look like when we started it. We can adjust as we go.		Meeting comment - noted.
17					Meeting	7/7/2020	Janet Brennan	I don't understand the hierarchy. Do technical and steering committees provide input? What decisions will these committees be making in relation to how our committee makes recommendations.	Donna: The BOD ultimately has approval over the plan. The technical committee works on technical information, will run through our committee. The technical committee work will come through some of the workshops, and we will discuss these items with you also. Steering committee is related to utilizing BOD member and general managers from each GSA and will keep BOD updated, utilized in slightly different way. ISP Planning committee, fairly clear.	Meeting comment - noted.
18					Meeting	7/7/2020	Janet Brennan	Good overview of recent history. Going back a little bit, seems the Monterey Subbasin used to be a part of the 180/400 subbasin where there is a 3,500 AFY SWI. Why is this subbasin not a part of the 180/400? Why is this subbasin not critically over drafted?	Gary: This is a DWR question. The subbasin determinations were set by DWR.	Meeting comment - noted.
19					Meeting	7/7/2020	Janet Brennan	As part of our subbasin planning, will we address the Deep Aquifer which is a part of this subbasin?	Gary: I would say SWIG will look at that, and it includes City of Marina and MCWD representatives and Bob Jaques, seaside watermaster	Meeting comment - noted.
20					Meeting	7/7/2020	Janet Brennan	Does the Monterey subbasin include all of the Corral de Tierra subbasin?	Leslie Girard: Yes, DWR made corrections to include all of Corral de Tierra.	Meeting comment - noted.
21					Meeting	7/7/2020	Janet Brennan	It seems like there are two distinct subbasin with very different water issues. How are we going to come up with single criteria for the subbasin? Are we going to come up with separate criteria for separate areas?	DW: The criteria, depends on which you're talking about, will be set differently for different areas. However, they must tell a single integrated story. The can be separate, but have to be coordinated. Storage is an example of a single basin criteria. One area cannot prevent another area from	Meeting comment - noted.

22					Meeting	7/7/2020	Janet Brennan	That suggests that the area with the greatest problem will be the one that sets the standard.	DW: Not necessarily. It comes down to negotiation between the areas. What is significant and unreasonable in each area. What is a future condition we can reasonably	Meeting comment - noted.
23					Meeting	7/7/2020	Margaret Anne	Very impressed with the job you've all been doing.	Comment received	Meeting comment - noted.
24					Meeting	7/7/2020	John Farrow	Not clear if there will be a single GSP to cover both areas. Will it be drafted by this committee or MCWD or the BOD? Do all GSAs need to approve the GSP? Are the jurisdictional areas where they have annexed? Or where there services areas are? Seems to have been given large area. I'm wondering if MCWD representative sought the boundary changes and not DWR, could the MCWD representative give more background? Seems like it has created a complex problem with coordination and the SWIG.	Gary: [map] the green areas are the expanded annexed areas. On left, corral de tierra area. The Ord area in the Leslie Girard: Under SGMA the jurisdictional boundaries of MCWD are its boundaries. That means a GSA cannot impose fees on areas outside of those boundaries. They are service provider for much of the area outside of their jurisdictional boundary. They cannot impose a fee outside of their jurisdictional boundary. DWR allowed for management outside their jurisdictional boundary (MCWD) Patrick Breen: Have nothing to add. We will work together as Leslie Girard described.	Meeting comment - noted.
25					Meeting	7/7/2020	Sarah Hardgrave	Special request for special meeting to have discussion about the edges of the Monterey subbasin. Especially with respect to Laguna Seca area and impact to Seaside, and how SMC apply to adjacent subbasins and coordination actions with neighboring subbasins, like 180/400 subbasin.	DW: Happy to add that in.	Meeting comment - noted.
26					Special Meeting	7/17/2020	Sarah Hardgrave	Is subsidence data reflecting only groundwater impacts, or other sources of change?	DW: Yes. Possibly seeing subsidence due to faults in the area. InSAR data is satellite data, if you till field and move land surface, will show up on InSAR. We will add caveats to text, and explain must be due to lowering groundwater	Meeting comment - noted.
27					Special Meeting	7/17/2020	Janet Brennan	It seems like it would be helpful to have the same subsidence [SMC] as the 180/400.	DW: Great point, SGMA requires us to not cause adverse effects to our neighbors. If we say, can allow 8in drop and they say 0in drop, they can say 'you are preventing us from reaching sustainability.' This is my opinion, if subsidence is not a problem for you, choose 'subsidence is 0 subsidence. There's a right answer and a wrong answer. Yes the	Meeting comment - noted.
28					Special Meeting	7/17/2020	Janet Brennan	Lacking data, do we have the possibility of simulation?	DW: I suppose the question is really, how accurate are the simulations? They will probably have used that USGS gage for part of the simulation. Make assumptions that the data is 'good enough'. There will be uncertainty, and we can talk about that uncertainty. We can incorporate the uncertainty by including conservative approaches to depletion, or	Meeting comment - noted.
29					Special Meeting	7/17/2020	Janet Brennan	Doesn't GDE and ISW require monitoring?	DW: SGMA discusses the rate of depletion, not the flow in a stream or level in a lake. We're measuring our *impact* on SW bodies through GW management.	Meeting comment - noted.
30					Special Meeting	7/17/2020	Janet Brennan	I don't understand how you can do that without being able to measure your impact.	DW: I'll go over more what we did in the 180/400, and talk about some recommended approaches. What we're looking at, historically, has our pumping cause an undesirable effect on the SW? The easiest one to understand is, is there a flow requirement for fish in the river? Has the current rate of pumping caused you to fail to meet that flow requirement? This is about meeting legal obligations with current rates on depletion. This is not the same as knowing what the flow is	Meeting comment - noted.
31					Special Meeting	7/17/2020	Sarah Hardgrave	Regarding the model, how it is designed, especially with respect to the relationship between SW and GW. I think a lot of these are intermittent streams which flow during the rainy season. Does the model account for that kind of input from streamflows?	DW: Yes it does. The model has a series of stream inputs. Since it is a GW model, the stream inputs are a little rougher than if this was a stream model.	Meeting comment - noted.
32					Special Meeting	7/17/2020	Sarah Hardgrave	Does it estimate the quantities for different size storm events?	DW: Not in the GW model, but there is a watershed model that is able to estimate runoff. There is a tool that can feed into this and estimate runoff from storms.	Meeting comment - noted.

33					Special Meeting	7/17/2020	Sarah Hardgrave	Can you explain how much water is expected to be in a stream?	DW: For the calibrated period, a period of time where we have data, those data will be in the model. We can say, ok it's doing a reasonable job of estimating the amount of water in the stream. So when they simulate future scenarios, they will be able to say if it's a reasonable The question is, how important is El Toro creek with connection to GW. This is something we'll be looking for feedback on. Is this really driving sustainability or not. We could say, current conditions are unreasonable or not? El Toro creek may be a good one to look at due to less	Meeting comment - noted.
34					Special Meeting	7/17/2020	Margaret Ann Copernall	Are going to consider the impact on Sea Water Rise?	DW: I will get into it in 3 metrics. Sea Level Rise is an interesting question, and I'll come back to that with sea water intrusion.	Meeting comment - noted.
35					Special Meeting	7/17/2020	Harold Wolgamott	How are we going to write a caveat? This is depletion of GW level. If there is no GW level, we can't control precipitation, how to we write a caveat to explain that?	DW: I don't know if we do write caveats for GW levels? One of the questions that come up is about when there is a drought? The point of these metrics is we are managing a 50yr plan, long-term averages, towards an objective. We try to account for droughts. DWR understands there will be droughts, and people will fall off their plans. We can write a	Meeting comment - noted.
36					Special Meeting	7/17/2020	Bab Jaques	You mention if there's a lack of data on GW levels in the Corral area, ideally, even before you establish the SMC, you would want to obtain more data. I don't know if there's time during GSP development to do that, or if you will be using Seaside Model data. What would be the most effective way to handle that?	DW: You're getting to an important distinction. If we say GW levels in 2015 are significant and unreasonable. We can look at what wells we have, set our SMCs there, then say, we don't have enough wells. During implementation, we can look for more wells. Before we have all data, we will set what we consider significant and unreasonable. We can find	Meeting comment - noted.
37					Special Meeting	7/17/2020	Bob Jaques	I understand the GSA received grant money to develop GSP. Can some of that money be used for looking for data?	DW: Ms. Gardner would know more Emily: You do have to have a good grasp on where your data gaps occur so you can provide the missing information. You don't have to have submitted the GSP, but far enough in the process to know where you don't have data	Meeting comment - noted.
38					Special Meeting	7/17/2020	Janet Brennan	I assume, based on the relationship to domestic wells, 1ft above 2015 levels, accounts for these criteria. They are not mutually exclusive. The GDEs, the domestic well issue, we should be able to address these with one threshold. The relationship of GW levels 1ft above the 2015 levels, whether or not that is consistent with Seawater Intrustion concerns.	DW: two good questions. First, you're correct, these options are not mutually exclusive, and you can set the SMCs that way. You can combine the ideas of GDE and groundwater levels. Second, for Seawater Intrustion, there are a couple ways to look at this. Each of the SGMA 6 sustainability indicators, we have to avoid undesirable results simultaneously. No matter what we say, we have to stop SWI. If we don't use GW elevations to stop SWI, that's ok, find another way. You can define everything separately. Some people have tried to address everything all together, stitched together with a GW elevation map. It kind of assumes you already know your projects and actions ahead of time. You have SGMA 6 undesirable results to avoid	Meeting comment - noted.
39					Special Meeting	7/17/2020	Janet Brennan	Because our approach to Seawater Intrusion is more to stop the Seawater Intrustion and not related to Groundwater levels, are they compatible?	DW: Say there are two ways to approach this: raise all GW levels and push it back, or drill wells and draw the water down. We may not want to predicate it all together. Things can change in the future. It is a complicated topic.	Meeting comment - noted.
40					Special Meeting	7/17/2020	Sarah Hardgrave	Do we have data in the Corral subarea in terms of the number of wells and kinds of wells they are? I understand domestic wells serving 1-2 households are not regulated, considered de minimis under the law. I understand these wells are the primary types of wells in the Corral area. Can the de minimis users be considered cumulative?	DW: You are correct, we have some data from the Corral area. I will point out we are missing some data from this area. It is a data gap we have to fill, and it will cause us a problem to implement a threshold. You're right, any well that serves a household, no crop, less than 2AFY, de minimis. We cannot force domestic well owners to report to pumping to the GSA or to DWR. I believe we can include them in the management structure, both individually and Marina P: We can ask Les Girard to help clarify.	Meeting comment - noted.

41	`				Special Meeting	7/17/2020	Sarah Hardgrave	Without understanding the number of wells, their depths, and how much they're pumping, it seems hard to manage. I am aware for the CALAM managed systems, Ambler and Toro, they have a water quality question with regard to arsenic.	DW: Yes good to know that it should be one of the drivers of our groundwater elevations.	Meeting comment - noted.
42					Special Meeting	7/17/2020	Janet Brennan	I assume this does not address the deep aquifer?	DW: It will include the deep aquifer. It doesn't show up in the whole basin. If we set the total pumping, it will include the Deep aquifer.	Meeting comment - noted.
43					Special Meeting	7/17/2020	Janet Brennan	How did we address it in the 180/400?	DW: We do not set this aquifer by aquifer, we address it as a whole basin. So, this will include the deep aquifer.	Meeting comment - noted.
44					Special Meeting	7/17/2020	Sarah Hardgrave	Because the SWI is occuring in the MCWD management area, what roll does this committee play in working with MCWD in setting this SMC? Will we have the opprtunity to weigh in? Will that be done solely by MCWD then negotiated?	DW: There is a good working relationship right now between the GSAs. The decision-making details have not been worked out. We will continue working coooperatively.	Meeting comment - noted.
45					Special Meeting	7/17/2020	Beverly Bean	I was under the impression that MCWD has already written a GSP and when can we see it?	DW: We are writing a single GSP with EKI.	Meeting comment - noted.
46					Special Meeting	7/17/2020	Beverly Bean	Does their GSP cover the 400 acres?	Gary: The City of Marina has written their GSP. We have read it and commented.	Meeting comment - noted.
47					Special Meeting	7/17/2020	Beverly Bean	Will we be looking at that plan as this committee moves forward? I suggest we look at it to incorporate all available input.	Gary: Derrik is well aware of the plan	Meeting comment - noted.
48					Special Meeting	7/17/2020	Beverly Bean	Is our GSP to replace the plan that Marina wrote?	Sarah: I don't believe so, that area is not in our subbasin. It's in the 180/400 DW: We are not replacing their GSP, it's not in this subbasin Gary: That plan was for an area within the 180/400 subbasin and does not impact our subbasin or GSP	Meeting comment - noted.
49					Special Meeting	7/17/2020	Tamara Voss	I'm with MCWRA, and I'm with group that creates the SWI maps. The area to the south in both the 180' and 400' SWI maps are areas where there is a large data gap. We put a gray band with black question marks to denote the missing data on our maps. I want to make sure everyone knows this is an area with missing data.		Meeting comment - noted.
50					Special Meeting	7/17/2020	Tina Wang	I want to tack on, there is a limited number of wells along the coast for data. There are the sentinel wells put in by the Seaside watermaster and we will look in to those wells.		Meeting comment - noted.
51					Special Meeting	7/17/2020	Bob Jaques	The Salinas Valley Integrated model is going to be used for modeling purposes for all Salinas Valley GSPs. How will that be coordinated with the Seaside GW Model, especially with respect to the Corral area? Do you envision any model runs during Corral GSP developmetn? Or will that be after the GSP approval and implementation.	DW: I believe the USGS has the Seaside model and will incorporate it. There may not be significant differences, but we'll have to negotiate out the differences if they are important. We will run the model during development, several simulations to work out projects and actions.	Meeting comment - noted.
52					Special Meeting	7/17/2020	Sarah Hardgrave	I observed a discussion of the Seaside watermaster and the area where there is a data gap along Fort Ord and to the Coast. I would like to have a conversation about how the monitoring network can be expanded because I don't think we can rely on existing data.		Meeting comment - noted.

53	3	Table 3-2 Existing Well Types			JotForm	7/16/2020	Heather Lukacs	We request that this table include all Monterey County regulated drinking water systems and clearly distinguish between type of drinking water system. Local small water systems serve 2-4 connections, state small water systems serve 5-14 connections, private domestic wells serve 1 connection. In addition this table should list agricultural and industrial users as separate well types. This distinction is made in Figure 3-6 but not in this Table. It is important to distinguish between well type here in order to set the stage for good water budget estimates, for the monitoring network, and throughout the plan. This data is all readily available to the public and GSA.	Submission Received	Table 3-2 was made using DWR's OSWCR database, and it does not provide information on the amount of agricultural and industrial wells so these categories have to be combined into the production category. The parcel data used to make Figure 3-6 came from Monterey Country, not from DWR so it is unlikely that these two data sources match up exactly.
58					Meeting	9/4/2020	Beverly Bean	Have any of the recommendations from the GeoSyntec been implemented?	**DW:** The Zone B8 overlay still only covers the area between the boundary between the subbasins to the Ambler Park area. This overlay says "this is an area of limited water supply". It has not been expanded per the recommendation.	Meeting comment - noted.
59					Meeting	9/4/2020	Beverly Bean	Who would be responsible for implementing those recommendations?	DW: The county planning department would be in charge of the zoning.	Meeting comment - noted.
60					Meeting	9/4/2020	Sarah Hardgrave	Who commission the GeoSyntec report?	Beverly Bean: The County Board of Supes asked for it because of problems with people's wells:	Meeting comment - noted.
61					Meeting	9/4/2020	Janet Brennan	Will the cutbacks in the Seaside Basin be met this year?	Bob Jaques: Yes, through conservation and other measures, they've been able to keep pumping below the 3,000AFY. I anticipate we'll be able to meet that.	Meeting comment - noted.
62					Meeting	9/4/2020	Janet Brennan	CalAm is required to replenish the seaside basin over time. Is that related to the cutbacks?	Bob Jaques: It pays back the basin from the 2007 decision time, by in-lieu replenishment of the basin. By further reducing their pumping by 700 AFY additional, they would pay back what they've pumped since the decision was	Meeting comment - noted.
63					Meeting	9/4/2020	Janet Brennan	I think It would be important to know what the demand is in the Corral de Tierra area. That will speak to the kind of projects we need to look at.	DW: We will address that in some upcoming discussions today.	Meeting comment - noted.
64					Meeting	9/4/2020	Sarah Hardgrave	I was involved in the early years of implementation, and have worked with Bob and Derrik. Helpful to see all the work done over time. As you've developed your modeling for the watermaster, can you distinguish the natural safe yield as determined by the court versus the true sustainable yield?	Bob Jaques: Natural safe yield is very simplistic, you look at inputs and outputs at all boundaries. If outputs exceed inputs, you're exceeding the natural safe yield. For sustainable yield, you look at the whole basin. One area can experience drawdown while the whole basin can be sustainable. Our board considered a sustainable yield analysis, but it's very costly. We're waiting to see how the GSP is developed, and then do that analysis with additional	Meeting comment - noted.
65					Meeting	9/4/2020	Sarah Hardgrave	Thank you, that is helpful to know. Another observation, the boundaries of the adjudicated area were more political than hydrogeological. The issues between the Eastern Laguna Seca area and the Corral area may be reflective of that. Maybe there isn't a physical division between the subbasins.	**Georgina King**: You're completely correct, there is no physical boundary there. Parts of the boundary were delineated by flow divides, but we all know those divides change. The boundary shown on the map was actually the incorrect boundary. The correct one was more based on the geology. But yes, you're correct the boundary is more **DW:** Yes, that flow divide was more reflective in the marina area. This corner of the basin was an extension of that line. There really is no difference between managing the Laguna Seca area and managing the Toro/Corral area.	Meeting comment - noted.

66					Meeting	9/4/2020		Subsidence SMC: Motion to accept Option 1: Any subsidence anywhere in the Subbasin is significant and unreasonable using the metric of InSAR data.	Motion was passed by Committee and will be incorporated into GSP.	This will be incorporated into GSP development as a strategic comment. See memo for further discussion.
67					Meeting	9/4/2020	Sarah Hardgrave	Re: Groundwater Storage SMC: I would assume that sustainable yield for the Corral Area would include adequate groundwater flow to the Laguna Seca area.	Abby Ostovar: Yes, through SGMA, you cannot impair your neighbor from reaching sustainability.	Meeting comment - noted.
68					Meeting	9/4/2020		Groundwater Storage SMC: Motion to accept Option 1: Pumping in excess of the sustainable yield leads to significant and unreasonable impacts.	Motion was passed by Committee and will be incorporated into GSP.	This will be incorporated into GSP development as a strategic comment. See memo for further discussion.
69					Meeting	9/4/2020		Seawater Intrusion SMC: Motion to accept Option 2. Existing SWI is significant and unreasonable, and SVBGSA chooses to improve SWI. Goal is to push back seawater intrusion.	Motion was passed by Committee and will be incorporated into GSP.	This will be incorporated into GSP development as a strategic comment. See memo for further discussion.
70					Meeting	9/4/2020	Eric Tynan	I appreciate what you're doing. What's going on in Castroville is it's within 2000 feet of our wells, and we're losing well 3. We've been taking measures, so unless we start pushing it back now, we're in a bad spot. I know it's not close to you, but I appreciate what you're doing.	comment received	Meeting comment - noted.
71					Meeting	9/4/2020	Bob Jaques	Your comment about arsenic being naturally occuring, I have friends on a CWS with arsenic levels worsening over time. They have to put in a remediation system	**DW:** These are the thresholds we're setting. When we talk about undesirable results, degraded water quality as a result of GSA actions is undesirable. In the case of the arsenic that has already been degrading over time, that wasn't caused by a direct action of the GSA, we would not be responsible **Abby Ostovar:** Even with Option 1, it doesn't prevent you from taking actions that have the additional benefit of	Meeting comment - noted.
72					Meeting	9/4/2020	Janet Brennan	My question is related to Option 3. It would appear that it would not be interferring with other agencies?	**Abby Ostovar:** . We can come back on who is responsible and for what. My understanding is that this hasn't really played out with SGMA yet. It's still unclear. **DW:** You're right, it's still not very clear. Many other places in the state are taking the "do no harm" approach. You want to work with partners, but not overstep their bounds with	Meeting comment - noted.
73					Meeting	9/4/2020	Justine Massey	We think about water quality from the perspective from individual, domestic wells. They are the least protected and regulated, but are very important to those who rely on them. I agree with comments on how GSAs engage with water quality is not very clear. However, water quality is one of the six undesirable results. We would like to encourage taking care to explore what the situation is for the domestic wells. That would mean not just using deep supply wells, but measuring what the quality is in shallow wells. We support Option 3 here, we think there is a role for GSAs to address water quality. Even if you go with Option 1, we have more sugestions such as DW mitigation program. To reiterate, we think there are many opportunities for partnerships and multi-benefit projects to mitigate the impacts.	Sarah Hardgrave: Thank you for your comments.	Meeting comment - noted.
74					Meeting	9/4/2020	Bob Jaques	On discussion to move on Option 1. I would vote no. I move for Option 3. My friends on a small water system would want to see someone try to do something. You can start with that, and revise it if you see it's not working.	comment received	Meeting comment - noted.

75					Meeting	9/4/2020	Sarah Hardgrave	That raises the question as to whether we can have split criteria for different parts of the subbasin. Arsenic issues may be more of a concern in the Corral area. Can we consider different criteria for different areas, with part of Option 3 as well?	Abby Ostovar: There is still the conversation about management areas and the whole subbasin. We haven't reached out to DWR. There is a question about different options for different aquifers as well. This may be an area to get your input now, not make a decision, but bring back	Meeting comment - noted.
76					Meeting	9/4/2020	Beverly Bean	Regarding arsenic: Different areas have different issues. I don't believe quality is the job of the GSA, it's the job of other agencies. I believe our job is to make the amount of pumping sustainable. If you get the pumping under control, many quality issues resolve themselves.	Comment received	Meeting comment - noted.
77					Meeting	9/4/2020	Janet Brennan	Actions as wtihin other areas, like pumping, will indirectly benefit quality. I still support Option 1.	Comment received	Meeting comment - noted.
78					Meeting	9/4/2020	Bob Jaques	My experience with regulatory agencies is, they will notify you of the problem but they will not take over and solve it for you.	Comment received	Meeting comment - noted.
79					Meeting	9/4/2020	Sarah Hardgrave	One final comment, whether overpumping is exacerbating quality issues needs to continue to be discussed.	**Abby Ostovar:** Yes, this gives us direction on how to begin writing the GSP, and how to engage with MCWD. We will certainly continue to have these discussions. **Donna Meyer:** We have initiated conversations with Monterey County Health and we see them as a valuable partner in this. We are learning more about how we can develop the responsibilities and relationship. We're also reaching out to regional board and other agencies to learn	Meeting comment - noted.
80					Meeting	9/4/2020		Water Quality SMC: Motion to accept Option 1: Degraded groundwater quality resulting from direct GSA actions is significant and unreasonable as measured by the number of supply wells.	Motion was passed by Committee and will be incorporated into GSP.	This will be incorporated into GSP development as a strategic comment. See memo for further discussion.
81					Meeting	9/4/2020	Janet Brennan	Re: Groundwater Levels SMC: The relationship of this threshold with SWI, comments were made for the 180/400 that setting it at the 2015 level was not consistent with the requirement to address SWI. Maybe it's not as important in this subbasin. Can we have a discussion about that here?	**DW:** Janet is correct. And here, we are setting SMCs mainly for the Corral area. In the 180/400 we said we will set SMCs for SWI and we would meet them. What we didn't do is incorporate all our SMCs into GW levels. We said we have 6 different things to meet at the same time. What happens is that one of the SMCs will become the dominant driver of how we manage the GW system. They don't have to absolutely integrate. For example if we say we want to stop SWI by injecting water. Our GW levels will rise above the Min Thresh and it meets the requirements. If we say we want to stop SWI by pumping SWI out, our GW levels will drop and we will have to make some adjustments. At this point, we probably don't want to integrate the objectives	Meeting comment - noted.
82					Meeting	9/4/2020	Sarah Hardgrave	I did have some thoughts about data needs for the Corral area and GW levels, and what makes the subbasin unique in terms of the proportional share of pumping for omestic purposes versus ag purposes. Looking at what the 180/400 selected, their water demands and purpose are different than in this area. I think our committee primarily selecting an emphasis on shallow domestic wells is reflective of the primary users in this area. I would like more information on the amount of domestic wells and regulated systems compared to the amount of pumping for ag purposes. I see some reason for having different criteria on the GW levels.	Abby Ostovar: Again, this is an iterative process. Other subbasins also came against this where they need more information. We can get initial direction and still come back with more information.	Meeting comment - noted.
83					Meeting	9/4/2020	Janet Brennan	Groundwater Level SMC: Motion to accept Option 4: Impacting shallow, domestic wells is signficant and unreasonable.	Motion was passed by Committee and will be incorporated into GSP.	This will be incorporated into GSP development as a strategic comment. See memo for further discussion.

84					Meeting	9/4/2020	Beverly Bean	Depletion of Interconnected Surface Water SMC: Motion to accept Option 3: The current rate of surface water depletion is not unreasonable (although it may be significant).	Motion was passed by Committee and will be incorporated into GSP.	This will be incorporated into GSP development as a strategic comment. See memo for further discussion.
85					Meeting	9/4/2020	Sarah Hardgrave	Re: Projects and Management Actions: Pumping reductions question: If domestic wells are de minimus users under SGMA, what ability do we have to do pumping restrictions or a water charges framework?	DW: We will include an analysis of that in our data packet. One question we've talked about internally, we don't have reg authority to meter wells, can there be a voluntary system? We'll look into those options as well.	Meeting comment - noted.
86					Meeting	9/4/2020	Janet Brennan	Seems to me the first priority is not to make the problem worse. So, that means no new wells in the area, that's where we begin.	DW: You did point out earlier about Zone B8 overlay. But if it's the suggestion of this committee, we can propose it is expanded and go to the county as the GSA.	Meeting comment - noted.
87					Meeting	9/4/2020	Sarah Hardgrave	I think it would be helpful if you brought back the recommendations of the GeoSyntec report.	Comment received	Meeting comment - noted.
88					Meeting	9/4/2020	Beverly Bean	I agree. We spent $300,000 on that report and we have those recommendations. We may not have the power to implement those, the county does. We don't need to reinvent the wheel, and I think we have enough to go on. If the Country Club is not recycling their water, we can have the county require that they do. Generally speaking, upper Corral area has better supply and quality than lower Corral area well. Is there a way to purchase, pump and store in those areas?	Comment received	Meeting comment - noted.
89					Meeting	9/4/2020	Margaret Anne Copernall	With respect to the SWI, there has been new information on sea level rise being higher than initially thought and the impacts on GW will be severe.	DW: I am familiar with that recent study. We are planning on developing GW models to address these issues specifically. However, we will be making decisions before the results of those models are available. But we will	Meeting comment - noted.
90					Meeting	9/4/2020	Janet Brennan	Are most of the residents on septic systems or sewer? Requiring community sewage collection systems and recycling water could be an approach if there are enough residences on septic. I raise this as a brainstorm possibility.	Comment received	Meeting comment - noted.
91					Meeting	9/4/2020	Sarah Hardgrave	I want to add on. In the Toro Park subdivisions, they are on a wastewater system. It's not exactly a benefit directly to our subbasin. I recall in the Ferini Ranch there was a discussion to connect to Monterey OneWater to get more flow. For the Country Club, I don't think they have a recycled water source for irrigation, but it may be a good idea for an in lieu recharge situation.	Comment received	Meeting comment - noted.
92					Meeting	9/4/2020	Bob Jaques	A couple things, I know Toro Village is sewered to the Toro area treatment plant near the Highway 68 bridge. I think that system was expanded and extended to pick up a little more, not all the way to the Corral area. Looking at the GeoSyntec recommendations, one was more monitoring wells. This would help M&A to calibrate the model so you're not making too many assumptions. Under the GSP, one was to install more monitoring wells. Even though you can't require de minimis wells to report/monitor, but you can ask them and maybe the GSA could get funding for meters. In Seaside we were able to require some wells to provide pumping data.	DW: Yes, for de minimis users we cannot require metering. One question that has come up in other basins is, can we require users to verify they are de minimis users, so they can account for their water use? This is a possible option, but we need a legal opinion if it falls under SGMA abilities or not.	Meeting comment - noted.
93					Meeting	9/4/2020	Sarah Hardgrave	Any sort of recharge project could be expensive. If in the future, the alternative project to desalinate brackish water pumped from the SWI extraction barrier wells was to come to fruition, if aquifer recharge could happen on the southern end of SWI line, if you were trying to mound treated water in the 180/400, if that would have the benefit of mitigating further SWI? And speaking of water gradients, on the other side we may have water leaving this subbasin to the 180/400 aquifer. Would there be benefit to freshwater recharge at those boundary areas?	Comment received	Meeting comment - noted.

94					Meeting	9/4/2020	Janet Brennan	It seems that addressing some of the problems in the Laguna Seca area would also benefit the Corral area. I don't know what kind of projects those would be, but the inter-relationship should be something to consider.	DW: Would you like us to look at what the shortest pipeline runs might be? From CalWater? Or Monterey OneWater? What is the smallest pipe run possible, and how to get water in the pipe?	Meeting comment - noted.
95					Meeting	9/4/2020	Sarah Hardgrave	I think it depends on what projects MCWD would be developing. I think the shortest route is along Reservation Road. Looking at some sort of recharge/injection in the Laguna Seca area, then along a different route. In addition to providing freshwater and recharge, thinking about if it would also have the benefit of halting SWI.	Comment received	Meeting comment - noted.
96					Meeting	9/4/2020	Janet Brennan	Do we have any idea of water consumption at the residential level, such that recommending conservation measures would be a worthwhile approach?	DW: We don't have specific data. The value used in the 180/400 plan was 0.39 AFY per living unit to be used across the basin. It does not include landscaping use, or differentiate large living units and landscaping.	Meeting comment - noted.
97					Meeting	9/4/2020	Janet Brennan	We could extrapolate use from Carmel Valley or Pebble Beach. Those data are available.	Comment received	Meeting comment - noted.
98					Meeting	9/4/2020	Beverly Bean	I think this data could easily be collected. There are several small systems that keep these record, we just need to do the asking.	Comment received	Meeting comment - noted.
99					Meeting	9/4/2020	Sarah Hardgrave	I would like to see a quantification of the water systems (all sizes) and residential connections.	Comment received	Meeting comment - noted.
100					Meeting	11/6/2020	Bob Jaques	Re: Action Minutes for Subbasin Committee Meeting: I find the action minutes for the meetings not to be satisfactory in the sense that there is so little information provided about what the discussions were at the meeting.	**Emily and staff:** Action minutes are a particular type of minutes which primarily record meeting motions and votes. Comments from Committee members are recorded in the Comment table and the meetings are also recorded. **Chair Hardgrave:** We have comments captured in the comment table and we have the technical memorandum that provides additional information about motions. My feeling is that we have the comments captured and the information available to support the minutes if needed.	Meeting comment - noted.
101					Meeting	11/6/2020	Sarah Hardgrave	Re: Draft Chapters: I have a question about the two management areas, and coordination with the two GSAs. First question is around the federal lands, and the importance of GSA coverage, combined with statement that SGMA doesn't apply to federal lands. Could you say more about this issue?	**Emily Gardner:** It's a grey area we don't yet have clarity on. SGMA doesn't apply to fed lands. However, when a GSP is analyzed, they look at if the whole subbasin is covered. We're trying to find the best approach to this grey area. **DW:** We have received different feedback from different members at DWR. What is more accurate is, we can't tell people on federal lands what they can and cannot do with their water. We do need to cover all the land, including federal land, with the GSP. We just can't tell them what to do. The safest approach is to cover all the land with a GSA.	Meeting comment - noted.
102					Meeting	11/6/2020	Sarah Hardgrave	In the areas in the middle, BLM land, they probably don't have much GW extraction. I'm interested in the federal lands in the north. Like Presidio Monterey. Will those lands be transferred to local agencies?	**Patrick Breen:** My understanding is that everything has been transferred that will be transferred, and those areas that you are asking about will not be tranferred and will remain federal.	Meeting comment - noted.
103					Meeting	11/6/2020	Sarah Hardgrave	Are those federal areas served by Marina Coast?	**Patrick Breen:** Yes, under a contract with the Army.The water use will be captured within MCWD's numbers.	Meeting comment - noted.
104					Meeting	11/6/2020	Sarah Hardgrave	It might be worth considering inviting the presidio as a stakeholder.	Comment received	Meeting comment - noted.
105					Meeting	11/6/2020	Sarah Hardgrave	I have a question about the water charges framework for the Corral de Tierra area, if that will apply to the 300 domestic wells you've identified. It may be a future agenda item.	**DW:** It's something we've talked about internally, and what are our legal options to do that. That's a great future discussion we will have. **Abby Ostovar:** You'll see in the project and management actions, it is part of pumping controls, and will be a conversation after the allocations workshop. It's very much on our mind, but not something we've worked on and are	Meeting comment - noted.

106					Meeting	11/6/2020	Sarah Hardgrave	There was a difference in the discussion about the deep aquifer. The staff report left out a few statements about pumping from the deep aquifer. I assume this discussion would be included in another spot in the document.	**Abby Ostovar:** It's something we'll work with MCWD on. It's a difference of where we talk about it. Some chapters include it in the principal aquifer discussion, but we might have moved it to the water budget chapter.	Meeting comment - noted.
107					Meeting	11/6/2020	Sarah Hardgrave	Comment about the piper diagrams that were included in one version and not in another. For the lay person who may not understand piper diagrams, perhaps include them in an appendix. That way the information is available for the technical experts, but it's not in the draft and weighing down the draft chapter for the lay person. If they are included, more explanation of what they are depicting. This comment goes for the cross section diagrams as well.	Comment received	Meeting comment - noted.
108					Meeting	11/6/2020	Beverly Bean	Re: ISW Input: We have other people who have extensive knowledge, Mike Weaver has extensive knowledge.	**Abby Ostovar:** Local knowledge would be great. **Sarah Hardgrave:** I agree	Meeting comment - noted.
109					Meeting	11/6/2020	Sarah Hardgrave	You may want to consider talking with representatives from CalAm. They have some facilities near Toro Creek, but I don't know the depth of their wells in those locations.	Abby Ostovar: I think CalAm's wells are much deeper.	Meeting comment - noted.
110					Meeting	11/6/2020	Beverly Bean	Re: Domestic Wells: As a former active person in our local domestic water system, the Monterey County Health Dept. closely monitors us. They have considerable information about the small water systems. The reports we have to complete every year were very complete. Have you considered them as a source?	**Abby Ostovar:** We have reached out to them, we have not heard back. **Emily Gardner:** We took this approach because getting this information from the Health Dept. was a complex process. They have a lot of the information, but only some files have all the information we need like well logs. It's a variable data source, much of it is in PDF form, and we have to open each file and read it individually. We've spoken with the Health Dept, and we've taken this approach first before we go down that route.. We can do that, if that's the direction you **Abby Ostovar:** We have a number of well logs and that's how we've located which aquifer these wells are in.	Meeting comment - noted.
111					Meeting	11/6/2020	Tamara Voss	We've been working together to get you data. We have a bit of a well log library. If you had APNs, we could make another go at it. Either APN or quarter section. Maybe there's something we can batch give you. I can't guarantee if it could easily be matched to the map. Isn't there someone on the SWIG? Have you reached out to Roger?	**Emily Gardner:** Roger and Sheryl Sandoval have both reached out back to us, they're willing collaborate. We have to be focused on our ask, and we have to be prepared to go through the documents and figure out how to match them to the dots on our map.	Meeting comment - noted.
112					Meeting	11/6/2020	Beverly Bean	I just want to reiterate the health department does inspect each new well. You'll have current information. These older wells, pre-1995, many are not functional. The health department does inspect when each new well comes online. They do have this information, and it's current. I know it's a lot of work, but it's current.	**Abby Ostovar:** They continue to inspect the wells? **Emily Gardner:** You mean taking water quality samples? **Abby Ostovar:** Do they take water level information? (Emily: No) (Bev: They know how deep they are, and the water level from when it was drilled.)	Meeting comment - noted.
113					Meeting	11/6/2020	Janet Brennan	It looks like there's no problem in Corral de Terra based on your data? Am I reading this correctly? Also, you use many acronyms in your slide. It would be helpful for you to be more descriptive in your presentations.	**Abby Ostovar:** This is the best we've been able to do with the data we've got. Have you heard of a lot of wells going dry that aren't reflective of what is here?	Meeting comment - noted.
114					Meeting	11/6/2020	Sarah Hardgrave	You're asking, what year would be a good year to set the baseline to measure GW elevations for SMC?	**Abby Ostovar:** Yes, we're looking at what year were the impacts on domestic wells minimal? **DW:** Of the wells we know about, there are 50 on this chart. In 2015 and 2017, we think these wells were operable. We would have to have much lower water levels to have impacts in those wells. Is 2015 or 2017 a safe place to set our water levels? We're looking for feedback from this group that 2015 or 2017 are safe enough? Or do you think	Meeting comment - noted.

115					Meeting	11/6/2020	Sarah Hardgrave	I'm not sure if Cal Water Service has any comments since they have such a large base of customers, and they have the most familiarty with their well operations during these years. I don't feel able to answer the question about how many wells were impacted. My impression from your chart was	**Abby Ostovar:** I think 2017 is often considered an average year in the valley? **DW:** It was a little wet, and 2015 being extremely dry.	Meeting comment - noted.
116					Meeting	11/6/2020	Janet Brennan	The Corral de Tierra is in a B8 Zone which limits pumping. These data seem to contradict the B8 designation. Am I reading this incorrectly?	**Beverly Bean**: The B8 only applies to certain parts of Corral de Tierra and it doesn't restrict pumping. I don't think you legally can restrict pumping. It simply prevents subdivision of legal lots because that is indirectly a way to reduce **Sarah**: Yes, B8 zoning is a land use zoning, not necessarily an effort to limit pumping with existing users. **Beverly**: Specifically the B8 area, is where the GeoSyntec found the most impact from wells.	Meeting comment - noted.
117					Meeting	11/6/2020	Beverly Bean	These well levels relate directly to the drought years. I agree with Sarah. The driest years are the ones you should be measuring from. Also, when I'm talking about wells, I'm talking about small domestic wells and small mutual water systems, when these drought years come and their well goes dry, they just drill another deeper well.	**Abby Ostovar:** This doesn't capture if one well went dry, and they drilled another. We'd have both records. These are the domestic wells.	Meeting comment - noted.
118					Meeting	11/6/2020	Sarah Hardgrave	This is a sustainability criteria that is based on the domestic wells. This captures a portion of the domestic wells constructed since 1995, the more	**Abby Ostovar:** We can update this in the future. **Abby Ostovar:** So I understand the MT recommendation is	Meeting comment - noted.
119					Meeting	11/6/2020	Bob Jaques	Re: Wallace Group Memo. It says the purpose was to estimate water extractions, and to estimate available recyled water. It seems like they didn't really complete the task. At the end they talk about information gaps that prevented them from getting handles on those numbers. I have a few ideas. Looking at page 6 and 7, they talk about Cal Utility Service. It seems the Regional Water Board would have waste discharge reports because they all have to be permitted. I've been able to get this information. I would encourage looking at that. Second, on page 7, they have a table of estimated WW flows, the figure for residential indoor domestic use looks awfully high to me. The water reuse on that same page, Las Palmas, there may be additional waste water that could be used from that plant elsewhere in Corral de Tierra.	**Abby Ostovar:** You're right, the WW is high and the Projects document has the updated number.	Meeting comment - noted.
120					Meeting	11/6/2020	Sarah Hardgrave	Re: Wallace Group Memo: Las Palmas is within the County service area and they are in the process of updating some of the reports. I think the county will have more information available for the WW capacity for that system in the next few months because of a development proposed in that area and they are reporting to the Regional Board. I can ask county staff to provide that.	Comment received	Meeting comment - noted.
121					Meeting	11/6/2020	Janet Brennan	Re: Projects and Management Actions: In terms of use of GW from the Upper Corral Canyon, who would do that? I don't understand who would be doing that? Are we talking about the public water agencies?	**Abby Ostovar:** The GSA could take actions, we have to figure out who would finance them. I don't know, since it's outside the subbasin boundaries. We could always partner **Les:** The GSA has independent authority to do a variety of things. There are other agencies which have authority. We could form more JPAs, and there are many ways to partner with other entities that have authority.	Meeting comment - noted.
122					Meeting	11/6/2020	Beverly Bean	Re: Projects and Management Actions: Encouraging domestic conservation. In my experience, the people who have small systems or their own wells are not amenable to conservation. During the drought, we observed in our group that we were the only ones that reduced our water use. No one else did. Conservation has been successful on the peninsula because they can reduce your water pressure way down. How can we enforce conservation?	**Les:** In my opinion, the GSA can regulate extractions of de minimis users, but we can't make them report their extractions. MCWRA can regulate extractions, they have never done so, but they have that authority. Monterey County can also regulate extraction under certain circumstances.	Meeting comment - noted.
123					Meeting	11/6/2020	Les Girard	The GeoSyntec report was commissioned by Monterey County Resource Management Agency, not MCWRA. And the B8 Zone was adopted from that which is a limitation on development.	**Beverly Bean:** The B8 overlay was in effect since 1992, the GeoSyntec report supported it and allowed it to continue.	Meeting comment - noted.

124					Meeting	11/6/2020	James Sang	I'm really interested in water recharge. I like the use of recycled water instead of GW. It would be dependent on what the residents feel about it. I think it's a good source of water. The use of GW from upper areas, requires a lot of money to build pumps and piping and tanks. Re domestic conservation, I agree with Beverly that people are not willing to do it. I don't like pumping limitations. I like the idea of recharge, but I would like to know exactly where the water is coming from that people are using. If it's coming from wells, we should do collection and recharge around that well.	Comment received	Meeting comment - noted.
125					Meeting	11/6/2020	Sarah Hardgrave	This exercise and this presentation really reinforced the challenge of this particular area, in terms of options for recharge in particular. I was concerned about seeing more details on the limitations and the physical geology of the area, being limiting factors. The decentralized recharge areas and basins, I think there are opportunities for that, but it will be a drop in the bucket. It wouldn't provide as much as benefit, would not have a significant effect in terms of GW levels. This is a rural residential area, so there isn't infrastructure in place for bioswales and that intentional, "Slow it, Sink it, Spread it concept". It also didn't seem like it would result in a lot of recharge to the aquifers. The recharge from runoff is pretty minimal. I think it would be worth it to look at extensive educational program with homeowners. This area is not part of the county's municipal stormwater program. There is extensive materials and information out there with the county RMA, for collaborative efforts in this area, but I'm not fully convinced it would have big bang for the buck.	Comment received	Meeting comment - noted.
126					Meeting	11/6/2020	Beverly Bean	I support what you're saying about recharge. Most of the small users' wells are already at 300-400 feet. Recharge would not be very successful at that depth. The golf course just drilled a new well at 800 feet deep. My strong feeling is enforcing pumping limitations is the only way forward. Legally, we can do it, how do you implement it? I would like to see more details on the last item (pumping limits).	Comment Received	Meeting comment - noted.
127					Meeting	11/6/2020	Sarah Hardgrave	I think at this point in time, I would recommend not taking anything off the table entirely. None of these is a silver bullet. There are a lot of challenges. I would like to see how we can incentivize conservation. Maybe now with the GSA, there is more authority to enforce it and maybe we can approach it differently.	Comment Received	Meeting comment - noted.
128					Email	11/6/2020	Bob Jaques	Re: Project Ideas: Programs and Actions should include: "Coordinate with Seaside Basin Watermaster to mitigate lowering of groundwater levels in the Laguna Seca Subarea” To meet SMC measurable objectives, should include addressing overdraft in the Seaside Basin Laguna Seca Subarea.	**Comment received.**	
130					Meeting	1/7/2021	**Sarah Hardgrave**	Are you going to develop a long-term sustainable yield for the two management areas or for the subbasin as a whole?	**Abby Ostovar:** We have to calculate overdraft as a subbasin, but still need to discuss with MCWD. If only for informational puporses, we will do this for each management area, but we haven't discussed how this all works yet. Have to check what's in the regs, what we can do legally and well as what we want to do. For this conversation, focused on the corral de tierra area. I'm not asking you to make decisions today, this is just to inform	Meeting comment - noted.
131					Meeting	1/7/2021	**Sarah Hardgrave**	It seems like allocations are more easily applied in areas where there are more ag/irrigation users, and not as easily in areas that are predominantly rural and residential areas. Are the Cal-Water and Cal-Am in the Corral area service systems considered municipal systems?	**Abby Ostovar:** I'm pretty sure, I'll check on it. They would be different than mutual water systems, not overliers.	Meeting comment - noted.

132					Meeting	1/7/2021	**Janet Brennan**	I think addressing this issue depends on if a pumping allocation system can even be implemented in this area. It seems that a large portion of the water users are beyond the regulatory process.	**Abby Ostovar:** We can regulate de minimis users. You can regulate them, you just can't meter them. Tricky because you don't know what they are actually pumping.	Meeting comment - noted.
133					Meeting	1/7/2021	**Janet Brennan**	How do you know they're meeting their allocation?	**Abby Ostovar:** If there was a connection basis, you could have a set amount per connection. Say you have 1000 AFY and you have 500 connections, and 100 are de minimis users. You could count them as connections and that would be their slice of the pie. It's an approximation.	Meeting comment - noted.
134					Meeting	1/7/2021	**Janet Brennan**	I guess the question in terms of percentage of users, what percentage are de minimis, what percentage are overliers?	**Abby Ostovar:** I don't have the percentages here. Do you want to treat municipal systems different than mutual water systems? You can, you don't have to.	Meeting comment - noted.
135					Meeting	1/7/2021	**Janet Brennan**	Why would you differentiate?	**Abby Ostovar:** The categories the state uses are overliers and non-overliers. But mutual and municipal are both for	Meeting comment - noted.
136					Meeting	1/7/2021	**Sarah Hardgrave**	It seems that the municipal systems, the Cal-Water service and Cal-Am are serving neighborhoods or developments that are more akin to a medium density residential area, whereas the mutual water systems may serve larger lot property owners. I'm not sure you could treat them equally. Those larger lot owners may have horses, or a small vineyard on their property that may account for more water use. I think that's something we need to consider. In the B8 Zone, the recently adopted county regs for accessory dwelling units do not allow ADUs within the B8 Zone area. So that is not a consideration for future demand, within that B8 portion of the management area. Not all of the management area is in the B8 Zone. In the B8 zone, there's no further subdivision according to the zoning. I don't know how much subdivision potential there is outside of the Zone, but I think it's probably limited. I recommend looking at the county land use plan for the Toro area for an indication of potential growth to use for the calculation of a set aside. I don't think it will be a substantial amount.	Comment received.	Meeting comment - noted.
137					Meeting	1/7/2021	**Beverly Bean**	Question about the difference between municipal as those being served by Cal-Am or Toro water, compared to the mutual systems formed from residential users. Water source. Mutual water systems pump from wells close to their properties. Where are the wells used by Toro and Cal-Am?	**Abby Ostovar:** We know where some of the wells are. As far as overlying rights, the mutual water systems' wells are right there, and they can't move that water. We can look at how far away the wells are of the municipal water systems. My guess is that it isn't that far, so it won't make that much of a	Meeting comment - noted.
138					Meeting	1/7/2021	**Beverly Bean**	You believe they're all within the Corral de Tierra subbasin?	**Abby Ostovar:** I believe so. We will look at those along the edge.	Meeting comment - noted.
139					Meeting	1/7/2021	**Jon Lear**	I just want to say as far as Cal-Am pumping in this area and pumping in the Laguna Seca area, there is going to be a change in the Laguna Seca area because the most recent general rate case has CalAm building an intertie to their main system, so there will be an overall reduction in the Laguna Seca area. The corral de tierra area, still plan to have that area pumped. No plan to tie-in to larger system.	Comment received.	Meeting comment - noted.

140					Meeting	1/7/2021	**James Sang**	I wanted to know exactly how it is being determined you're in overdraft. Are you going to different wells and just judging by how far you reach the water? And in the future, if you're able to get enough progress to bring the water level up, how does that affect the pumping allocation? Last November, we discussed some projects but they didn't seem to really be able to increase the GW supply. I think there are other projects that can be recommended. In Langley, they recommended rooftop water harvesting. I think that's good for anyone that's on a well to reduce their pumping. There are some people who have 5,000 gal tanks. On a 15inch rainfall year on a 1,000 sq ft roof, you can get 9,000 gal. I think it's possible to harvest rainwater and get it into the GW but using the slopes. You could do it by trenching the surface of the hills to collect more of the rainwater, and prevent it from being evaporated and allow it to sink into the soil in the hill and allow it to sink into the ground. How do you determine overdraft?	**Abby Ostovar:** We use a groundwater model. We're actively working on it. They're very complex models, you have to take in the stratigraphy and climate. We're working on it. We're hoping to have a budget for you soon. For recharge projects, if you put more in the ground, you can take more out. However, there are not great recharge options in this area. There isn't a steady supply of surface water in the area. We're working on scoping a larger recharge project. We've looked at scoping decentralized rainwater harvesting. It will be very challenging to meet the sustainable yield just with those types of projects. There are over 300,000 gal in an AF. The amount you collect on an individual house may help that house, but getting enough homeowners to participate is a very challenging task. We want to pursue it, but we have to look at the numbers to see if we can meet sustainable yield. For a larger recharge project, there is also the question about how to pay for it. Pumping allocations, even if not used for reductions in pumping, could be a way	Meeting comment - noted.
141					Meeting	1/7/2021	**Sarah Hardgrave**	Given land use in the area, and the residential areas, has there been much fluctuation in pumping over time, or has it been fairly consistent?	**Abby Ostovar:** One of my staff has looked more at this, but it only goes back to 2013.	Meeting comment - noted.
142					Meeting	1/7/2021	**Beverly Bean**	I would say the majority of development has happened in the last 50 years or less. I've been here for the last 40 years, and growth was unchecked from the 70s and 80s on, and with the flimsiest ideas of where the water would come from. Historically speaking, I don't know what time frame you're talking about. The growth since the 60's and 70's has been steady. The number of people living here has steadily increased. The groundwater levels are steadily decreasing.	**Abby Ostovar:** We don't have data for water systems prior to 2013. We could take an average between 2013 and 2018 but that includes a drought. For individual households, we don't have that data, but we could look at the number of households.	Meeting comment - noted.
143					Meeting	1/7/2021	**Janet Brennan**	If you use historical pumping as the basis of an allocation system, historical pumping has created the problem. So is it historical pumping minus a percentage?	**Abby Ostovar:** The historical pumping would basically say, 2013-2018, average water use sets up the pie. Your sustainable yield determines the size of the pie. Could be smaller. It just sets the basis for the overall allocation.	Meeting comment - noted.
144					Meeting	1/7/2021	**Janet Brennan**	Historical pumping seems to be a fair way to allocate water use. I mean, it reflects actual use for all systems, except for de minimis.	**Abby Ostovar:** The argument against historical is that it rewards those who have caused the problem.	Meeting comment - noted.
145					Meeting	1/7/2021	**Janet Brennan**	If you have an allocation based on historical use, how does it increase water use?	**Abby Ostovar:** If you have 2 neighbors, and one has been pumping and irrigate all their land, and the other hasn't, how much they've been pumping determines how much they use in the future. The one who has pumped a lot can continue to pump, and the one who has conserved cannot. **Emily Gardner:** It would have to be changed proportionally. **Abby Ostovar:** Right, if you've always used less, you will always use less.	Meeting comment - noted.
146					Meeting	1/7/2021	**Beverly Bean**	In terms of this historical pumping, if you've caused problems in the past, why should you be allowed to continue that? In my mutual system, we have an allocation of basic use of 30,000 gal per quarter per household. If you go over that, you are punished by a severely higher rate. Maybe those kinds of numbers are the way you need to look at this. If you go by household, what's a reasonable number and if you go over that, you have exceeded your allocation.	**Abby Ostovar:** There are two more options, by **h**ousehold/building structure or connections. Net acreage would be another one. Sarah mentioned that some people have other uses, like horses. How do you deal with that in your mutual water company?	Meeting comment - noted.
147					Meeting	1/7/2021	**Beverly Bean**	Having horses is a choice. If you can do it within your allocation, you can do it. The problem is with affluent people, I'm not sure the cost is a deterrent. We don't make special circumstances for what people do on their property. If you use more you pay more. I'm not sure that is a sufficient deterrent.	Comment received.	Meeting comment - noted.

148					Meeting	1/7/2021	**Janet Brennan**	Could have allocation based on households plus acreage, a hybrid, to account for people who have horses.	**Abby Ostovar:** It's a fair point that there are other uses than just domestic use.	Meeting comment - noted.
149					Meeting	1/7/2021	**Sarah Hardgrave**	Some people have swimming pools and other household activities.	**Abby Ostovar:** The question is "what's fair", does each household get the same? Should allocation be based on	Meeting comment - noted.
150					Meeting	1/7/2021	**Sarah Hardgrave**	If you fly over this area, there is a quite a bit of variation in size of houses. There's probably some houses over 10,000 ft^2 and other houses that are 2,000 ft^2. That's a challenge in this area to consider. I think that's where a hybrid that considers the lot size might be appropriate.	**Abby Ostovar:** Would you weigh those equally?	Meeting comment - noted.
151					Meeting	1/7/2021	**Sarah Hardgrave**	I feel we don't have enough information to weigh in at this point. It would take some better understanding from the land use perspective to propose a hybrid.	**Abby Ostovar:** If you're in overdraft, this will be one of the ways to meet sustainability. Post GSP there will be more of a process, more stakeholder discussions. Here, this is the The more input we have now, the better we can come back. When it comes to overliers vs non overliers, should those have a similar metric and allocation or should we have something distinct for those?	Meeting comment - noted.
152					Meeting	1/7/2021	**Janet Brennan**	I'm not sure why we would want to differentiate between municipal systems and overliers. We should use the same approach for both.	Comment received.	Meeting comment - noted.
153					Meeting	1/7/2021	**Sarah Hardgrave**	I would agree with you, Janet, because the areas served by Municipal systems, Toro Park, Las Palmas, those are more suburban density neighborhoods, so if you're using some sort of lot size or acreage, that would be reflected. Or those areas would be more likely to have the 0.4 AF househole usage versus someone higher up in corral who has a 10-acre property.	Comment received.	Meeting comment - noted.
154					Meeting	1/7/2021	**James Sang**	On this issue, what this program is dealing with is if you're getting in overdraft or not. If Cal-Am or Cal-Water has their water source far away, I don't think they should be included unless their source of water is connected to this aquifer.	**Sarah Hardgrave:** These are satellite systems that are operated by these two utilities that draw their supply in this system. They are neighborhood scale systems that have the source of supply in area.	Meeting comment - noted.
155					Meeting	1/7/2021	**Beverly Bean**	These dormant overliers, if these are what we call legal lots of record, aren't they entitled to water? We're just counting them in so we can make a water budget?	**Abby Ostovar:** Theoretically, you can just say they don't get any. She cautioned against that. Either you account for them when they start using, or you set aside part of the pie.	Meeting comment - noted.
156					Meeting	1/7/2021	**Beverly Bean**	Are these legal lots of record? Simple enough to find out who they are and how many there are.	Comment received.	Meeting comment - noted.
157					Meeting	1/7/2021	**Sarah Hardgrave**	I agree, from the county's land use perspective, there would be a significant issue if legal lot of record were not accounted for in the budget.	Comment received.	Meeting comment - noted.
158					Meeting	1/7/2021	**Sarah Hardgrave**	Re: Municipal growth: I think that would be pretty easy to quantify because the potential for that kind of growth is limited for this area. Different question for Marina area and former ft ord.	Comment received.	Meeting comment - noted.
159					Meeting	1/7/2021	**Janet Brennan**	All I can say is best of luck getting legal lots of record from the county. The county always punts and says it's too detailed. It's crazy. It's not going to be easy Sarah, to find these legal lots in the Toro area. Nobody knows how many legal lots of record there are for the county. Maybe looking at the land use plan and getting a sense for how much development could occur may be the best way.	Comment received.	Meeting comment - noted.
160					Meeting	1/7/2021	**Sarah Hardgrave**	Did the general plan, 2010 EIR quantify this in any way?	**Janet Brennan:** No. For example, in Carmel Valley the number of legal lots of record has ranged from 500 to 250 over time, depends on who you're talking to. I don't think we can ask them to get a feel for vacant parcel that could be developed. That's probably the best question rather than legal lots of record which is a more detailed analysis.	Meeting comment - noted.

161					Meeting	1/7/2021	**Sarah Hardgrave**	Seems like you could look at assessors code for vacant property. But it's an imperfect number. I don't know how into the weeds the GSP needs to get. I do think it would be important to have some general estimate for making sure the potential is accounted for within a sustainable yield allocation. In terms of substantial municipal growth in this area, there's not a lot of room for it. The one major subdivision that was proposed has gone into a conservation easement.	Comment received.	Meeting comment - noted.
162					Meeting	1/7/2021	**Beverly Bean**	I would like to say a de minimis user could have a large estate property and use a large amount of water. They have their own wells for the property.	**Abby Ostovar:** De minimis is defined as those using less than 2 AFY. You have to somehow determine how much they're using.	Meeting comment - noted.
163					Meeting	1/7/2021	**Beverly Bean**	How do you ask them or determine that?	**Abby Ostovar:** For a 0.4 AFY, that's 5 households under 2 AFY.	Meeting comment - noted.
164					Meeting	1/7/2021	**Beverly Bean**	Some have vineyards or pools, I can imagine they're using that much water if they are growing grapes. If you can't meter them, how can you know anything?	**Abby Ostovar:** You could do an estimate to include them in it. You can still do net acreage. **DW:** It's a difficult question. Self-certification, and then they have to demonstrate they are de minimis. None of the approaches are perfect. No matter what decision we make, we're going to have to draw a line. And if people have issue,	Meeting comment - noted.
165					Meeting	1/7/2021	**Sarah Hardgrave**	I think it would be helpful if you can bring back alternative proposals that include/exclude [de minimis users] based on your further investigations. If we're using some sort of acreage factor, that should be considered in a hybrid approach.	Comment received.	Meeting comment - noted.
166					Meeting	1/7/2021	**James Sang**	I think de minimis users should be included, and dormant users should not. If they don't have a well and they're not extracting water from the aquifer. If people are drawing water from the aquifer, they should be charged. If they are not, they should not be charged.	**Sarah Hardgrave:** There's the question of the allocation amount, and the question of what you do with it. That's a **Abby Ostovar:** Typically dormant users are not charged, even if there's space in the pie for them, if they're not using.	Meeting comment - noted.
167					Meeting	1/7/2021	**Janet Brennan**	Re: Prioritization of pumping controls: Our response depends on what alternatives we're looking at. If there are projects that will increase supply and are cost effective, our answer will be different than just out of the blue. We need more data.	**Abby Ostovar:** We're working on that.	Meeting comment - noted.
168					Meeting	1/7/2021	**Sarah Hardgrave**	I would concur with Janet. It seems like our supply projects are really limited in opportunity. It's hard to answer that question without understanding what those options might be.	**Abby Ostovar:** I'm hoping next time, these parts will come together. We'll try to come up with some kind of proposal or some kind of allocation structure based on this	Meeting comment - noted.
169					Meeting	1/7/2021	**Janet Brennan**	What I got out of it is that the data from the Stanford study (AEM) and the Marina Coast area, there was no inconsistency with that data and MCWRA data. Did I read that correctly? My understanding is that there is a lot of conflict with this data and County resources.	**Abby Ostovar:** The AEM data informs how we understand the basin. I don't know how is conflicts with MCWRA data. **DW:** I think the consensus is that AEM data generally supports the conceptual model. People have noted there are specific areas where there are some discrepancies. Your concern is about discrepancies?	Meeting comment - noted.
170					Meeting	1/7/2021	**Tina Wang**	Re: Discrepancies between Stanford and county data. Our plan has said that in the lower 180 and 400- aquifer, which is currently SWI intruded, the AEM data is consistent with the MCWRA chloride maps. There is one thing we pointed out in that chapter, is the dune sand aquifer and the upper 180 foot aq is not SWI intruded, it is fresh. That's a slight difference with the data published by the county. It does not distinguish the specific conditions in our subbasin that is seperated into the upper 180 that isn't intruded and the lower 180 that is intruded.	Comment received.	Meeting comment - noted.

171					Meeting	1/7/2021	**Tamara Voss**	Re: Discrepancies between Stanford and county data. Number 1, the agency the does not collect data in the Dune Sand Aq. We also don't break down the 180-foot aq into an upper and a lower. This report seems to group the lower with the 400, instead of with the upper 180. We'll have to have further discussion. I'd want to further understand what EKI defines as fresh water, before I would say the upper 180 is not intruded near the coast. It would helpful to define the geographic extent where the consultant is defining freshwater.	Comment received.	Meeting comment - noted.
172					Meeting	1/7/2021	**Sarah Hardgrave**	In follow-up to this, I would like to suggest inviting Tamara to one of your TAC meetings to further explore these questions. Seems there is a need for further technical discussions in order to address Janet's question about the discrepancies.	Comment received.	Meeting comment - noted.
173					Meeting	1/7/2021	**Bob Jaques**	With regard to the AEM data, if I recall correctly, in conjunction with CalAm's slant well desalination planning and EIR process, I think the county convened a blue ribbon panel of hydrologists to review. I believe they evaluated the AEM data and rendered their opinions. They had some concerns about how valid that data was. One of my comments in regard to chapter 5 would be that there should be some language in the document that reports on what that panel's findings were regarding the AEM data. They had some concerns about that data being used.	**DW:** We have discussed the AEM data with some members of the blue ribbon panel. We did talk to some members, they didn't have too many concerns. I will look at some of the specifics of what was brought up today.	Meeting comment - noted.
174					Meeting	1/7/2021	**Bob Jaques**	Some additional comments: there are so many acronyms, there needs to be an acronym page in the front. It would help me follow the discussion. In the Seaside, we have 3 aquifers, Aromas, Paso, Santa Margarita. I would like a figure that shows the relationship between the different aquifers and where different terminology is being used. I think they're all connected, but they seem to have different names based on which basin you are in.	Comment received.	Meeting comment - noted.
175					Meeting	1/7/2021	**Sarah Hardgrave**	A suggestion, in terms of the figures, in figures 1-10, if you could put the 2017 and 2018 figures together, you could see the comparison across the years more easily instead of flipping between fig 1 and fig 5 (several pages away). There are some statements around the Deep Aquifer levels decreasing over time. I was wondering if those kinds of analyses are being included in the Deep Aquifer working group as well as with the SWIG, and also if this subbasin is being included in those committee discussion. I'm cognizant of the concerns of MCWD of the Deep Aquifer and the other parts of the valley, I want to make sure these concerns are being heard.	**Abby Ostovar:** We've worked very well with EKI, and been involved with these discussions. We wanted to get something out to this group. It just takes time to get through this coordination. We'll take this input and keep working.	Meeting comment - noted.
176					Meeting	1/7/2021	**Patrick Breen**	The Deep Aquifer presentation was shared with the SWIG.	Comment received.	Meeting comment - noted.
177					Meeting	1/7/2021	**Janet Brennan**	Regarding the findings of the Deep Aquifer I thought that was the outstanding information in this report. It's the most alarming, and good information I've seen.	Comment received.	Meeting comment - noted.

178					Meeting	1/7/2021	**Sarah Hardgrave**	Statements around connection between aquifers, the Deep Aquifer being hydrologically connected to the Santa Margarita in the Seaside Basin and the Paso Robles being connected in another place. Connectivity, and concerns for the Seaside basin. Page 31 talked about FO 10 and FO11 monitoring wells and the Seaside watermaster report address those monitoring wells as well. I want to make sure those statements being reported here are consistent with what is being reported to the Water Master.	**Abby Ostovar:** The pumping trough is part of what EKI and MCWD presented to the SWIG.	Meeting comment - noted.
									DW: Historically, the Deep is considered Lower Paso and below. And Santa Margarita gets pulled in. We're waiting to see just how connected all those really are. We're looking forward to seeing the Deep Aq investigation come out.	
								The Pumping tough north of this area, I would like to know what that means for this subbasin.	**Abby Ostovar**: It may make more sense when CH 4 is released, and the rewrite.	
179					Meeting	1/7/2021	**Sarah Hardgrave**	SWI, and the MCWRA lines with large swaths with question marks. How do we reconcile those areas where we don't have monitoring well information at the front of the SWI lines. How, in this subbasin, where additional monitoring wells will be needed. I think I brought that up at the MCWD meeting as well.	Comment received.	Meeting comment - noted.
180					Email	2/23/2021	**Beverly Bean**	page 24 -section 3.1.5 delete the Ft Ord Reuse Authority(FORA) which was disbanded in 2020	**Comment received.**	
								page 46 section 3.5 1st paragraph eliminate the sentence about FOR A		
181					Meeting	3/5/2021	**James Sang**	For every 1% of temperature rise, water vapor increases by 4%. Carbon rises and the ground has been drying up. You see this in the hills in the Corral area when you're driving. We have to capture that precipitation when it's coming down, and increase the soil moisture. For us to have rain, we have to have enough soil moisture. We have to capture that precipitation in the ground.	Comment received.	Meeting comment - noted.
182					Meeting	3/5/2021	**Sarah Hardgrave**	For the minimum threshold historically observed between 1995 and 2015, is that an annual average? Did the levels fluctuate over those 20 years?	**Tina Wang:** How it will be measured exactly, we will use water levels collected from November/December compared to water levels collected in November/December. For each well, we will look at the lowest water level observed in November/December between 1995 and 2015 and use that	Meeting comment - noted.
									Abby Ostovar: The distinction for the Corral area is that we have selected only 2015 water levels. In a similar way, they will benchmark the representative year, and that will become the threshold year. And they're taking a short timeframe since MCWD was formed. It will roughly mirror our approach. Essentially a very similar approach.	
									Patrick Breen: And just to clarify, some water levels are different within that period of time. There are differences amongst the wells, where 2015 was not the lowest year.	
183					Meeting	3/5/2021	**Sarah Hardgrave**	I think this information is important for the next part of the presentation. But as for decision-making, we still have to review this information.There is a lot of incredibly valuable information in the packet. But I hadn't see the 1,700 AF/yr until now.	**Comment received.**	Special meeting scheduled to provide direction on SMCs
184					Meeting	3/5/2021	**Janet Brennan**	I see that decisions about projects and management actions are related to sustainable yield, and that information isn't provided. We can move ahead based on other factors, but we still need to know that to make decisions. Maybe at future meetings, that inter-relationship between sustainable yield and projects can be defined.	**Abby Ostovar:** Absolutely. I'd still like to go over the projects and management actions so you can provide strategic direction on what you want us to focus on. We're on a tight timeline to put together the GSP.	Meeting comment - noted.

185					Meeting	3/5/2021	**Bob Jaques**	Re: MCWDGSA Indirect potable reuse project: Would this water come from Monterey One Water?	**Vera Nelson:** That's correct. **Patrick Breen:** What this doesn't solve is the whole universe of source water. We know CSIP is looking to expand, there's the possibility of river water. I don't want to say MCWD has a particular volume of water and we're going to inject it. This is a conceptual model that assumes there is water that needs to be treated. We're not making some sort of claim. This is a conceptual project for injection. The source of the water to be treated is to be determined.	Meeting comment - noted.
186					Meeting	3/5/2021	**Janet Brennan**	This item is not on the agenda. What is on the agenda is projects that will benefit the Corral de Tierra area.	Comment received.	Special meeting scheduled to discuss Marina-Ord Management Area projects.
187					Meeting	3/5/2021	**Marieke Desmond**	Patrick, what other sources (I know this is introductory), what other sources of water would potentially be used for recycled injection? If there are any other sources that can be used?	**Patrick Breen:** We have existing flows to the plant currently, municipal sewer, or water in the Blanco drain, or other drains going to SRDF. There may be new sources that come on in the future from the river or otherwise. It will be water that goes through the plant for treatment before we can put it in the ground. There is no new source we're speculating	Meeting comment - noted.
188					Meeting	3/5/2021	**John Bramers**	Going back to the monitoring wells. How many wells are in the networks? I think there was an a, b, c. What wells? Are they domestic? Ag? What are they? Mainly the MCWD side.	**Tina Wang:** We'll be sharing a map of the wells at the MCWD stakeholder meeting. In each aquifer group, we have 9-13 monitoring wells, so 20% means about 2-3 wells exceeding MT would result in an undesirable result. They are only monitoring wells. As a background, water production in this area is limited to MCWD municipal use.	Meeting comment - noted.
189					Meeting	3/5/2021	**John Bramers**	You mentioned recharged for the Deep Aquifer. Do you have a study on that already?	**Vera Nelson:** What we've done is a feasibility study. We've done an analysis where we would have to inject with the timeframes required for pathogen reduction. But we have not done any geochemichal analysis with regard to compatibility. We have looked at where we could inject relative to gradients of existing wells, and how viable that	Meeting comment - noted.
190					Meeting	3/5/2021	**John Bramers**	I have one more question. It's about injection over the winter months. Is that the best time to do it?	**Vera Nelson:** The greatest availability of water is in the winter months. For a municipality, the timing doesn't matter as much, it's just more available. It allows the farmers more water for use in the summer months.	Meeting comment - noted.
191					Meeting	3/5/2021	**Bob Jaques**	If you're doing stream diversion for recharge into the Corral area, are you looking at other downstream effects on users that would benefit from that water naturally recharging?	**Abby Ostovar:** That analysis will be done later during the feasibility study.	Meeting comment - noted.
192					Meeting	3/5/2021	**Beverly Bean**	This comment is strictly addressing the first potential project, the rubber dam. I find it bizarre coming to these meetings and then going to the Toro LUAC. We're continually seeing new [housing] projects added to the area using existing water systems Cal-Am and Toro Water, but these systems are still pumping from this basin. On one hand we're talking about ridiculously expensive projects, and on the other hand there is no moratorium on continuing to add pumping to the basin? Do we have authority to restrict pumping?	**Sarah Hardgrave:** We're getting to that in the pumping allocations discussion.	Meeting comment - noted.
193					Meeting	3/5/2021	**Janet Brennan**	My reaction to the project list is that recharging the basin is more efficient than anything at the homeowner level, they almost don't seem viable. I did look at the pumping per connection on Page 4 of the analysis. I did look at the amount of water per connection. There are parts of the Corral Area Subbasin that have excessively high water demand per connection. Salinas Hills has a per unit connection of 0.73. There are four or five areas that have an excessively high water demand per connection. Based on that, and this may not be accurate, this points to the directions for the need for a demand allocation.	**Abby Ostovar:** Thank you, Janet. The analysis was done by Wallace Group to help this committee because we don't have great pumping data here. For the water systems we do have data, there are some that use 0.7 and others that use 0.2. For the water systems where we have data, larger than 15 connections, we use those values. For the estimation for *de minimus* pumping we use 0.4 AF per household, which may also be underestimating it. When thinking about pumping allocations, if you think that value is significantly low, then more work may need to be done.	Meeting comment - noted.

194					Meeting	3/5/2021	**Bob Jaques**	One of the projects listed in one of the earlier reports talked about using recycled water for irrigation. Could you explain why that is not on the list?	**Abby Ostovar:** I do have a slide that was a backup slide. Wallace Group did look into wastewater. There are two main sewage systems in this area. One uses this water for medians. We have not been able to find out if the golf courses use recycled water. There is potential for greater water recycling. There has not been interest in the past from WW operators to do recycling. We're looking at incentive programs, or looking at SVBGSA to incentivize those actions.	Meeting comment - noted.
195					Meeting	3/5/2021	**Sarah Hardgrave**	In the Las Palmas subdivisions, served by Cal Utilities service and Cal Am manages wastewater. They do have recycling of water in that area, which is one of the larger water municipal users. There is some recycling that is occurring in this area and in separate conversations with CalAm's current rate case, that recycling system is very expensive to operate.	Comment received.	Meeting comment - noted.
196					Meeting	3/5/2021	**Bob Jaques**	I was thinking the Corral de Tierra Golf Course as one of the larger water users in the area, would be a potentially good candidate for recycled water. In any event I think it would be important to look far enough into the golf course as a regional water user as one of the potential reuse projects. It may be so cost prohibitive, but I don't think it should not be an option.	**Abby Ostovar:** It was a comment from the Wallace Group as well, that further waste water recycling had a high cost. However, we can still list it as an option.	Meeting comment - noted.
197					Meeting	3/5/2021	**Sarah Hardgrave**	Well, you have some other expensive projects in there, I don't see why this [waste water project] couldn't also be included.	Comment received.	Meeting comment - noted.
198					Meeting	3/5/2021	**Christopher Bunn**	To add to the wastewater discussion, there's an opportunity. Cal Utilies Services treats the water and then disperses it in spray fields, just to disperse it. There's going to be a bridge at Davis Road, it could include a pipe underneath, and would be quite close to the main sewage lift station for the City of Salinas and then it could be injected and moved to Marina.	Comment received.	Meeting comment - noted.
199					Meeting	3/5/2021	**Sarah Hardgrave**	I want to add to build on what MCWD described and build on regional projects. If there were a desal or brackish water plant project in the Marina area serving MCWD down to East Garrison, extending a pipeline down the bluffs and then to Toro Park and Las Palmas, looking at municipal users, that was 64% of total usage. Looking at current materials, current pumping is 2400 AF and 64% in urban systems, and sustainable yield is 1,700, if we could have an alternative supply to those areas, we could reach sustainability. It's pie in the sky at the moment. In terms of this analysis for this area of the subbasin, it would be good to include a potential cost of a pipeline from East Garrison down reservation road to those utilities. I'm just throwing it out there. I hope you will consider it for future discussion.	**Abby Ostovar:** We've been looking for new ideas as well.	Meeting comment - noted.
200					Meeting	3/5/2021	**Beverly Bean**	I just want to comment on your comment about the B8 Zone. That is a very small part of this subbasin. It is only preventing subdivision, and there are constant efforts to overturn it and change it. The rest of the area is open to development. In the LUAC, we constantly see more houses going in. So the B8 Zone is just a small part of this area.	**Abby Ostovar:** Thank you. If and when allocations are developed, there will be a much more refined analysis.	Meeting comment - noted.
201					Meeting	3/5/2021	**Beverly Bean**	Re: Pumping allocations. I want to comment that the golf course should be included in every one of these charts. They have new wells at 800 feet. We're not allowed to know how much they're pumping. We should try to estimate how much it is.	**Abby Ostovar:** I don't have it included here, but Wallace Group has that estimation of their water use. They have overlying rights, so you can consider them in the overlier portion of the chart as well.	Meeting comment - noted.
202					Meeting	3/5/2021	**Janet Brennan**	Drinking water systems, are they municipal, or are they not identified on the chart? Thank would be helpful to include on the chart.	**Abby Ostovar:** DW systems are municipal systems and mutual water systems. We also included an allocations memo, where it is explained more. But thank you for your suggestion to include in our chart.	Meeting comment - noted.

203					Meeting	3/5/2021	**Bob Jaques**	Of the various approaches you've described here, is there any estimate of the amount of pumping reduction that would curb under those various scenarios to the sustainable yield? Is there anything other than pumping allocations that has a chance to close that gap?	**Abby Ostovar:** You mean projects?	Meeting comment - noted.
204					Meeting	3/5/2021	**Bob Jaques**	Other than simply requiring pumping to be reduced, do any of the other things you mentioned achieve the reduction needed to get to sustainable yield?	**Abby Ostovar:** Good question. We're talking about the magnitude being over 1,000 AF being reduced. Without the new projects mentioned today, these projects are much smaller than the overdraft. It's looking like allocations may be needed. Everybody could cut the same amount. We haven't done what the volumetric cut down would be, I wanted to keep this conversation conceptual. We would also need to consider a minimum for the human right to	Meeting comment - noted.
205					Meeting	3/5/2021	**Bob Jaques**	As you mentioned, if you add those project benefits together, it probably wouldn't be a real big number. Requiring reductions in pumping is going to be the path you need to take to get to sustainable yield. And should be included as a probable thing that has to be done.	**Abby Ostovar:** I understand this is extremely uncomfortable for everyone, but with the GSP we have to show DWR that we can locally manage our groundwater so that the state doesn't come in and do it.	Meeting comment - noted.
206					Meeting	3/5/2021	**Janet Brennan**	There's a significant emphasis that the allocation structure is not related to groundwater rights, making the distinction. Yet Option 1 is based on overlying rights. Isn't that a contradiction?	**Abby Ostovar:** It's tricky. We're trying to avoid an adjudication. No one is going to be fully happy, but how do we prevent someone being so unhappy they start an adjudication? It's a really challenging subbasin. We tried to	Meeting comment - noted.
207					Meeting	3/5/2021	**Margaret-Ann Coppernall**	I have a question about the notification if wells would go dry. Do you have any data on which wells went dry in the past and what caused them to go dry? I think it's important to avoid crisis management.	**Abby Ostovar:** We don't know exactly which wells went dry, no one is collecting that data. The closest we came is developing a groundwater contour, and then looking at the depths of wells that have been drilled. We talked about this when we talked about the SMC. There aren't too many wells we could assess accurately because their location information is not accurate. The analysis is based on the depth of the well and the contours, and determining which	Meeting comment - noted.
208					Meeting	3/5/2021	**Margaret-Ann Coppernall**	I think we need to include climate change and sea level rise in the analysis.	**Abby Ostovar:** We are working on developing future sustainable yield which will take into account climate change. When we finish the water budget, it will include	Meeting comment - noted.
209					Meeting	3/5/2021	**Beverly Bean**	The wells that did go dry and caused the B8 moratorium, the wells most likely to go dry are in the B8 zone. It's my impression the *de minimis* users with their own wells that use huge amounts of water on their various activities would not be affected by these allocations. They will continue to use all the water they want.	**Abby Ostovar:** While the GSA cannot require metering from various users less than 2AF, they can be regulated. The GSA could implement a pumping charge. There are ways they can somewhat be included, there is some ability. Sarah Hardgrave: I found Table 2 in the Wallace Group memo, on Page 56 of the full agenda packet. It has a list of all municipal systems. I appreciated the data provided today. It showed me that there are 312 private non-agriculture wells, and their total use was not as big as I	Meeting comment - noted.
210					Meeting	3/5/2021	**Christopher Bunn**	As far as metering, I hope we can meter as many entities as possible. With more data, we can have a more honest discussion. As far as irrigated acreage, you have 1027 irrigated acres and you only have 408 AFY for water use. For sake of discussion, an acre of romaine will take 1 AF. You have to check and see where those ranchers are pumping, if it's within the subbasin or just next door in the 180/400. Romaine is the least thirsty of the crops.	**Abby Ostovar:** Given that GEMs cover most agriculture areas, we should be able to use that data for an analysis for water used. We haven't done an analysis about whether someone is pumping from outside the subbasin and bringing **Sarah Hardgrave:** The table on Page 57 of the report, the note says it was based on lettuce and romaine.	Meeting comment - noted.
211					Meeting	3/5/2021	**Beverly Bean**	I just want to clarify that this meeting would be to discuss allocations, projects, and the numbers you need from us. I want clarification on what this meeting would be about.	**Sarah Hardgrave**: We have not provided feedback on projects or pumping allocations options. And we need to discuss the SMCs. Have a more focused conversation that we haven't really been able to do today. **Abby Ostovar:** The other part of Beverly's point is that we haven't prepared the water budget with EKI. We will get that to you as soon as possible, but it isn't ready yet.	Meeting comment - noted.
212					Meeting	3/5/2021	**Sarah Hardgrave**	We need to look for about 1,000 AF of either additional water supply projects or supplemental sources, combined with reductions of pumping to achieve sustainability.	**Abby Ostovar:** That's our best estimate now. We will do full analysis but we'll refine numbers as best we can. It's on the right order of magnitude.	Meeting comment - noted.

218					Special Meeting	3/23/2021	**Sarah Hardgrave**	It would be helpful to know how many wells will be impacted at each Measurable Objective.	Emily Gardner: I don't have the answer either. We always talk about these plans being pretty iterative. We talk about the Minimum Threshold and Measurable Objective as relatively solid. This has me thinking, say we pick the lowest one, achieve it, and realize there are some wells that have problems, could we then strive to go higher? Abby, do you Abby Ostovar: No, but we do have the 5-year update. We can do the data analysis with the data we have. We can do the analysis, but won't be very helpful since so many wells are not shown at their accurate locations.	Meeting comment - noted.
219					Special Meeting	3/23/2021	**Gary Kreeger**	The Minimum Threshold, 2015, that was in the middle of the big drought? How much of that level was from the drought? How much was from over pumping? If you are picking a drought year, you are picking pretty rock bottom.	**Abby Ostovar:** We can say that the trend is going down, regardless of drought year. But they both have an impact. It's hard to separate them out. Here, it went lower in 2016, and 2019 was slightly below 2015 levels. **DW:** It's hard to disaggregate when we already have declining water levels. The drought is overlain on a significant downward trend. Our bigger concern is the	Meeting comment - noted.
220					Special Meeting	3/23/2021	**James Sang**	I notice already we're below the Minimum Threshold, are you saying we already have to start conserving water? Is there any benefit if the water level goes above the Measurable Objective?	**Abby Ostovar:** Regardless of being below the Minimum Threshold, you need to still have actions to get to the MO. The lower you are, the harder you have to work to get there. While there are benefits to being higher than the Measurable Objective, so until that happens, I can't quite	Meeting comment - noted.
221					Special Meeting	3/23/2021	**Christopher Bunn**	I think as part of this discussion, I would want to see what the interaction is between the Toro Aquifer and the aquifers of the 180/400. Because unless that's modelled, you're not going to know what the pumping in that basin is really going to be doing and how it will influence this subbasin. I think that's a pretty important part of the puzzle. Now that the model is available, you can run that analysis.	**Abby Ostovar:** We've mapped the groundwater elevations and we've looked at how the aquifer contours fit together. Our modelers from M&A are working with EKI modelers, and looking specifically at those cross-boundary flows. They're deep in the modeling world trying to figure that out.	Meeting comment - noted.
222					Special Meeting	3/23/2021	**Christopher Bunn**	Are you going to look at the historical influence of other subbasins? What did pumping outside of the Monterey Subbasin do to the historical decline?	**Abby Ostovar:** The SVIHM goes back to 1967 or so, but only has one calibration point in the Monterey subbasin. The EKI model goes back to 1998 and the model run is from 2003 to 2018. Those are the time frames where we'll have a good	Meeting comment - noted.
223					Special Meeting	3/23/2021	**Bob Jaques**	If you reduce your pumping to a sustainable level, your decline would stop but it wouldn't raise the level any higher to where you flattened out. In the Seaside Basin, we're seeing that meeting the sustainable pumping level doesn't make up for the overpumping that occured prier to that. That is something that should be discussed here. If you want to get higher than 2015, you have to look at how to further reduce pumping below the sustainable level or import another source of recharge water.	Comment received.	Meeting comment - noted.
224					Special Meeting	3/23/2021	**Ron Stefani**	Re: Measurable Objective for groundwater levels: I think we should go with the lowest one. When we get into project costs, as we move up the level, it will get more expensive. I believe it will be cost related.	**Abby Ostovar:** Excellent point. I will point out these aren't the only options, you can benchmark any year.	Meeting comment - noted.
225					Special Meeting	3/23/2021	**Sarah Hardgrave**	I would tend to agree. I think we should strive toward something that may be more achievable in the near-term, and see what we can accomplish in the first 5 to 10 years.	Comment received.	Meeting comment - noted.
226					Special Meeting	3/23/2021	**Bob Jaques**	I'm kind of jumping ahead to projects, just looking at this chart again, if you pick the lowest of the 3 proposed Measurable Objectives, which is 2011, and your 2015 level is that 8 feet below that, and it will go more below before we get to management activities and projects, in the list of projects and management activities under discussion, they all seem targeted at achieving sustainable yield level. That won't meet your objective of raising the groundwater level objective. I think we need to look beyond sustainable yield. We need to look at bringing the groundwater level up, and then maintain sustainability.	Comment received.	Meeting comment - noted.

227					Special Meeting	3/23/2021	**Margaret Anne Coppernall**	I want to say that I agree with the two speakers who mention the cost. I think it would be helpful to know the cost before we make a decision to compare the cost and affordability. I think the groundwater level is very important, especially with relation to seawater intrusion and taking into considering sea level rise.	Comment received.	Meeting comment - noted.
228					Special Meeting	3/23/2021	**Janet Brennan**	We have a recommendation of 8 feet and 16 feet, why don't we compromise at 11?	Comment received.	Meeting comment - noted.
229					Special Meeting	3/23/2021	**Patrick Breen**	Do we have any sense of pump depths and if anything went dry in 2016?	**Abby Ostovar:** We don't. We have the domestic well analysis where we looked at the depths of wells and water levels. We did it for 2015 levels, but we don't have the accurate locations for the wells, it's only a sampling of them. We could do the same analysis for 2016.	Meeting comment - noted.
230					Special Meeting	3/23/2021	**Gary Kreeger**	I understand there are difficult decisions to make. If you go above that 8 feet and shoot for 11, it will be a little more work, but it will give you a little more cushion.	Comment received.	Meeting comment - noted.
231					Special Meeting	3/23/2021	**Beverly Bean**	It troubles me to understand how much about these water levels are projections and estimates and modeling numbers, and how few are actual real numbers from actual wells. The GeoSyntec report recommended more test wells to get a better picture and I don't think that happened. We're not collecting data to make these decisions. How much of what you're recommending is based on actual data from those wells? I don't think we're getting enough real data. The other thing that troubles me is one of the management actions we need to look at is reducing pumping. How are we going to do that? We don't have enough well data, can we do something about getting more well data?	**Abby Ostovar:** This is based on actual groundwater well data. The domestic well analysis was projected/extrapolated between the monitoring wells. The domestic well analysis was more an estimate based on the depths of the wells versus this is based on actual monitoring data. However, you can include in the implementation actions installing more monitoring wells which could help with management down the road.	Meeting comment - noted.
232					Special Meeting	3/23/2021	**Beverly Bean**	Are you satisfied with this data, do you think it's enough to make these decisions?	**Abby Ostovar:** I never think there is enough data, but we have to use what we have.	Meeting comment - noted.
233					Special Meeting	3/23/2021	**James Sang**	I want to see that Minimum Threshold lowered. Are you planning on telling stakeholders that they have to cut off their water supply? We have to implement these ideas before we do anything? This puts a lot of stress on stakeholders.	Comment received.	Meeting comment - noted.
234					Special Meeting	3/23/2021	**Gary Kreeger**	I would be hesitant to push the Minimum Threshold lower. We are already overpumping. I agree with Beverly, at some point we have to talk about restrictions on pumping.	Comment received.	Meeting comment - noted.
235					Special Meeting	3/23/2021	**Janet Brennan**	Recommend a Measurable Objective at the 2008 groundwater level.	Motion passed unanimously.	Will be incorporated into SMCs.
236					Special Meeting	3/23/2021	**Sarah Hardgrave**	The steep decline is pretty alarming, to see 5 feet from one year to the next. A drop of 30 feet over a 16-year period is very concerning. I would concur with Mr. Jacques to see about having projects that would increase the levels over time. This is a really difficult situation for this area of the subbasin. I do hope that in addition to the projects, that we will also be able to think big picture as well.	Comment received.	Meeting comment - noted.
237					Special Meeting	3/23/2021	**Beverly Bean**	Does the chart include getting the golf course off potable water for their greens?	**Abby Ostovar:** In the in-lieu projects, this was a program to incentivize alternative sources instead of pumping. The approach we're trying to take is to not tell specific actors what to do, but we can look at that.	Meeting comment - noted.
238					Special Meeting	3/23/2021	**Beverly Bean**	On the peninsula during restrictions, there was a moratorium on new hookups. Are restrictions or moratoriums on new hookups on the table? We should be making recommendations to those who do have the power to do so.	**Abby Ostovar:** We have to work within the authority of the GSA. So we'd have to work in partnership with the County. It might be helpful for future planning development but we need to have a conversation with the County. It won't	Meeting comment - noted.
239					Special Meeting	3/23/2021	**Sarah Hardgrave**	The Corral de Tierra golf course is not located in close proximity to a sewer system that would be able to recycle water for irrigation. I think that's why it wasn't identified in the list of projects before us. Because the WW facilities are not nearby.	**Abby Ostovar:** Yes, these WW facilities are near the boundary with the 180/400.	Meeting comment - noted.

240					Special Meeting	3/23/2021	**Sarah Hardgrave**	In the example of the cease and desist order, it deals with a different circumstance. I think the question that we should ask the staff and consultants to explore is how do that findings of this analysis and ID of overdraft through the GSP, how will the County determine the safe and adequate water supply for new development? How will the county use the GSP to inform their decisions? It is a worthy conversation to have with the County Department of Environmenal Health.	Comment received.	Meeting comment - noted.
241					Special Meeting	3/23/2021	**Janet Brennan**	Using pumping allocations and control, in essence, will result in in-lieu projects because those are the options available to reduce pumping. It seems to me through an allocations system you could limit new developments by not allocating water to vacant parcels, or limiting the amount of water for vacant parcels, which would be a way to address new development. How difficult will it be to implement pumping allocations?	**Abby Ostovar:** Developing an allocation structure will be challenging, but it can be done. The goal of it could be to avoid adjudication, which is also a lengthy process. One of the challenging parts in this area will be to figure out how to deal with *de minimis* users. There will be some steps, the MCWRA only collects extraction from a portion of the subbasin. There will be various steps in collecting the data. It's not outside of the realm of what's doable.	Meeting comment - noted.
242					Special Meeting	3/23/2021	**Janet Brennan**	Table 2, 3,542 connections that could be affected by allocations. In Salinas Hills (0.73 AFY), Corral Estates (0.75 AFY), Robly (0.75 AFY), I mean these are huge water demand figures, especially when you compare to the peninsula.	Comment received.	Meeting comment - noted.
243					Special Meeting	3/23/2021	**Bob Jaques**	I support Beverly's comments. I think that in the projects, it would be good to add a few more. One could be use recycle water for landscape and golf course. Another could be about limiting or halting new connections. It may be infeasible, but for anyone reading the GSP, if they're not in there, someone might think it wasn't considered as a management action.	Comment received.	Meeting comment - noted.
244					Special Meeting	3/23/2021	**Sarah Hardgrave**	You've done this analysis of cost, is that a requirement of the GSP? Can you have a project without a cost associated with it?	**Abby Ostovar:** You don't need a cost, you just need to show you've considered projects and management actions and lay out a path forward. This is mainly for us and our stakeholders to understand the level of effort and which	Meeting comment - noted.
245					Special Meeting	3/23/2021	**Sarah Hardgrave**	I agree with both Bob and Bev on those potential additions.	Comment received.	Meeting comment - noted.
246					Special Meeting	3/23/2021	**Bob Jaques**	I see a mention of a "direct potable" use and I assume you mean indirect potable use.	Comment received.	Meeting comment - noted.
247					Special Meeting	3/23/2021	**Sarah Hardgrave**	Re: WW going to Marina. I think the challenge for our management area, if we're sending that water up to be treated, how do we get it back to be used here. I'm not sure how that can come back to this area, except for a pipeline to bring it back.	**Abby Ostovar:** Our subcontractor talked about increasing the level of treatment at the existing facility. She has a much better handle on the most feasible option and she will scope that. We solicited ideas in November and December. We can add these two new projects, but we need to have this	Meeting comment - noted.
248					Special Meeting	3/23/2021	**Margaret Anne Coppernall**	Given the steep drop in groundwater level, we need to have a sustainable supply for people who are already existing, who already need it, not new development.	Comment received.	Meeting comment - noted.
249					Special Meeting	3/23/2021	**Gary Kreeger**	I'd like to know more about the linkage between the authority for approving development and our authority around water. I think there should be no more new development included [in the GSP] to reinforce the idea there's a real problem here. We're talking about allocation controls, do we have the authority to tell people to stop pumping as much? Can we cut back? How do we enforce that?	**Sarah Hardgrave**: There was a workshop provided for all subbasins on allocations. It is posted on the SVBGSA website.	Meeting comment - noted.

250					Special Meeting	3/23/2021	**Sarah Hardgrave**	My observation of the proposed projects is that they are costly, complicated to implement, but they are the choices we've got. My biggest concern is that they may not be enough to get to sustainability. That is the challenge in this area. It seems like we need to include all of these options and make an effort for all of these options. But also look outside of this area and look to a regional effort to achieve sustainability. I'm concerned about the declining water levels in the Laguna Seca area. Also, the comment from Mr. Bunn earlier about how are we being affected with what is happening in the 180/400. How can we adjust sustainability in this area working with our adjacent subbasins for potential regional solutions?	Comment received.	Meeting comment - noted.
251					Special Meeting	3/23/2021	**Christopher Bunn**	Some of the solutions lie outside of your subbasin and that is why the modeling is so crucial. The multi-benefit stream channel could potentially benefit you guys significantly. It could reduce agricultural pumping in the 180/400, which could impact this subbasins well levels. However, the way that project is presented, it's going to fail. Right now it is being presented where the GSA is covering the cost of administration, but you also have the cost of doing the work. It's a 95-mile river, but the final 10 miles can't be worked on. 85 miles and many land owners are absentee, and won't spend the money. That project needs to be done on the whole river and needs to be tweaked. I'd love to see the modeling to see the effects on this subbasin.	Comment received.	Meeting comment - noted.
252					Special Meeting	3/23/2021	**James Sang**	I'd like to suggest a project only for well owners. I want to see this group suggest to well owners to build infiltrating trenches around their wells to recharge their own wells. Trench 2 feet deep to prevent rainwater from being evaporated. This could be a huge amount of water to recharge their wells.	**Sarah Hardgrave:** We do have the decentralized stormwater project, which is similar to what you're suggesting. It is a very expensive endeavor for not as much water as we would like.	Meeting comment - noted.
253					Special Meeting	3/23/2021	**Sarah Hardgrave**	We encourage SVBGSA, EKI and MCWD to think about potential opportunities for projects that would benefit both management areas for the subbasin and also how to coordinate any potential allocation program across both management areas.	Comment received.	Meeting comment - noted.
254					Special Meeting	3/23/2021	**Janet Brennan**	I'm torn between Option 2 and 3. From a policy perspective, it seems drinking water systems should be a priority. But Option 3 maintains the existing proportion of use.	Comment received.	Meeting comment - noted.
255					Special Meeting	3/23/2021	**Beverly Bean**	I'm favoring Option 3, it seems like it treats all water users pretty equally. If we prioritize one group over another, we're inviting lawsuits and people who would feel unhappy and unprioritized. Back to my point about a moratorium, if that large precent of users are in a large system, I think the idea of some form of a moratorium would be possible. I think we should consider that when we make these decisions.	Comment received.	Meeting comment - noted.
256					Special Meeting	3/23/2021	**Beverly Bean**	I think the best way to do it is to treat everyone as equally as possible. Everyone should share the pain.	Comment received.	Meeting comment - noted.
257					Special Meeting	3/23/2021	**Margaret Ann Coppernall**	I agree and lean towards Option 3. We need to be fair. I know senior overliers will protest if they don't get their fair share. I agree we need to pick the option that is the fairest to everybody.	**Abby Ostovar:** More analysis will happen, and we'll have to deal with outliers. You're at the right level of thinking.	Meeting comment - noted.
258					Special Meeting	3/23/2021	**Sarah Hardgrave**	I am also leaning toward Option 3. Sounds like we have a majority of folks leaning in that direction. I would welcome a motion. One question, Abby, we need to achieve sustainability in the entire subbasin. I'm wondering if the discussion of allocations needs to include the Marina-Ord area? Could you work with our other management area on that question?	**Abby Ostovar:** Groundwater law is still evolving, we're figuring out where the courts are on this issue. Having the Ord area in the middle and separate management areas and different principal aquifers makes this difficult. **Patrick Breen:** In all our area, we're the only pumper. If there was a reduction on pumping in the area, it would just be us. If we're not sustainable, the reductions would be born solely on the water district, so we don't really have this	Meeting comment - noted.

259					Special Meeting	3/23/2021	**Janet Brennan**	I recommend Option 3 for the allocation system.	Motion passed. Bob Jacques abstained.	Option 3 for a pumping allocation description will be included in the GSP.
260					Special Meeting	3/23/2021	**Margaret Anne Coppernall**	A topic that came up earlier, about Pure Water Monterey Project that is looking at expansion this week. Looking at FEIR. Is there a way to coordinate with them on a cost analysis for a pipeline to bring recycled water over here in the future?	**Sarah Hardgrave:** This will be included in the additional projects that will be scoped.	Meeting comment - noted.
261					Special Meeting	3/23/2021	**Bob Jaques**	Abby, when you're going through the projects slide, there was the topic of prioritizing listed in the packet, or talked about it. I didn't hear any conclusions or consensus about prioritizing. Is that something this group needs to come up with?	**Abby Ostovar:** You don't have to, but it would be helpful to us if you did. Now would be a great time to do that to include in the chapters.	Meeting comment - noted.
262					Special Meeting	3/23/2021	**Bob Jaques**	From our perspective, we're concerned about the effects of pumping and the dropping water levels. The modeling shows that the Corral de Tierra pumping is causing the Laguna Seca levels to fall. When you look at the cumulative amount of pumping reductions versus the projects, you need to cut it down by about 1000 AFY. The total amount of the other projects only add up to about 400 AF. It's obvious pumping reductions/allocations will have to be imposed. I think it should rise to the top as one of the most critical choices. I think it should be one of the high priority projects in the GSP.	Comment received.	Meeting comment - noted.
263					Special Meeting	3/23/2021	**Beverly Bean**	I completely agree with Bob, and I would like to put that forward as a motion. Let's not waste any more time with costly schemes, let's get this pumping down. Motion: Pumping allocations should be our top priority.	Motion passes unanimously.	Prioritization of pumping allocations will be incorporated into the GSP.
264					Special Meeting	3/23/2021	**Margaret Anne Coppernall**	I think it's a very prudent motion.	Comment received.	Meeting comment - noted.
265					Special Meeting	3/23/2021	**Janet Brennan**	I agree with the motion.	Comment received.	Meeting comment - noted.
266					Special Meeting	3/23/2021	**Marieke Desmond**	I appreciate the committee so carefully considering these options. Equity in water will depend on how accurately we measure it. We encourage metering in these allocations discussions.	Comment received.	Meeting comment - noted.
267					Special Meeting	3/23/2021	**Marieke Desmond**	It's so important to get to the sustainable yield on this issue, but I want the committee to keep looking at supply solutions as well as pumping allocations. Pumping allocations alone aren't necessarily the key to sustainability although they can help get to a better water storage levels.	**Sarah Hardgrave:** Yes, to clarify, I wasn't saying that we shouldn't pursue any of the projects. It is helpful to have allocation prioritized as an initial action in addition to the projects that were laid out because they won't get us to sustainability by themselves.	Meeting comment - noted.
268					Email	4/12/2021	**James Sang**	I wanted to present some potential agenda items.	Comment received.	Point #1 was considered throughout the Salinas Valley and it is incorporated in projects for other Subbasins.
								1. Can rainfall harvesting through swales refill wells and increase groundwater and water aquifers?		
								Reference a: You Tube video (Harvesting Water Naturally with Swales by Urban Farmer Curtis Stone)		Point #2 has been incorporated into the overland flow MAR project which was modeled on the Pajaro Valley project noted.
								Reference b: You Tube video (Recharging A Well Part II -John Kaisner The Natural Farmer)		

								Reference c: You Tube video (Swales on Contour can Drought -proof Gardens, Farms and Pastures with Water Harvested Passively by Edible Forest Gardens)		
								Reference d: You Tube Video (Deep Soil Ripping for Water Conservation by Megan Clayton)		
								Reference e: "Deep Soil Ripping as an Effective and Affordable Water Capture Tool written by Amanda C. Krause, Megan K. Clayton, ...et al" Please google search article.		
								2. Can you make a presentation on what UC Santa Cruz is doing to recharge their wells? This is what Robin Lee wanted.		
								Reference a. You Tube video (Enhancing Groundwater Recharge in the Pajaro Valley by California Department of Food and Agriculture)		
								I believe that swales and subsoil plowing can recharge a farmers well, groundwater and aquifers. This is a cheap and easy way to help every farmer and landowner have a plentiful supply of water. This idea will solve California's goals of recharging water aquifers and holding back salt water intrusion into our coastal lands.		
								Can you show this to all interested parties?		
269	4				JotForm	4/22/2021	**Ron Weitzman**	I am objecting to the claim by the Hydrogeological Working Group in their letter of 5 April 2021 that your designation of the Dune Sand Aquifer as a Principal Aquifer is incorrect. While the EIR for the Monterey Peninsula Water Supply Project, for which HWG has consulted, dismally failed to model that aquifer successfully, with a relative error equal to 30, it has reported that it may account for up to two-thirds of the source water for the project. According to Appendix E2 of the 2017 and final EIR (p. 28), "The third approach used reported results that determined the pumping allocation based on well-screen configuration and model calibration to the test-slant-well pumping results (66% from Model Layer 2 and 34% from Model Layor 4)." That alone qualifies the DSA as a Principal Aquifer. Other reasons supporting that designation also exist. According to the hydrogeologist hired by Water Plus, Barbara Ford, "The extremely low Kv applied to the Dune Sand/A Aquifer unit [in the EIR], and particularly in the underlying layer 3, appears to have resulted in eventually reducing the residual at three of the wells. The extremely low Kv was applied to reduce the residuals at the wells, but because the value seems unreasonable, its use as a mechanism (prop up the head in layer 2) to improve the appearance of the calibration, instead reduces the confidence in the calibration." That contrived low kv makes the Dune Sand Aquifer incorrectly appear to drain little or no water from overlying streams, ponds, and the Salinas River. According to the hydrogeologist hired by the California Coastal Commission, no evidence exists to support that claim and, in fact, evidence shows that aquifer has a seaward gradient, which could allow seawater intrusion only if MPWSP wells draw water from it. The Dune Sand Aquifer is indeed a Principal Aquifer, as your Groundwater Sustainability Plan currently asserts.	Comment received.	Comment Received
270	1, 3, 4, and			Figure 5-1 through 5-10	Email	4/23/2021	MCWRA	Some sections are not completed or indicate future revisions and updates. MCWRA looks forward to an opportunity to comment on those when completed.	Comment received.	Thank you for the edits and suggestions.
								Suggest that on the Figures that combine the Lower 180-Ft Aquifer and the 400-Ft Aquifer wells, they be symbolized differently.		
								Suggest adding FO-11, along with FO-09 and FO-10 wells, to the monitoring network.		
								On Figures 5-1 through 5-10, suggest changing the color of the dot to something other than black. It is difficult to see the locations when they are close to the black/white dashed boundary lines.		

271	7				Email	5/27/2021	MCWRA	Appendices mentioned in the text were not provide so MCWRA staff were unable to review. Suggest adding a table that clearly list which analytes and parameter are being collected/measured, including frequency and methodology (i.e. lab analyzed or field measurements w/ hand-held instruments) For seawater intrusion monitoring, suggest clearer description…will chloride concentration be used, or TDS, or conductivity? MCWRA has provided other minor and/or editorial comments on the chapter of the Draft GSP to Montgomery & Associates in a Word document that was supplied for that purpose	Comment received.	Thank you for the edits and suggestions.
272					Meeting	5/7/2021	**John Bramers**	I was going to mention on the outreach that it's deceiving in the way it's called. It's Toro Park, San Benancio, etc.….The stakeholders out there hear "Monterey" and don't think they are a part of it.	**Donna Meyers:** If you think we may know or have contact, but if you have direct contact with them, we'll cross-reference them. We want to make sure we have a completed group. We'll have an outline of how to approach this and any dates. We'll be planning that in the next several weeks and will get you that information, including dates **Sarah Hardgrave:** I would welcome any committee members who have contacts at HOAs to please share those with us and I will cross reference them with our District	Meeting comment - noted.
273					Meeting	5/7/2021	**Gary Kreeger**	Regarding using different models, could you speak to how understanding how our subbasin will interact with others since we know they're all connected?	**Derrik Williams:** The modeler who is putting this together now, as he is finalizing it, is to make sure the interaction with the other subbasins is well simulated. The model is going to be developed to have an accurate representation across the boundaries. The only thing that will come up will be how we simulate projects in other subbasins. Say, the impact on the 180/400, we'll have to roll it into this model and it is an extra step. If water levels are going up in the 180/400, how will it affect this subbasin? I don't think it's going to be a difficulty, just an extra step. I don't think there	Meeting comment - noted.
274					Meeting	5/7/2021	**Bob Jaques**	Agenda makes a brief mention about a seawater intrusion model to be funded with grant funds. How far into the adjacent basins will the model go? I'm interested in it if it will extend into the Seaside subbasin.	**Derrik Williams:** First plan is to develop the model only for the Monterey Subbasin. Then we will extend it into the 180/400. We want to pick up all seawater intrusion observed. There isn't any seawater intrusion observed in the Seaside subbasin, so it's not in the plan right now. But if we start see that, we will develop a plan on how to extend that.	Meeting comment - noted.
275					Meeting	5/7/2021	**Tamara Voss**	Just to tag on to Bob's comments and interest in the potential seawater intrusion in the Seaside area, I think Derrik, you're correct that we're not seeing seawater intrusion in the Paso and Santa Margarita aquifers. I do think there is evidence of seawater intrusion in the shallower aquifers, which can then migrate down. The aquifers of use and interest don't have seawater intrusion, but there is high chloride level water in the shallower water that can move vertically down, and this group should not lose track of that mechanism.	**Derrik Williams:** Point well taken, thank you, Tam.	Meeting comment - noted.
276					Meeting	5/7/2021	**Sarah Hardgrave**	The recent annual seawater intrusion monitoring included some indicator findings at a recent meeting with the Seaside Watermaster, and I concur with that. I'm glad to hear we're not in a situation of dueling models. There seems to be good agreement on using this model in-lieu of the SVIHM model. Are they using different software platforms? Are they completely separate approaches? Or are they similar based software for the modeling?	**Derrik Williams:** They are similar software packages, but not identical packages. The fact that they're similar makes it easier to transfer information between the two. The fact that they're different is why the Monterey model will be better for seawater intrusion. They're both based on codes developed by the United States Geological Survey.	Meeting comment - noted.

277					Meeting	5/7/2021	**John Bramers**	To follow up on that, for the area on Reservation Rd, will that area be managed with the 180/400?	**Donna Meyers:** That is still planned to be managed as part of the Corral. We would have to do a boundary adjustment. **Abby Ostovar:** We've thought about a boundary adjustment. It's a complicated process that takes a lot of time. We're just trying to be more explicit in the GSP so it's not just lumped into the Marina Ord management area. They do have a monitoring network closer to those areas.	Meeting comment - noted.
278					Meeting	5/7/2021	**John Bramers**	I'm confident most of the water in those farming areas is coming from the 180/400. It's going to be a challenge for projects.	**Abby Ostovar:** That's how we arrived here. As we have gone further in the GSP process, these flags have come up.	Meeting comment - noted.
279					Meeting	5/7/2021	**Sarah Hardgrave**	One of those areas is the Bluffs Development, the sort of southern one. The other ones are more on the valley floor and in agricultural use. And then there's the one little triangle, also agricultural use?	**Abby Ostovar:** Strawberries	Meeting comment - noted.
280					Meeting	5/7/2021	**Sarah Hardgrave**	In terms of the name, referring to it as Reservation Road area makes sense to me. Seem intuitive. Does anyone have other suggestions? Let's go ahead and go with that, as a way to call it out. Will there be some slightly different management actions for those areas that would be more along the lines of the management actions in the 180/400?	**Abby Ostovar:** Actually, yes, you'll see that in the next slides with regional projects. Benefit assessments will be done. We've widened our scope on projects and management actions.	Meeting comment - noted.
281					Meeting	5/7/2021	**Janet Brennan**	Relating to the extraction barrier project, to address seawater intrusion. In listing your projects, it only talks about using the water for desalination. It doesn't address the seawater intrusion project specifically. My suggestion is that to be included, specifically. Why is that project not included in the MCWD's proposal to address seawater intrusion in that area?	**Patrick Breen:** Participation in regional projects is at a conceptual level, MCWD would entertain participating in the regional projects. We have not cited it for the MCWD GSP because it is at the conceptual level. We're not opposed to it.	Meeting comment - noted.
282					Meeting	5/7/2021	**Janet Brennan**	I suggest you include it in the regional projects.	**Abby Ostovar:** We're still working through how we develop the partnerships and support. Yes. We'll figure out how to have it in there.	Meeting comment - noted.
283					Meeting	5/7/2021	**Janet Brennan**	I also have a recommendation for another project for the Corral area. Specifically request the County of Monterey expand the B8 planning area for land use.	**Abby Ostovar:** That has been brought up previously, thank you for flagging it.	Meeting comment - noted.
284					Meeting	5/7/2021	**Sarah Hardgrave**	One comment about invasive species eradication, you're talking about the unit cost for remaining work. I don't think invasive species eradication ever ends as it requires ongoing effort.	**Abby Ostovar:** We've been working with Resource Conservation District of Monterey County (RCDMC) on this, it includes the remaining acres along the Salinas River. The idea is the full 900 acres are treated in a timely manner, with retreatments along the way. What his number doesn't include is if you don't treat it, how arundo will spread.	Meeting comment - noted.
285					Meeting	5/7/2021	**Sarah Hardgrave**	Will the recharge basins be located in the 180/400? Where are they located?	**Abby Ostovar:** We don't have locations. This is a notional cost.	Meeting comment - noted.
286					Meeting	5/7/2021	**Sarah Hardgrave**	To clarify, that is the number for within our planning area? Or for the 180/400?	**Abby Ostovar:** We had it scoped out for what the 100-acre basin would cost. This number is not realistic for the Monterey subbasin, we have to think a little more carefully about how it would fit here.	Meeting comment - noted.
287					Meeting	5/7/2021	**Bob Jaques**	What recycling plant are you referring to for the source?	**Abby Ostovar:** Cal Utilities Service plant.	Meeting comment - noted.
288					Meeting	5/7/2021	**Bob Jaques**	That's the one right by the Salinas River, off Reservation Road. Was there any investigation into the Las Palmas plant? I know they have surplus water at certain times of the year.	**Abby Ostovar:** They already put a lot of that water to use in medians and open spaces. The two big things going in are it's costly to go in and costly to pipe it somewhere.	Meeting comment - noted.

289					Meeting	5/7/2021	**Tom Adcock**	I am on the GSA board at this time, representing a utility, Alco Water Service. My comments don't have anything to do with the GSA board. I am also the general manager for the Cal Utility Service. It's located at the confluence of Toro Creek and the Salinas River. We have ~130 acres of spray field to put secondarily treated wastewater, near the river. I would be happy to work with the GSA or subcommittee or engineering firm to discuss the ability to provide reclaimed wastewater to where our customers are. There's no doubt that it costs a lot to build pipes and transport water. The estimate seems a little high. I think there are ways to place distribution mains to bring that cost down significantly. Very happy to answer any questions. I want to make sure the agency understood Cal US is happy to work with you.	**Comment received.**	Meeting comment - noted.
290					Meeting	5/7/2021	**Sarah Hardgrave**	I was involved with early planning and feasibility and design of the Pacific Grove local water project, which provides recycled water to the PG golf course. That's a small package plant that's in operation. It might be a good reference point. I think Wallace Group would have that information.	**Abby Ostovar:** Piping is a large part of the cost. We didn't see anywhere else to bring the water. We can get together with Mr. Adcock and see where else we could look. **Sarah Hardgrave:** The primary place of use is the Corral de Tierra Golf Course.	Meeting comment - noted.
291					Meeting	5/7/2021	**Margaret Anne Coppernall**	I was curious about the rollout for the seawater intrusion extraction portion discussed earlier. I was wondering where it was going to be placed and how it would function.	**Sarah Hardgrave:** My understanding is that this was identified in the 180/400 plan that was submitted to the Department of Water Resources in 2020. Abby Ostovar: Right now it's a conceptual idea, it is not at the stage for planning or a feasibility study. It hasn't progressed to where we're taking implementation steps.	Meeting comment - noted.
292					Meeting	5/7/2021	**Sarah Hardgrave**	It's effectively the Highway 1 corridor north of the river?	**Derrik Williams:** Conceptually, it was placed along Highway 1, north of the river. Conceptually, because it does give us a line that covers the entire basin and protecting most of the municipalities. It will probably change going forward, but conceptually that's the right place.	Meeting comment - noted.
293					Meeting	5/7/2021	**Janet Brennan**	I would like to ask the committee to consider to ask the County to expand B8 as a recommended program. I would like consideration of that.	**Comment received.**	Meeting comment - noted.
294					Meeting	5/7/2021	**Sarah Hardgrave**	I appreciate the project to take brackish water, desalinate it and use it to provide an additional source of water, and the multiple benefits it would produce. I'd like to reiterate my support for a publically owned project for a more affordable supply.	**Comment received.**	Meeting comment - noted.
295					Meeting	5/7/2021	**Beverly Bean**	I would support what Janet is saying, I just wonder where it would expand to. Would you base it on the previous study or look at new numbers? Planners and the county don't even enforce it, or know what it is. The county just approved a subdivision, even though the Land Use Advisory Committees (LUAC) pointed out that it was in the B8.	**Comment received.**	Meeting comment - noted.
296					Meeting	5/7/2021	**Janet Brennan**	The B8 should be updated to reflect current overdraft conditions, and that the county enforce its B8 zoning.	**Comment received.**	Meeting comment - noted.
297					Meeting	5/7/2021	**Margaret Anne Coppernall**	I support if it means getting more information, if it's feasible.	**Comment received.**	Meeting comment - noted.
298					Meeting	5/7/2021	**John Bramers**	This is getting into land use. You probably need more information before you vote on it.	**Comment received.**	Meeting comment - noted.
299					Meeting	5/7/2021	**Sarah Hardgrave**	It is unclear to me at this time the relationship between our water planning efforts and the land use side of things. It would be helpful to have a better understanding. I'm not disagreeing with Janet's suggestion. It could be an important measure for not intensifying or adding use in the subbasin. It is unclear to me how the GSP recommendations for land use actions would be received on the County side.	**Comment received.**	Meeting comment - noted.

300					Meeting	5/7/2021	**Janet Brennan**	The GSA has no land use authority. Under an allocations system, which does not affect water rights, has an effect on land use indirectly. I have no problem with the GSP addressing this more directly. Because the projects are so expensive, and so way off even to transport brackish water here, the problem is so urgent, we need interim measures to address the Corral de Tierra overdraft problem. I would like staff to provide additional thoughts on my recommendations.	**Comment received.**	Meeting comment - noted.
301					Meeting	5/7/2021	**Janet Brennan**	GSA's have the ability to fallow land. If that's not a land use application, I don't know what is. There may be indirect relationships. We can't rezone it ourselves. The county has to understand the seriousness of the problem. If they're approving developments in the B8 Zone, there is obviously a lack of understanding about the groundwater impacts. This is an opportunity to establish a relationship.	**Emily Gardner: We can be really thoughtful about our relationship with the county and their process. Staff can explore this, and think through how we address it.** **Gary Petersen: Land use and SGMA, SGMA can't override land use. Once a SGMA plan is in place, then general plans have to consider SGMA plans. We're at a transition place for that. As land use plans are developed, they have to consider the GSP. We have to investigate further and bring back more information.** **Sarah Hardgrave: Whether or not the GSP and land use decision making process needs to consider on the land use side. The recent project Beverly mentioned, I provided our information from these efforts to one of our land use planners. This is not an adopted plan, so at this point in time, our efforts are not appropriate to take into consideration. Then in the future, does the GSP become something land use jurisdictions consider in their decision making process? That's the question.**	Meeting comment - noted.
302					Meeting	5/7/2021	**Janet Brennan**	Motion: Request SVBGSA staff to address expanding the B8 area as a program to address groundwater extraction in the Toro Area.	**Comment received.**	Motion passes.
303					Meeting	5/7/2021	**Janet Brennan**	I think it would be helpful if staff summarized recommendations like "one more monitoring well". Summarize recommendations so the committee is fully aware of what the draft is recommending.	**Comment received.**	Meeting comment - noted.
304					Meeting	5/7/2021	**Bob Jaques**	My general comment for both subareas monitoring well networks is both of those subareas abut the Seaside Subbasin, and we know they're hydrogeologically connected and each subbasin can affect the other. I suggest the monitoring network be expanded to include existing monitoring wells in the Seaside Basin that are close to the border, so the effect of any projects or management actions, can be measured to determine the effect they have on the Seaside subbasin. I will also submit comments online as well.	**Abby Ostovar:** I need to check to see if we can have wells outside of the subbasin included in the monitoring network. We include wells outside for drawing contours, but I'm not sure if we can have wells outside of the subbasin as representative monitoring sites. **Tina Wang:** The wells we are talking about here are to meet the requirements. It does not prevent us from collecting date from outside the subbasin. It doesn't prevent us from looking at data from adjacent basins.	Meeting comment - noted.
305					Meeting	5/7/2021	**Margaret Anne Coppernall**	Do we know how many new wells we need, and how much they will cost? Seawater intrusion is such an important issue.	**Abby Ostovar:** We haven't looked at the cost yet. We will look at existing wells before we install new wells. **Patrick Breen:** We haven't worked a cost estimate. It depends on type, depth, levels. Some of that needs to be determined before we provide a cost estimate.	Meeting comment - noted.
306					Meeting	5/7/2021	**Margaret Anne Coppernall**	How many would you need to install?	**Tina Wang:** Near the coast would be a great location for nested wells for seawater intrusion and monitoring in the deep. We'll look at this for implementation chapters. We're in the process of identifying how many we need.	Meeting comment - noted.
307					Meeting	5/7/2021	**Margaret Anne Coppernall**	I'm impressed with this chapter, it's so thorough. You did a great job here.	**Comment received.**	Meeting comment - noted.

308					Meeting	5/7/2021	**Sarah Hardgrave**	We're focused here in the Corral area. I will comment on the Marina-Ord side, on the seawater intrusion maps, they have this area with question marks. If we can get to answering those question marks, that would be great.	**Patrick Breen:** We've had meetings to address those.	Meeting comment - noted.
309					Meeting	5/7/2021	**Sarah Hardgrave**	The Watermaster was grappling with monitoring well issues on the Fort Ord-9, just on the boundary line. Hoping there can be some good collaboration.	**Patrick Breen:** We're aware and we agree. We'll work with the watermaster to address those issues.	Meeting comment - noted.
310					Meeting	5/7/2021	**Sarah Hardgrave**	On the Corral side, are you saying there are potentially existing wells to use first?	**Abby Ostovar:** We're not aware of any existing data collection in those areas, but if there are wells we can perhaps start collecting data.	Meeting comment - noted.
311					Meeting	5/7/2021	**Sarah Hardgrave**	It came to my attention that Cal-Am is planning to drill a new well for their Toro system. The well that is no longer functioning is being planned to be turned into a monitoring well.	**Comment received.**	Meeting comment - noted.
312					Meeting	5/7/2021	**James Sang**	How will you have projects that will refill each aquifer at one time?	**Abby Ostovar:** Each of the projects will look at which aquifer they impact. None of the projects promise to refill all aquifer at any one time.	Meeting comment - noted.
313					Meeting	5/7/2021	**James Sang**	Then you will have some wells that will receive a benefit and some wells will go dry.	**Abby Ostovar:** There could be varied benefits. We will look at what the conditions are throughout the subbasin and have projects to address conditions in all areas.	Meeting comment - noted.
314					Meeting	8/10/2021	**James Sang**	I was reading through the paperwork and I noticed there were 10 of 15 areas in the Fort Ord area that were contaminated with fluorocarbons. Should we be concerned about that? Because if we try to do any recharge in this area, they left this contamination behind.	**Comment received.**	Meeting comment - noted.
315					Meeting	8/10/2021	**Sarah Hardgrave**	I think that is a good question related to the Marina Ord management area.	**Patrick Breen:** Yes, it is being considered, and the plans are not going to have an impact on the US Army's effort to clean that up. **Tina Wang:** It's an important thing to note, most of the remediation effort is conducted in the shallow aquifers, which are the Dune Sands and shallow 180. Most of the groundwater activities are in the lower aquifers. We are coordinating with the Army, we are going to comply with any remediation project restrictions. We have described that in Chapter 3 of the GSP, described in the groundwater restriction areas because of the remediation efforts being done there.	Meeting comment - noted.
316					Meeting	8/10/2021	**Sarah Hardgrave**	Who are the entities responsible for monitoring the exceedances of drinking water and how that might vary depending on the size of the system?	**Abby Ostovar:** Drinking water standards? We monitor those to sustainable management criteria. Systems that have over 15 connections, those are monitored by the state. Monterey County Health Department monitors 2 to 14 connections.[Correction: Monterey County monitors systems with 2-199 connections, and the State compiles data for systems 15 and larger].	Meeting comment - noted.
317					Meeting	8/10/2021	**Sarah Hardgrave**	In Chapter 8 where this is discussed more in depth, are *de minimis* wells, the domestic wells, included in this? Are the wells monitored in the same way?	**Abby Ostovar:** *de minimis* wells is based on how much you pump. Generally domestic wells aren't monitored for [Title 22] groundwater contaminants, but water systems wells are.	Meeting comment - noted.
318					Meeting	8/10/2021	**Sarah Hardgrave**	For this particular subbasin, with naturally occurring arsenic, are small systems monitored for that?	**Abby Ostovar:** The county does, and you can see which ones have exceedances. To my knowledge, there is no government regulated monitoring for domestic wells [with a single connection].	Meeting comment - noted.
319					Meeting	8/10/2021	**Sarah Hardgrave**	For the sustainable management criteria for water quality potentially being correlated to groundwater levels, if the groundwater levels were to lower with the naturally occurring arsenic, could that potentially increase the amount in the wells?	**Abby Ostovar:** There are many different factors that could affect that, but it is a potential. We don't have enough data to know if there is a certain depth where you will find more arsenic. We know in this area it is naturally occurring, and depth dependent, but we don't have enough information.	Meeting comment - noted.

320					Meeting	8/10/2021	**Janet Brennan**	I'm concerned about letting groundwater levels decline in the Corral de Tierra subbasin, I don't think it's a prudent approach given the water quality issues. Furthermore, allowing water levels to decline is going to exacerbate the issues in the Laguna Seca. I do not support the level at which the chapter recommends [2015].	**Abby Ostovar:** This committee set the minimum thresholds and measurable objectives, it's a prerogative that this committee make a decision on which ones are appropriate for this subbasin.	Meeting comment - noted.
321					Meeting	8/10/2021	**Beverly Bean**	At the last meeting, Janet made a request that the staff address expanding the B8 area as an action to prevent further groundwater extraction. What is going on with that?	**Sarah Hardgrave:** It is not currently on the agenda, and I recommend that we discuss it under future agenda items.	Meeting comment - noted.
322					Meeting	8/10/2021	**Janet Brennan**	I support all the comments LandWatch submitted, and the committee should have a chance to review and respond to those comments. I think the water levels should not be allowed to decline in the Corral de Tierra area.	**Comment received**	Meeting comment - noted.
323					Meeting	8/10/2021	**Beverly Bean**	I want some clarity on what was just stated. Will the letters be a part of the public record, and how will that happen? I am not familiar with the letter spreadsheet	**Emily Gardner:** I will forward it to you now. If someone says please forward this to the committee, we do that. If they don't say that, we add it to our letters, and we post it to our website. This area requires a lot more collaboration with Marina Coast. We can just post what we have to the website.	Meeting comment - noted.
324					Meeting	8/10/2021	**Sarah Hardgrave**	Is it our responsibility to go look for these letters, or will they be included in future meeting material? Then a 90 public comment period. I'm not sure our committee will have the benefit of weighing in during that time. If we can see anything that comes in, it would be helpful.	**Comment received**	Meeting comment - noted.
325					Meeting	8/10/2021	**Beverly Bean**	I see the comment table always comes to us and I think letters should also be included. Letters should be noted and sometimes summarized. At this point, I don't want to miss out on public comments. I think these should be shared with materials and on the website.	**Comment received**	Meeting comment - noted.
326					Meeting	8/10/2021	**Sarah Hardgrave**	I also think the letters should be available to the public, which is why they're on the website.	**Comment received**	Meeting comment - noted.
327					Meeting	8/10/2021	**James Sang**	The issue of arsenic is really the first time I've heard about this. This is really important because it really increases a person's chances of getting cancer. Can you send out a notice to let people know there is a little more arsenic in their wells?	**Comment received**	Meeting comment - noted.
328					Meeting	8/10/2021	**Sarah Hardgrave**	I believe that is the responsibility of the Monterey County Health Department, and residents in this area are generally aware of this.	**Comment received**	Meeting comment - noted.
329					Meeting	8/10/2021	**Sarah Hardgrave**	In Section 8.5, there's discussion of the process of input, in that particular section it talks about the agreement between the GSAs and Technical Advisory Committee and the stakeholder committees. It doesn't talk about this committee, and I would ask that that be added. Do our two GSA technical experts feel there is adequate and broad enough coverage? Are there areas where new wells are recommended?	**Abby Ostovar:** It's in Chapter 7, the Monitor chapter. There are data gaps and we do recommend the installation of new wells there.	Meeting comment - noted.
330					Meeting	8/10/2021	**Sarah Hardgrave**	There were a whole lot of graphs for wells, I would suggest the bulk graphical information be put into an appendix and it can be quite a bit of pages, and maybe those could go to the back for ease of read. Just a suggestion. Then, I was very interested to see all those tables and graphs because it showed areas where the groundwater levels were in a steeper decline. I was concerned to see that in some of the Deep Aquifer wells. I was concerned to also see the groundwater decline in the MPRWMD Fort Ord wells, which are in that Seaside-Marina-Ord boundary. Which is not our group, but wanted to make that observation. There is a fair amount of discussion in this chapter about coordinating with adjacent subbasins. We don't have Bob Jaques here today, but I hope he will bring this to the Watermaster Board to comment and discuss the hydraulic connection on the Seaside side.	**Comment received**	Meeting comment - noted.
331					Meeting	8/10/2021	**Beverly Bean**	I agree with Janet, I think the [GWL SMC] needs revisiting.	**Comment received**	Meeting comment - noted.
332					Meeting	8/10/2021	**Gary Kreeger**	I agree as well, at the very least I would like to see the staff come back and address what is in the LandWatch letter.	**Comment received**	Meeting comment - noted.

333					Meeting	8/10/2021	**Sarah Hardgrave**	When will the groundwater levels information for this past year be added?	**Abby Ostovar:** We have groundwater levels information through this spring. To avoid having a lot of iterations, the "current" year is 2019 for the GSP.	Meeting comment - noted.
334					Meeting	8/10/2021	**Sarah Hardgrave**	Given that we had such a dry year, I'd be interested to see what happened this last year.	**Abby Ostovar:** If revisiting the groundwater levels, it would be helpful to have more guidance on the information that you would find helpful to make a decision, given that time is really tight.	Meeting comment - noted.
335					Meeting	8/10/2021	**Sarah Hardgrave**	I think we had considerable information at another meeting, and graphs, and years related to our minimum threshold and measurable objective. I think it would be worthwhile to go through that again, considering the letters received. I think it would be worthwhile for this group to see that again and how it was developed.	**Comment received**	Meeting comment - noted.
336					Meeting	8/10/2021	**Janet Brennan**	I think the new information received is the relationship between groundwater level and quality. I think this is important to Corral de Tierra. I know staff has said it is difficult to establish the relationship. There is one. We should take a conservative approach in addressing groundwater levels to assure they do not decline in future years. I'm not sure that setting groundwater levels at the 2015 level accomplishes that.	**Comment received**	Meeting comment - noted.
337					Meeting	8/10/2021	**Sarah Hardgrave**	If you all (Abby) could plan to prepare a memo that is more specific to the Corral de Tierra conditions, and lay that information out for us to have a discussion, that would be helpful.	**Comment received**	Meeting comment - noted.
338					Meeting	8/10/2021	**Sarah Hardgrave**	This is a lot of really good information, and a lot to digest. I'm hoping this presentation will get posted to our webpage, so there is a little more time to look through it.	**Comment received**	Meeting comment - noted.
339					Meeting	8/10/2021	**Janet Brennan**	[Re: Model accounting for rainfall intensity and runoff vs recharge] That is not the information we have received previously, we heard that the DWR model doesn't take into account increased intensity [and that is a major flaw in the climate change scenario].	**Comment received**	Meeting comment - noted.
340					Meeting	8/10/2021	**Janet Brennan**	I think staff was going to look at a project that would request the county extend the B8 zoning to the residential users on subdivisions?	**Emily Gardner:** We are working on that. I did speak to legal counsel about that, and we're working on developing a program where we can coordinate with the county. We're working on it and can bring it to the next meeting.	Meeting comment - noted.
341					Meeting	8/10/2021	**James Sang**	I feel like in the Corral de Tierra area, I see a great potential for using swales or trenches for capturing rainwater. I think all the water coming out of the hills at the base of the hills, you could collect a lot of water in that area. In the Marina area, a waste treatment plant would be great for the area with more population. Plus an area with a lot of sand, you could put trenches and swales there and capture a lot of water.	**Sarah Hardgrave:** Thank you, I believe those are captured in the decentralized stormwater and rainwater projects.	Meeting comment - noted.
342					Special Meeting	8/25/2021	**Janet Brennan**	I have several questions about that chapter [8], about groundwater levels and impact to the Seaside Basin. Especially those issues raised in the Land Watch letter.	**Emily Gardner:** We have that agendized to discuss it today. Depending on your feedback today, it will be incorporated into the chapter.	Meeting comment - noted.
343					Special Meeting	8/25/2021	**Sarah Hardgrave**	We'll provide input today and depending on the outcome, if there are changes will you post a revised version of the chapter?	**Emily Gardner:** We'll email and post it. Again, we can get feedback at the September 8 meeting.	Meeting comment - noted.
344					Special Meeting	8/25/2021	**Janet Brennan**	Do we recommend approval of the Monterey Subbasin GSP?	**Emily Gardner:** It has depended on each subbasin committee, how formal/informal they want to be. You can be formal and approve each chapter or you can wait until the whole draft GSP in one piece on September 8, and approve it to send it to the Board. Or just have general consensus.	Meeting comment - noted.
345					Special Meeting	8/25/2021	**Sarah Hardgrave**	If our committee is not able to reach agreement or take a formal vote, individual committee members can still provide comment during the comment period?	**Emily Gardner:** Yes. There have been some committees that have said the GSP is okay, but acknowledge that there are still things that need work. It's a living document.	Meeting comment - noted.
346					Special Meeting	8/25/2021	**Bob Jaques**	If we get 3 chapters, and the entire GSP shortly before the September 8 committee meeting, that will be a lot to review. It will be hard to think you will get a motion to approve.	**Emily Gardner:** We recognize that. We're hoping you will take us up on the 45-day comment period. We're working on the other deadlines for notification.	Meeting comment - noted.

347					Special Meeting	8/25/2021	**Sarah Hardgrave**	I would just suggest, to think about, whether there would be a possibility for this committee to get together one last time during that 45 day comment period.	**Emily Gardner:** Yes, that's what we've been tentatively planning with the other subbasins, to review any substantive changes and get feedback.	Meeting comment - noted.
348					Special Meeting	8/25/2021	**Bob Jaques**	Interested in if there are any pumping depressions within the subbasin.	**Comment received**	Meeting comment - noted.
349					Special Meeting	8/25/2021	**Sarah Hardgrave**	I'll just add that those [Toro and Ambler Park] are both Cal Am systems and Cal Am was at that time adding treatment for arsenic. This is a difference between public systems and small water systems and domestic wells, which don't have treatment.	**Comment received**	Meeting comment - noted.
350					Special Meeting	8/25/2021	**Bob Jaques**	I think Option 2 is the best. Adjusting wells individually which would put wells at 2008 levels would be desirable from the Seaside Basin perspective.	**Comment received**	Meeting comment - noted.
351					Special Meeting	8/25/2021	**Janet Brennan**	What is the impact of the 2015 minimum threshold on the Seaside Basin? We are already in a trend to exceed the 2015 minimum threshold. You made the argument that if we raise the minimum threshold, we're going to have to implement programs faster than we already have to. What's the difference?	**Victoria Hermosilla:** My understanding of the modeling data is that there is approximately 400 acre-feet per year water moving from Corral to the Seaside Subbasin. I don't know that we have enough data to definitely say what the impacts to Seaside were. Raising water levels in one area will generally raise groundwater levels in neighboring areas as well.	Meeting comment - noted.
352					Special Meeting	8/25/2021	**Janet Brennan**	Seems like if you have time for 2015, you have time for 2008. I support Bob's recommendation.	**Comment received**	Meeting comment - noted.
353					Special Meeting	8/25/2021	**Beverly Bean**	As a resident of the area, I support 2008 as the way we will get the most aggressive action most quickly. All of this is based on a study that is already old. I favor the fastest approach. Favor Option 2.	**Comment received**	Meeting comment - noted.
354					Special Meeting	8/25/2021	**Patrick Breen**	What concerns me is setting these thresholds at a level that we won't be able to meet. Do we have a sense of how many projects this would take to get the water into the aquifer? I don't think hydrogeologically it would impact the Marina Coast Water District Management Area.	**DW:** There isn't a legal issue with this. It's whether it is practicably achievable.	Meeting comment - noted.
355					Special Meeting	8/25/2021	**Gary Kreeger**	I understand not doing too big of a lift. We need to think about where we need to be, what the problem we're trying to fix.	**Comment received**	Meeting comment - noted.
356					Special Meeting	8/25/2021	**Janet Brennan**	I do not support keeping 2015 levels in the Marina-Ord area because it's allowing seawater intrusion. The coastal well project is pretty much pie in the sky. We have funding issues coming down the line. I think that 2008 is reasonable for the Corral de Tierra.	**Sarah Hardgrave:** To clarify, you raised the LandWatch letter, and you have similar concerns about the 180/400, correct? **Janet Brennan:** Correct	Meeting comment - noted.
357					Special Meeting	8/25/2021	**Margaret-Anne Coppernoll**	On an earlier slide it showed groundwater levels going up in 2017 and then going back down.	**Sarah Hardgrave:** My layman's response is that in 2015 we were in a drought, and in 2017 we had more rain.	Meeting comment - noted.
358					Special Meeting	8/25/2021	**Margaret-Anne Coppernoll**	What option gives us the most flexibility to adjust to changes in groundwater levels?	**Victoria Hermosilla:** You can mix and match and add the management action to any of the other options. **Vera Nelson:** I just want to clarify that changing the minimum thresholds/measurable objectives in the Corral de Tierra area will not change them in the Marina/Ord area. Changing the minimum thresholds/measurable objectives in the Corral de Tierra will not affect seawater intrusion because the Corral de Tierra is at such a high elevation. In the Marina/Ord area, the plan is to keep the minimum thresholds at 2015 and measurable objectives at 2004/2005.	Meeting comment - noted.
359					Special Meeting	8/25/2021	**Beverly Bean**	Setting lower elevations would cause us to be in violation of the Sustainable Groundwater Management Act.	**Comment received**	Meeting comment - noted.
360					Special Meeting	8/25/2021	**Bob Jaques**	I think it would be good to add the management action in Option 3 to Option 2.	**Comment received**	Meeting comment - noted.

361					Special Meeting	8/25/2021	**Christopher Bunn**	I was just curious if the minimum thresholds and measurable objectives for elevations have been contemplated in any expansion plans for the city of Marina.	**Abby Ostovar:** This discussion is only about the Corral de Tierra area and would not affect the Marina/Ord area. **Sarah Hardgrave:** Hydrogeologically, where the minimum thresholds and measurable objectives are set in the Corral de Tierra would not affect the Marina/Ord area, but a violation for one management area would be a violation of the Sustainable Groundwater Management Act for the subbasin. **Vera Nelson:** The projected water budgets and GSP do not address projected increases in groundwater extraction. **Sarah Hardgrave:** Those are pieces of the plan we'll be looking at during the September 8 meeting. I do look forward to seeing the projected water budget information.	Meeting comment - noted.
362					Special Meeting	8/25/2021	**Sarah Hardgrave**	I want to bring us back to the water quality/arsenic part of the presentation. If we were to change the minimum thresholds/measurable objectives, it doesn't appear to me that it wouldn't necessarily have an effect on the arsenic. So just to reconnect back to the purposes of this discussion, the overarching questions you're raising Janet are more about water supply and not water quality.	**Comment received**	Meeting comment - noted.
363					Special Meeting	8/25/2021	**Janet Brennan**	You're correct, that going to the 2008 level would help the Seaside Basin. I am going to make a motion to change to the 2008 levels and add the management action.	**Comment received**	Meeting comment - noted.
364					Special Meeting	8/25/2021	**Bob Jaques**	Our modeling shows that while there is some inflow into Seaside now, if groundwater levels continue to decline, that will reverse and water will flow into the Corral de Tierra. So keeping the minimum thresholds high would not only benefit the Corral de Tierra area, but would be a benefit to the Seaside basin as well.	**Abby Ostovar:** I just want to make it clear that raising the minimum thresholds/measurable objectives will be a significant lift and would mean pumping reductions or costly supply side projects, and this will mainly have an impact on domestic use in the area.	Meeting comment - noted.
365					Special Meeting	8/25/2021	**Ron Stefani**	I can't support this motion because of the cost of making this change. It's a heavy enough lift with the current option.	**Comment received**	Meeting comment - noted.
366					Special Meeting	8/25/2021	**Patrick Breen**	I'm unclear of the different between Option 1 and Option 2.	**Victoria Hermosilla:** They are effectively the same, averaged. However, one is that broad brush stroke of adding 5 feet, and the other is pinning the change to the specific year for each well. It averages out to be approximately 5 feet, but some wells are different.	Meeting comment - noted.
367					Special Meeting	8/25/2021	**Sarah Hardgrave**	I'm going to support the motion, mainly because of the urgency of bringing forward a regional water supply, which would also address the issues in the 180/400. By serving a larger region it would be most cost effective. Our office sees the urgency and for that reason will support motion.	**Comment received**	Motion passes, 5 yes, 4 no Roll call vote: No - Breen, Coppernoll, Stefani, Storms Yes - rest (5)
368					Special Meeting	8/25/2021	**Bob Jaques**	I have submitted my written comments yesterday, I want to touch on a few for discussion but the committee. First, many projects and management actions in Draft Chapter 9 don't have cost or estimated unit costs. I'm concerned that without costs, we can't put together a budget, not a water budget, an operational budget. I think you should include that in the chapter. I think we need to do a reality check, some of these projects produce so little benefit, that the unit cost is out of sight. We need to see what is reasonable from a cost benefit standpoint.	**Comment received**	Meeting comment - noted.
369					Special Meeting	8/25/2021	**Janet Brennan**	I cannot support this [Regional Municipal Supply Project] unless it is declared that it is publicly owned.	**Comment received**	Meeting comment - noted.

370					Special Meeting	8/25/2021	**Janet Brennan**	Recharge to Corral de Tierra from stream channel improvements. How does that water get from stream to Corral de Tierra? I think that should be clarified.	**Comment received**	Meeting comment - noted.
371					Special Meeting	8/25/2021	**Janet Brennan**	I think you should clarify water diversion as well. Final point, proposed R2 would generate 15,000 acre-feet of water, and proposal would indicate water would go to agriculture. That's more costly than what agriculture can support. Your analysis needs to indicate if that water is really viable for agriculture.	**Comment received**	Meeting comment - noted.
372					Special Meeting	8/25/2021	**Bob Jaques**	There are several places in the chapter, I'm given the impression that pumping reduction may not be necessary. Says 'if pumping reductions are necessary.' I think that should be edited out, because without it, projects and management actions fall short. Also, the discussion about getting reclaimed water, I'm getting concerned that the amount of reclaimed water that can be produced is getting oversubscribed. The 180/400 includes expansion of the CSIP area, so reclaimed water will go there. Seaside Basin also. I think you need to make sure everybody is not making a claim, cause it seems like a lot of folks are looking to that reclaimed water.	**Abby Ostovar:** We can clarify that in the text. In the plans are the potential projects and management actions. It doesn't mean they will be implemented. For example, the Eastside GSP has two 11043 projects, they're just options. When we get to implementation, we'll decide. I hear your concern about overbanking on M1W.	Meeting comment - noted.
373					Special Meeting	8/25/2021	**Bob Jaques**	On page 9-1-3, de minimis pumpers, I think it would be worth having some legal review made whether it would be possible for MCWRA to have de minimis extractors file extraction reports. SGMA can't impose a fee on them. Probably a simple legal question, I don't think it would be too hard. I think MCWRA could impose that if it would help with basin management.	**Sarah Hardgrave:** It's a good question, and I think [legal] council here can consider it.	Meeting comment - noted.
374					Special Meeting	8/25/2021	**Beverly Bean**	In my opinion, pumping reductions are the only project that will help the groundwater.	**Comment received**	Meeting comment - noted.
375					Special Meeting	8/25/2021	**Patrick Breen**	Is there a way to determine what existing pumping would need to be minimized to raise water levels? Would a zero pumping scenario get us there within 20 years?	**Abby Ostovar:** We can look at it. I would need to talk with our modelers. I'm not quite sure what the capabilities are there.	Meeting comment - noted.
376					Special Meeting	8/25/2021	**Patrick Breen**	This group needs to understand existing pumping. I'm wondering if we're even in a feasible situation. With raised levels, I'm not sure we can even achieve that.	**Comment received**	Meeting comment - noted.
377					Special Meeting	8/25/2021	**Bob Jaques**	If you look at the regional projects, you have substantial amounts, not that it's inexpensive. I think it's achievable, on a regional basis. You look at the unit cost with smaller projects, and they're unachievable. Regional projects, even though capital cost is greater, is more reasonable.	**Comment received**	Meeting comment - noted.
378					Special Meeting	8/25/2021	**Sarah Hardgrave**	I agree with you Bob. Many of the Corral de Tierra projects seem like a heavy lift and a relatively small benefit for the effort required. It reinforces my perspective that regional projects are preferable.	**Comment received**	Meeting comment - noted.
379					Special Meeting	8/25/2021	**Gary Kreeger**	I want to point out that there will be a heavy cost if we don't turn this problem around. Keep it balanced. Yes there's a cost, but also a cost if we run out of water.	**Comment received**	Meeting comment - noted.
380					Special Meeting	8/25/2021	**John Bramers**	It seems like this small Corral de Tierra area will be burdened to pay for these projects, is this area even able to pay? Will Seaside participate, because they will benefit? If the GSP for the Corral de Tierra doesn't go through with the board, is the entire subbasin out of compliance?	**Comment received**	Meeting comment - noted.
381					Special Meeting	8/25/2021	**Christopher Bunn**	I very much agree with the comments from Bob and Sarah. I think that's the only way this area can be secured. I think there will be a lot of support from the farming community to the north for the right project. These piecemeal projects, I don't see it happening. The Winter release with ASR is primarily a 180/400 project, that project is something that the farmers won't get behind. If you're going to spend that much capital, you might as well get a proper regional project.	**Comment received**	Meeting comment - noted.
382					Special Meeting	8/25/2021	**Margaret-Anne Coppernoll**	I support this [Land Use Jurisdiction Coordination Program] for all the committees to see and understand. I think it's important, this collaboration idea.	**Comment received**	Meeting comment - noted.

383					Special Meeting		**Sarah Hardgrave**	I appreciate the inclusion of this language. There have been times when water use has been used as the rationale for land use restrictions, but they are related. My sense is that the concern we've heard from Janet was on the land use jurisdictional side. I think it will take commitment from the jurisdictions to consider the GSPs with their land use decisions. It's not a mandate, and may take more general consensus with respect to GSPs and future updates. It seems like a good generalized statement you've made here.	**Comment received**	Meeting comment - noted.
384					Special Meeting	8/25/2021	**Margaret-Anne Coppernoll**	I'll make a motion that we include it in all the GSPs.	**Comment received**	Meeting comment - noted.
385					Special Meeting	8/25/2021	**Janet Brennan**	I second.	**Sarah Hardgrave:** So the motion is to include it [Land Use Jurisdiction Coordination Program] in our GSP and encourage the other subbasins to incorporate it.	MOTION PASSES
386					Special Meeting	8/25/2021	**John Bramers**	Now that the other GSPS have gone to the Board, would this need to go back to the Board?	**Emily Gardner:** We did mention this at the Board meeting, that there would be edits to the draft GSPs. There is a version that went out for public comment. But there is a version that will have the edits and go back to the board on December 9.	Meeting comment - noted.
387					Email	9/8/2021	**Margaret-Anne Coppernoll**	1. Page 10-5 - Footnote, line 2 RWS - should this be RMS? 2. Page 10-7 - last paragraph. the wording seems unclear "and subject to seawater intrusion" - is groundwater elevation monitoring subject to seawater intrusion? I recommend clarification on this sentence. I apologize if I missed the correct connection. 3. Page 10-15 - Section 10.7, 2nd paragraph, 1st word: "Cost" should be "Costs herein are"? 4. Page 10-19: Section 10.7.2.2, line 7- there seems to be an extra word: the costs comprise of (extra word) annual analysis and reporting of sustainability conditions. 5. Page 10-20 - line 4: "permitting associated will (should be "with") all potential projects...." Question: Is it possible to describe or list what the actions are that will be implemented for the $35,000 budget item for supporting deep well monitoring/2022/23? I ask because the other budget items contain a description. Maybe a description is not necessary - just inquiring.	**Comment received**	Thank you for the edits and suggestions.
388					Meeting	9/8/2021	**Sarah Hardgrave**	Can this committee reconvene during the 90 days? We have to acknowledge it was an 834-page packet that we got on a holiday weekend, and it would have been impossible for all of us to digest the new material and plan as a whole. I would recommend that we have another meeting.	**Comment received.**	Meeting comment - noted.
389					Meeting	9/8/2021	**Margaret-Anne Coppernoll**	I like that idea. I think we need some more time.	**Comment received.**	Meeting comment - noted.
390					Meeting	9/8/2021	**Bob Jaques**	Would we be able to get a look at what the edits will be so we have something to respond to?	**Sarah Hardgrave:** I think we can request an update along those lines as part of the agenda materials. So we can leave it flexible for our consultants and GSA staffs for making changes. **Emily Gardner:** Your next regularly scheduled meeting will be that first Friday in November.	Meeting comment - noted.

391					Meeting	9/8/2021	**Sarah Hardgrave**	I think that will help today's meeting as well. We know we'll have an opportunity to come back with comments and questions. If you have the opportunity or time, I would encourage you to submit comments online in addition to what you've shared at the meetings.	**Emily Gardner:** To clarify, there is a 90-day notification to the city and county, the exact comment period will be determined when it is released by Marina Coast Water District. Ours is a little longer than 45 days.	Meeting comment - noted.
392					Meeting	9/8/2021	**Sarah Hardgrave**	When is the deadline to submit to DWR?	**Emily Gardner:** End of January, and then there will be another comment period.	Meeting comment - noted.
393					Meeting	9/8/2021	**Sarah Hardgrave**	To receive this, you are also looking for approval?	**Emily Gardner:** In general, this committee tends to prefer more formal motions. We just like to take it to the board having been reviewed by the committee.	Meeting comment - noted.
394					Meeting	9/8/2021	**Bob Jaques**	In the bottom right corner, the Corral water budget zone, net annual change in storage, I know in some of the other slides, I thought the overdraft was 1,000 AFY.	**Abby Ostovar:** So that was prior to having the model, and that was developed by taking groundwater levels between two different years and using a storage coefficient. The storage SMC here is the difference between the MO/MT.	Meeting comment - noted.
395					Meeting	9/8/2021	**Sarah Hardgrave**	What is the difference between the sustainable yield and the 1,000 AFY Bob is referring to?		Meeting comment - noted.
396					Meeting	9/8/2021	**Bob Jaques**	Would the modelers consider the 2,800 AFY to be more reliable than the previous 1,000 AFY?	**DW:** In a way, Bob, I would say it is more reliable because it is based on a more complete analysis of the basin. I would not say we're going to throw out the 1,000. We will keep it to look at the uncertainties. Yes, it is more reliable, but it is not the final word. **Abby Ostovar:** Keep in mind, the water budget is a requirement from DWR. It is one aspect to guide management. What we should be focused on is avoiding those undesirable results. Even though we do have imperfect and incomplete information, we know groundwater levels have been declining and that information can help guide management.	Meeting comment - noted.
397					Meeting	9/8/2021	**Bob Jaques**	What is the timeframe on this?	**Abby Ostovar:** This is projected out 50 years. **Tina Wang:** Those should be dates instead of numbers. The reason we're running these scenarios is because this subbasin is very interconnected to the other subbasins. We want to see how the boundary conditions and climate will affect the outcome of the model. The message that we're getting from this analysis is that it's very much dependent on boundary conditions as well as climate.	Meeting comment - noted.
398					Meeting	9/8/2021	**Janet Brennan**	All of this is going to the advisory committee, and I want to know if the threshold will be revised to the 2008 level before it goes to the advisory committee for consideration. This was one item that has a close vote, and the advisory committee may want to weigh in on this important issue. They should get chapters that reflect our agreement	**Emily Gardner:** What you're getting today and the board will get tomorrow is a verbal explanation that this has been changed. The plan was to have the advisory committee receive the same draft you received. There are time constraints. If something is ready before, then yes, but hopefully this explanation as Abby has presented is fine.	Meeting comment - noted.
399					Meeting	9/8/2021	**Sarah Hardgrave**	When we come back to a meeting in late October, hopefully that will be enough time to make those changes. Maybe, to Janet's point, there can be a slide explaining the discussion this committee had on Aug 25 so it's really clear that it happened, and they are receiving the information about it. I think it will continue to be a point of discussion. To Patrick's concern, better understanding of how the revised MT/MO, are we already at the Undesirable Result with the 20% below, and what does that really mean for us? I think there needs to be more discussion on how realistic it would be, especially based on water budget information.	**Abby Ostovar:** That is what the model shows.	Meeting comment - noted.
400					Meeting	9/8/2021	**Sarah Hardgrave**	I think we really need to talk about the project options and how far they would get us.	**Abby Ostovar:** If I get through the rest of the slides, it will get to the projects and we can continue this discussion.	Meeting comment - noted.

401					Meeting	9/8/2021	**Bob Jaques**	At the last meeting, one of my comments was about *de minimis* wells and requiring them to do reporting. Do you know if any legal look has been made into that?	**Sarah Hardgrave:** Can we pause on that question, Bob? The supervisors are in a meeting and Les Girard is there. If he can come to this meeting, we can ask him when he joins us here.	Meeting comment - noted.
402					Meeting	9/8/2021	**Janet Brennan**	Regarding: "There is no known impact to depth and concentrations of arsenic". I think it is more accurate to say there is a lack of data regarding the concentration and depth. Maybe that's a little technical, but it implies that there is no relationship when in fact there is no data to support a relationship. Am I off base? I suggest you change the wording.	**Abby Ostovar:** I can change that for the board meeting.	Meeting comment - noted.
403					Meeting	9/8/2021	**Janet Brennan**	I question whether agriculture is willing to pay a municipal cost for that excess water. You may want to note that somewhere.	**Abby Ostovar:** Part of the reason we have a range here is because it will require a number of conversations about where the water goes. There are a number of steps to bring this to fruition, or really to understand how this should be scoped.	Meeting comment - noted.
404					Meeting	9/8/2021	**Margaret-Anne Coppernoll**	My concern is related to Bob's question about *de minimis* wells, because that seems to give us a large data gap that is important to close. For the well registration, do we know how many exist? It's important to know considering the drops in the groundwater levels.	**Sarah Hardgrave:** I believe there is detailed information about the breakout of the different types of systems.	Meeting comment - noted.
405					Meeting	9/8/2021	**Margaret-Anne Coppernoll**	My question is about the legality and obtaining meters. I liked what Bob had to say and his questions.	**Sarah Hardgrave:** Again, we're going to hold off on that until legal counsel can join us.	Meeting comment - noted.
406					Meeting	9/8/2021	**Steve McIntyre**	I think it would be interesting to see when that analysis is done, to look at the reduction in pumping with respect to both the previous SMC and revised SMC, to look at what the difference might be.	**Comment received.**	Meeting comment - noted.
407					Meeting	9/8/2021	**Christopher Bunn**	It seems like the more I hear and read through this GSP, the more questions I have. No subbasin is mired entirely in itself, even if the 180/400 farmers meets its MOs, but Corral de Tierra is still losing water, how does the "do no harm" play into that relationship? Will the [Reservation Road areas] be included? Regarding the Regional water supply project and farmers, at municipal [water] cost levels, you can't farm. But I think there could be some kind of window or agreement for farmers to subsidize the cost of that water.	**Abby Ostovar:** With regards to projects and management actions along the Reservation Road area, we would address this as we go. That is Salinas Valley Basin GSA's responsibility, but any projects and management actions would have to be evaluated on its impact and participation level.	Meeting comment - noted.
408					Meeting	9/8/2021	**John Bramers**	I heard "need more data" a half dozen times, but we're setting MTs with a lack of data. My question is, we have to be sustainable in 20 years. By putting that MT at 2008, how many pumping allocations and projects will we have to do, and can we even get to that MT?	**Abby Ostovar:** We don't know at this point what the level of effort will be. It will be substantial regardless.	Meeting comment - noted.
409					Meeting	9/8/2021	**John Bramers**	How many wells are we looking at right now? If they all fall below, what is that?	**Abby Ostovar:** We don't know right now.	Meeting comment - noted.
410					Meeting	9/8/2021	**James Sang**	I notice a lot of wells are located in the southern part of the Corral de Tierra area. You've mentioned several projects, but are they really relevant to raising the water levels in the wells? Will it actually help us raise the groundwater levels in those wells in the southern part of the basin?	**Sarah Hardgrave:** Thank you for that comment, it reinforces further discussion here.	Meeting comment - noted.
411					Meeting	9/8/2021	**Christopher Bunn**	If the 180/400 meets the MOs, but Corral de Tierra is still losing water, how does the "do no harm" policy apply?	**DW:** Part of this is going to be a legal assessment. I would say that the idea is that you cannot prevent a neighboring subbasin from achieving sustainability. What that means has not been tested yet. Does that mean a neighboring subbasin has to have SMC you agree with? We are trying to set up SMC between our GSPs so there won't be a significant gap. It's an advantage to how we're approaching this whole valley. But the answer is it hasn't been tested yet.	Meeting comment - noted.

412					Meeting	9/8/2021	**Patrick Breen**	Of the 1,200 AFY being pumped, do we know how much is *de minimis* ? Just remind me, does the Sustainable Groundwater Management Act have jurisdiction over overlying pumpers?	**Sarah Hardgrave:** The first part of your question, one of the reports we received, had a table of the number of water systems and the number of *de minimis* wells, in addition to the small and regulated system. I know that information is available, but not quickly. **Abby Ostovar:** This was a memo we had the Wallace Group put together on extraction data in the area.	Meeting comment - noted.
413					Meeting	9/8/2021	**Patrick Breen**	Are we even able to regulate them? Is our ability to regulate them, shouldn't that be considered and weighed?	**Sarah Hardgrave:** Again, that is a legal question to give to Les. I hope you're keeping a list for him. **Emily Gardner:** I did ping Les quickly. MCWRA does have the authority to require meters for *de minimis* users, not the GSA. So it would have to be in partnership with them.	Meeting comment - noted.
414					Meeting	9/8/2021	**John Bramers**	If we can't get *de minimis* users to participate, I don't think we can balance this basin. Even if you can put a meter on those *de minimis* users, can you put an allocation on them? Also, when you talk about a well in the Upper Corral area, where is that going to?	**Emily Gardner:** I also have the pie chart that shows the percentage of *de minimis* users I can share.	Meeting comment - noted.
415					Meeting	9/8/2021	**Janet Brennan**	Even if you could regulate all the pumping and reduce pumping by 1,200 AFY, you're still not going to address the overdraft problem. It's more complex than just putting limits or having an allocation system.	**Comment received.**	Meeting comment - noted.
416					Meeting	9/8/2021	**Sarah Hardgrave**	If we set the targets at these different levels, we need more information than we have now, and explain what we would need at each level, and how the projects could meet the criteria. I think that goes to James Sang's comment, how we raise the levels. I do continue to see that if the regulated utility system, that would be the most reasonable to tie in to potable domestic water supply, that's the best way to reduce the amount of pumping.	**Comment received.**	Meeting comment - noted.
417					Meeting	9/8/2021	**Patrick Breen**	We're showing our water levels generally stabilizing but what we're going to encounter is some current wells going dry. Are we going to spend so much money to avoid a certain amount of wells going dry, or submit a plan where some wells will go dry. I understand the ramifications. In the context of what we're dealing with here, how much money are we willing to spend on a sustainable level, and maybe a sustainable level that is lower than we prefer. How much storage is in the Corral de Tierra area? Do we know that?	**Abby Ostovar:** We haven't put a number on the storage for the Corral de Tierra. There's a question of if it's feasible. I'm hearing that a lot of this is about trade-offs. Patrick, you put it well. Domestic wells were prioritized here, but the trade-off is cost. That conversation about projects and management actions to implement, and which will be prioritized, is where we'll head for implementation.	Meeting comment - noted.
418					Meeting	9/8/2021	**Bob Jaques**	In one of the earlier chapters there was a graph showing groundwater levels over time. And the groundwater levels continue to decline for a number of years and then they go up after projects and management actions are implemented. I'm curious how the rebound is determined. From the current list of projects and management actions, it doesn't look like we'll get there. Even if you turn off all the pumping, you're saying here that we won't get there. So it seems like someone was making assumptions about when those projects and management actions will be implemented. Do you recall that slide? Is that something that can be easily explained?	**Abby Ostovar:** I think what you're thinking about is the Marina-Ord area. We don't have "a project" scenario. Are you referring to interim milestones? It is just showing what will be needed to reach those levels.	Meeting comment - noted.
419					Meeting	9/8/2021	**Bob Jaques**	If those are interim milestones, if there was a way that those have been determined.	**Abby Ostovar:** It's not tied to specific projects. It assumed it will take a few years to implement and it will take some time to rebound.	Meeting comment - noted.
420					Meeting	9/8/2021	**Bob Jaques**	Okay, you may want to highlight that a little more because I didn't pick that up.	**Comment received.**	Meeting comment - noted.
421					Meeting	9/8/2021	**Sarah Hardgrave**	I think in this time, we've made some suggestions on what type of additional discussion is needed and time to review the documents and develop more comments and questions. I think at this time, our committee should recommend releasing this document for review.	**Comment received.**	Meeting comment - noted.
422					Meeting	9/8/2021	**Patrick Breen**	I make a motion	**Comment received.**	Motion passes, draft released for review

423					Meeting	9/8/2021	**Margaret-Anne Coppernoll**	I second it.	**Comment received.**	Meeting comment - noted.
424					Meeting	9/8/2021	**Sarah Hardgrave**	Bob and I did give an overview presentation to this to the Seaside watermaster. I will add one comment on the plan. In Chapter 2, there wasn't much mentioned on the need for coordination with the adjudicated basin. I noticed that was a missing piece. The shared boundary between Marina Coast and the FO-9/10 wells have been a subject of discussion of the watermaster.	**Comment received.**	Meeting comment - noted.
425						10/22/2021	**Bob Jaques**	Are there comments from the online form? I see there are always different spots. I really like to look at the next versions of the draft GSP, because so many comments are made and it's nice to see where revisions are made from comments.	**Emily Gardner:** Yes, we are working on it as fast as we can. We will try to get it at the end of November. We're going to try to get it to you as soon as possible.	Meeting comment - noted.
426						10/22/2021	**Sarah Hardgrave**	There have been quite a few comment letters that are comments on multiple subbasins. It's a little bit of a task to comb through and see what is specific to the Monterey Subbasins. Is MCWD receiving separate comments? Are they preparing separate responses?	**Patrick Breen:** It's my understanding that EKI and Montgomery are compiling the responses together into one table.	Meeting comment - noted.
427						10/22/2021	**Janet Brennan**	Re: Undesirable Results. This section about GSA projects to not let water levels fall below minimum thresholds, that suggests to me there is a relationship between groundwater levels and quality. Previously, the conclusion was that they could not establish a relationship, this implies there is a relationship, this seems to be a change in direction.	**Abby Ostovar:** You're correct. When we looked at arsenic, we couldn't find a relationship with groundwater levels. This is a more general statement that deals with all constituents of concern. It's one of the strategies we will use to make sure we don't have degradation, but we would have to look at each constituent individually. **Emily Gardner:** Exceedance of minimum thresholds refers to water quality specifically.	Meeting comment - noted.
428						10/22/2021	**Sarah Hardgrave**	I have the same observation as Janet, so thank you for the clarification. I am hearing what you're saying about arsenic and the relationship with groundwater levels in the Corral de Tierra. It's a very specific constituent of concern. There isn't a clear relationship between groundwater levels and naturally occurring arsenic. For other constituents, groundwater levels can impact quality. This statement will be applied to all constituents in all subbasins. I'm just restating what you said so I understand.	**Comment received.**	Meeting comment - noted.
429						10/22/2021	**Sarah Hardgrave**	I'm wondering if in the Monterey plan, if the clarification we made here can be added for the Corral de Tierra area. Specific concerns about arsenic and groundwater levels can be clarified, not necessarily influenced by groundwater levels. The challenge we have is that it's naturally occurring and not related to the overpumping issues we have. I would also assume that over time, there will be careful monitoring to see if there is a greater relationship than is currently understood.	**Emily Gardner:** In our definition of undesirable results, or the SMC chapter, perhaps where we talk about general groundwater quality. **Abby Ostovar:** We could reference it where we do talk about it. If someone just reads this, they might miss it. **Emily Gardner:** Yes we can point back to how we describe it elsewhere in the GSP.	Meeting comment - noted and incorporated
430						10/22/2021	**Bob Jaques**	Re: model results: I think more than anything, this shows how severely in overdraft this subbasin really is. Regardless of the minimum thresholds/measurable objectives, if you stop all pumping, you just have an unsustainable condition.	**Comment received.**	Meeting comment - noted.
431						10/22/2021	**Janet Brennan**	I was going to make a similar observation. No matter what we adopt. Even if we stop all pumping, we continue to decline because of leakage to other subbasins?	**Abby Ostovar:** Yes.	Meeting comment - noted.

432						10/22/2021	**Steve McIntyre**	So if there is leakage, and you stop all pumping, is there also the possibility that adjoining subbasins is somewhat harming this subbasin? Hydrologically, I'm sure there is another term for it.	**Abby Ostovar:** It is interconnected with other subbasins. Part of this is a challenge because we are projecting other subbasins' groundwater levels which we don't really know. Any model is also built on the best available data, and there are uncertainties including several data gaps in this area. This area is largely not covered by GEMS. The estimation of extraction may be less than what is actually occurring. But yes, this is related to adjacent subbasins, in as much as other adjacent subbasins are impacted by Corral de Tierra.	Meeting comment - noted.
433						10/22/2021	**John Tilly**	Are you aware of how much is going into the Seaside Basin too?	**Abby Ostovar:** I would need to look at the relationship again. We've talked to the watermaster as well. That area has a three-way partial groundwater level flow divide. We have some information about it, but it's tricky to understand what is going on there. Even with the modeling, it's a tricky area to understand.	Meeting comment - noted.
434						10/22/2021	**Bob Jaques**	One of the difficulties is that the modeling the watermaster has done in the past, we modeled the Paso Robles Formation and Santa Margarita Formation as separate aquifers. The Monterey model has modeled them together as a single aquifer, the El Toro. Their modeling shows an inflow to the Laguna Seca, and our model shows an outflow from the Laguna Seca. We expect in the early years of implementation we will find compatibility between the two approaches. The two aquifers, grouped together, are grouped from a lack of additional monitoring input. They will need to be separated to view the outflows and inflows.	**Abby Ostovar:** We did talk about this to figure out what the discrepancies are, and they have different boundaries and different future assumptions. We started to look at how those simulations work differently. In the EKI model, they do separate out the formations, but for the GSP they are grouped.	Meeting comment - noted.
435						10/22/2021	**Beverly Bean**	It seems to me that this kind of slide should be in the report and used as a wake up call to the powers that be, the political powers. For people to understand that this aquifer is so severely impacted, I want to know if you will put a no pumping scenario in the plan. I hope it wasn't brought back to us to revise the SMC.	**Abby Ostovar:** One idea we had for this committee, we were thinking this could be brought into the report as a project scenario like MCWD has, and perhaps into Chapter 9.	The no pumping scenario output was added to the plan
436						10/22/2021	**Janet Brennan**	I'm inclined to go back to the original SMC, to keep it in the realm of possibility. Our recommendation will impact the general population, it impacts all the residents in the Corral de Tierra. We have limited participation from that community. I'm really concerned about adopting something that is beyond any reasonable expectation.	**Comment received.**	Meeting comment - noted.
437						10/22/2021	**Bob Jaques**	Our concern is that our modeling indicated we will lose water even if we stop all pumping. If we do, the water rises and the gradient slopes more steeply to the Corral de Tierra. So then we're unsustainable, but how much more can we do beyond not pumping? We're already looking at other water for our subbasin for replenishment. As we talked at the last meeting, if we can generate new water, it sounds like all subbasins are in need of a new water source. I follow the 180/400, and they have their extraction barrier and potential desalination. We see the Corral de Tierra and Monterey Subbasin leaks a substantial amount of water to the 180/400. If the 180/400 could stabilize, it seems like it would solve some of the Monterey issues. We're just concerned about the Corral de Tierra area water levels not being brought back up.	**Comment received.**	Meeting comment - noted.
438						10/22/2021	**Sarah Hardgrave**	The Seaside Basin has already gone through their step-wise reductions, and we're still having issues.	**Comment received.**	Meeting comment - noted.
439						10/22/2021	**Janet Brennan**	The failure of all these sub-plans is to not identify a regional solution for the Salinas Basin that address the need for redistribution of water within the entire basin. That is a major concern of all of us. We just need to have a more comprehensive view and regional approach than just looking at projects. Some southern subbasins are not looking at the redistribution of water and we need to have a coordinated approach.	**Comment received.**	Meeting comment - noted.

440						10/22/2021	**Beverly Bean**	While I certainly agree with the regional needs, I want to take up the comment on the participation of Corral de Tierra residents. They pump happily away without realizing they are contributing to a problem. I think the "no-pumping" slide should be in the plan, and I don't think we should change the SMC back to the original levels. I think this needs to be a dramatic warning.	**Comment received.**	Meeting comment - noted.
441						10/22/2021	**Ron Stefani**	I am going to support the original SMC. Staff didn't pick that number out of the air. There has been a lot of work that has gone into this. If we can meet the minimum threshold and measurable objectives, they can be moved again later down the road.	**Comment received.**	Meeting comment - noted.
442						10/22/2021	**Steve McIntyre**	I have to agree with Beverly, that 95% of the Corral de Tierra residents don't have a clue, and I'm one of the 95%. As much as I am involved elsewhere. I think the slide today is quite dramatic, and we should include it in the GSP. I think this needs critical attention, and we won't get it without some shock value.	**Comment received.**	The no pumping scenario output was added to the plan
443						10/22/2021	**John Bramers**	I don't disagree with putting it in the GSP, and I do agree with putting it back to 2015. Did we ever get clarification that *de minimis* users, and how they will participate in restrictions? I remember that was key. We still need to get that clarification. Are we going to have leakage no matter what? Is leakage a pat of not being able to get to sustainability? Do we have to get to a point where there's no leakage?	**Abby Ostovar:** The Salinas Valley is hydraulically connected. You will never operate in a vacuum. This area is the area of recharge for here and the areas around it. We won't get no leakage, we all have to work together to get to our undesirable results. They are connected, and it's a joint effort no matter what. **Emily Gardner:** The authority around regulating *de minimis* users. While the GSA has limitations on how the regulate *de minimis* pumpers, the MCWRA does have that authority. So we'd have to work through the MCWRA. **Donna Meyers:** The County of Monterey also has that ability as well.	Meeting comment - noted.
444						10/22/2021	**Sarah Hardgrave**	I'll make a motion to go back to the 2008, 2015 SMC levels that had been in place prior to the August meeting.	**Motion Passes**	SMC for groundwater levels was adjusted based on Subbasin Committee vote
445						10/22/2021	**Janet Brennan**	I'll send this comment on to staff so you can understand it. This whole section needs clarification, it's based on so many assumptions. 'Sustainable' is based on other basins meeting their obligations. If you could re-take a look at that page and make it understandable for the lay person, I would appreciate it.	**Donna Meyers:** We're happy to do that, no problem.	Meeting comment - noted.
446						10/22/2021	**Margaret-Anne Coppernall**	I just want to bring up the *de minimis* wells again. I wonder how many there are and how much they're pumping. There's no way to know how much they're pumping. We need to include them in the equation because it is going to affect everybody. We need the information to make the correct decisions. It will require everybody. Do we know many *de minimis* wells there are?	**Abby Ostovar:** We did an analysis on parcels, assuming if they weren't served by a water system, they would be on a well. We applied an average household use, and other reasonable assumptions. We don't know exactly because there hasn't been measurement in this area.	Meeting comment - noted.
447						10/22/2021	**Sarah Hardgrave**	It was something like 150 or 160 wells?	**Abby Ostovar:** Just to clarify, one definition is 'individual households' and another is 'less than 2 acre-feet per year'. The estimation of *de minimis* use here is based on individual parcels. Some small water systems would be considered *de minimis* because they might use less than 2 acre-feet per year, but they are included under mutual water systems.	Meeting comment - noted.

448						10/22/2021	**Bob Jaques**	I just, earlier this morning, got a chance to read through the LandWatch letter, it was quite a lengthy letter. One of the things they go through strongly is the issue of financial ability to do projects. It seems to be a comment regarding listing projects, and not adequately demonstrating the financial ability for the GSA to carry the scenario out. It's striking for the Corral de Tierra area, and the ability to bring in new water sources, and the incredibly high cost to go along with that. I was disappointed to see the graphic on the 50-year period. I asked Abby how water levels would rebound during implementation, and the response was that it was assumed that projects would be implemented to achieve that. Part of the comment letter from LandWatch was that it was insufficient. Every project, when you add them all up, it's not enough. It's going to be hard for DWR to approve this. Even if we go back to other groundwater levels, the rationale is not supported with facts. That is something that should be addressed here for an acceptable GSP. I wanted to put that here as a comment. After reading that, I share their concerns.	**Abby Ostovar:** You did hire M&A to write a passing plan. This takes a similar approach as the 180/400, and this plan is more reasonable. We do believe this is a passing plan for DWR. It doesn't mean it won't be a heavy lift. DWR doesn't need to know exactly what you will do and how you will finance it. They want to know you have a range of options that you will develop funding mechanisms as you go. I think everyone here knows you will need to move quickly in this area.	Meeting comment - noted.
449						10/22/2021	**Janet Brennan**	There is a difference between which deciding which projects and having an overall view of the viability of any project. Given the lack of regional consensus, many of the projects that will address the problem are not viable. There is a step between just listing a bunch of projects and having more information, we could have more information on some of the projects on the viability of the solution. That is what LandWatch is looking for.	**Comment received.**	Meeting comment - noted.
450						10/22/2021	**Sarah Hardgrave**	We're planning to hold a community meeting on Nov 17 for the Corral de Tierra, and our outreach for that meeting will hopefully include several advertisements through several channels. We will ask staff to provide feedback at this meeting. Related to this discussion, supervisor Adams made a board referral on regional projects identified in the GSPs. This conversation emphasizes the importance of meeting with these stakeholders. There is not any desire or intent to step on the toes of the GSA or MCWRA, just a recognition that the board of supervisors are not fully familiar with what is coming out of the GSPs. Just want to have a common understanding of the GSPs, and a better understanding of these regional concepts. We have been talking with staff to do this in early December. It's not a referral to alter or change the GSPs, more to figure out next steps. Recognizing the GSA has plans for the integration, so multiple agencies and community leaders can have a more common understanding, and not just the folks who have been more active.	**Comment received.**	Meeting comment - noted.
451						10/22/2021	**Bob Jaques**	Would you be able to have that November 17 meeting to have a public display, like in the newspaper? Some folks may not otherwise be informed.	**Emily Gardner:** We have published previous notifications in the Monterey County Weekly.	Meeting comment - noted.