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MOTHER LODE CHAPTER

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RE: Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan prepared for the Eastern San Joaquin Groundwater Authority and dated November 2019

The Delta-Sierra Group members have been involved with the development of the Eastern San Joaquin Subbasin Groundwater Sustainability Plan (GSP) beginning in 2016 when the Basin Boundary Modification for the Eastern San Joaquin and Cosumnes occurred. A summary of comments letters is included in Appendix A and prepared to illustrate the efforts made to obtain information and to participate throughout the development process, in addition to participating in the Workgroup, Advisory, and Groundwater Authority Meetings. We are concerned that implementation of the GSP is not protective of some stakeholders particularly domestic well users, small groundwater public system, surface water users along with riparian and riverine ecosystems and groundwater dependent ecosystems.

The comments on the Final GSP are limited to issues of greatest concern involving monitoring of groundwater levels in the Subbasin, well permitting and well head protection, protection of shallower domestic wells in rural areas of the basin, the public data management system, modelling and recharge areas, and stakeholder engagement.

Monitoring of Groundwater Levels in the Subbasin

A total of 20 representative wells were identified for measurement of groundwater levels in the Subbasin, and 10 representative wells were identified for groundwater quality monitoring. The Final GSP includes measures and actions to avoid undesirable results caused by groundwater conditions. The Eastern San Joaquin Groundwater Authority (GWA) and the Groundwater Sustainability Agencies (GSAs) determined the minimum thresholds that represent significant and unreasonable groundwater conditions. The sustainability indicators consider the following categories:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon
- Significant and unreasonable reduction of groundwater storage
- Significant and unreasonable seawater intrusion
- Significant and unreasonable degraded water quality
- Significant and unreasonable land subsidence that substantially interferes with surface land uses
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

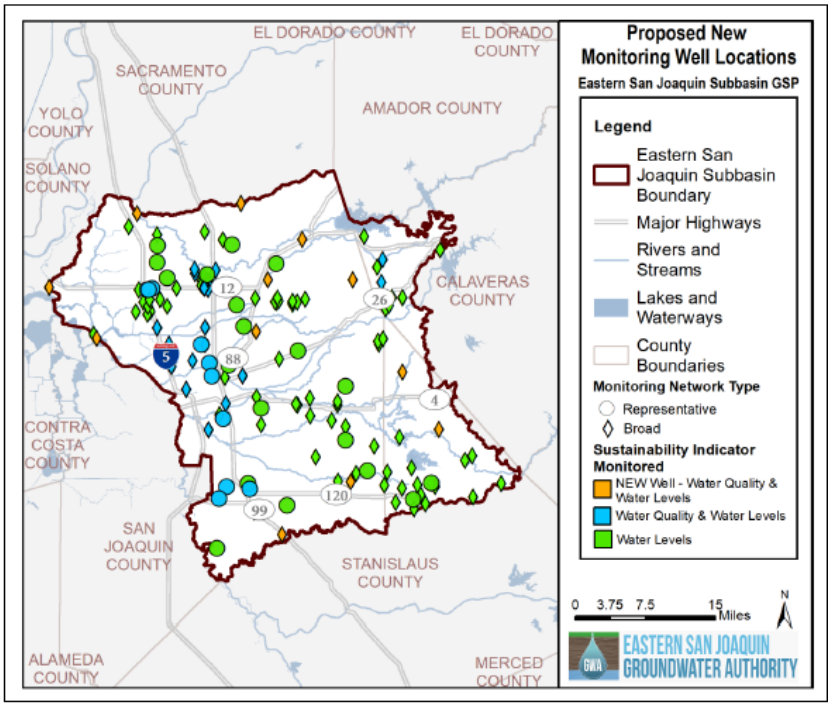
The GSP uses total dissolved solids (TDS) and chloride concentrations as measures of groundwater quality data and the basis for evaluating conditions for seawater intrusion and degraded water quality and uses groundwater level data as the basis for evaluating conditions for lowering the water levels, groundwater storage, land subsidence, and depletions of interconnected surface water. Representative wells provide the

basis for measuring the six sustainability indicators across the Subbasin. The Subbasin is approximately 1,195 square miles. Based on the recommendations by DWR presented in the Final GSP, the number of monitoring wells for the Eastern San Joaquin Subbasin should range from a density of 2.4 to 119.5 wells per 100 square miles. The GWA in an effort to save monitoring costs limited the number of representative monitoring wells and reduced the frequency of monitoring from quarterly to semi-annually. The 20 representative monitoring wells in the network have a density of 1.7 wells per 100 square miles. The GWA proposes to count the broad monitoring network, another 107 wells, when calculating well density resulting in a combined density of 10.6 wells per 100 miles, to satisfy the DWR recommendation. However, the data from this broad monitoring network wells are not used to determine compliance with minimum thresholds or measurable objectives. The density of the compliance representative wells is insufficient to characterize changes in groundwater conditions that are the basis of measuring the six sustainability indicators across the Subbasin.

In addition to not having sufficient compliance wells to assess whether or not minimum thresholds are exceeded, 4 of 20 representative compliance wells (shown as circles in Figure 4-3) do not have construction details based on data reported in Table 4-1: Representative Monitoring Wells for Groundwater Levels. According to 23 CCR § 352.4 (2) If an Agency relies on wells that lack casing perforations, borehole depth, or total well depth information to monitor groundwater conditions as part of a Plan, the Agency shall describe a schedule for acquiring monitoring wells with the necessary information, or demonstrate to the Department that such information is not necessary to understand and manage groundwater in the basin. There are additional wells within the broader network that could have been identified as a representative monitoring well to manage the groundwater in the basin. Without additional representative wells management of groundwater conditions is hampered. The proposed new wells in the Final GSP are not intended to replace any of the representative monitoring wells that lack construction details but are proposed to increase understanding. Additionally, there are two of the representative monitoring wells used for compliance that are deeper than 700 feet with screened intervals up to 780 feet, complicating the apparent groundwater levels reported from these wells. What was the benefit of including these wells in the representative monitoring well set since these lengths are excessive and results in uncertainty as to the location of the source of water to the well?

There are up to 12 proposed new monitoring well sites (shown in Figure 4-3 in orange). There was no commitment to use these wells for compliance only that that the data will be used to increase understanding. Two of these wells will be deep, multi-completion wells, built using support awarded to the Subbasin by DWR's TSS program. One of the TSS wells is located approximately in the middle of the northern Subbasin boundary (near Dry Creek) and the other well is located along Calaveras River near Highway 88 in the approximate middle of the Subbasin. Up to 10 of these wells are shallow and funded through the DWR Proposition 1 Sustainable Groundwater Planning Grant.

Figure 4-3: Proposed New Monitoring Well Locations (Shown in Orange)

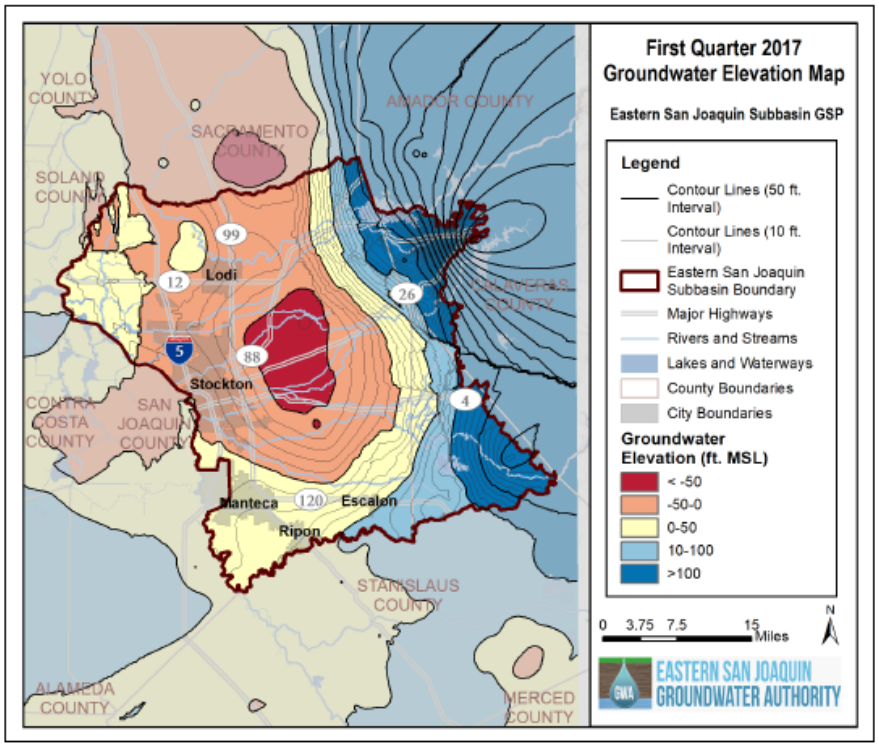


The proposed locations of these shallow wells were selected to be co-located with identified and potential groundwater dependent ecosystem (GDE) areas and near streams to further understand groundwater-surface water connectivity and to refine GDE data gaps. The Final GSP stated that "GDEs were ground-truthed with GSA staff and Groundwater Sustainability Workgroup (Workgroup) members".
The Groundwater Sustainability Workgroup meeting was lightly attended when this activity occurred and a few members of the group shared their stories of some areas on several maps of the basin. Ground truthing is a term that usually involves checking map data in the field. There were no field visits that occurred, only personal observations. Through this process, areas identified as GDEs were discussed, and areas identified as irrigated were reclassified. These areas are labeled on Figure 2-74 as "Stakeholder Comment." Those areas which were removed based on a single meeting of the Workgroup should be reconsidered given that many of the GDE areas that were removed in the draft have been included in the Final GSP and are under further investigation. Wells are allowed to be drilled within 150 feet of a surface water body and GDEs in these areas may be accessing both surface and groundwater. These GDEs may suffer if groundwater is unavailable due to decreasing groundwater levels through pumping more than recharging.

The Final GSP stated that in the Eastern San Joaquin Subbasin, representative wells were selected based on the history of recorded groundwater levels and potential to effectively represent the groundwater conditions. In addition to the 4 of 20 representative compliance wells (shown as circles in Figure 4-3) without construction details based on data reported in Table 4-1: Representative Monitoring Wells for Groundwater Levels, 3 of the 20 representative wells lack 20 years of monitoring data based on the hydrographs included in the Final GSP. One of these representative monitoring wells selected has less than approximately 5 years of data based on the hydrograph included in the Final GSP. What is it about these wells that warranted their selection as a representative monitoring well used for determining whether or not actions to avoid undesirable effects are sufficient with such as short history of groundwater level data?

The adjacent figure from the Final GSP shows where the cone of depression - greatest groundwater overuse - is thought to be located. This figure leads to the impression that there is one large area in the Subbasin that is overdrafted.

Figure 2-37: First Quarter 2017 Groundwater Elevation



Larry Walker and Associates submitted comments including data from the DWR Groundwater Information Center Interactive Map Application (Figure 1) that shows the changes in groundwater elevation for three time periods: B: Spring 2004-2014, C: Fall 2006-2016, and D: Spring 2008-2018.

Dark red represents 40 feet of decline, orange represents 20 feet of decline, green represents 10 feet of increase).

As shown, during the period spring 2004-2014 (Map B) groundwater levels declined 20 feet in the south-central portion of the Subbasin, while during the period spring 2008-2018 (Map D), groundwater levels declined up to 40 feet in the southern portion of the Subbasin.

These data suggest that the extent of overdrafted groundwater is more widespread and transient than depicted in the Final GSP. Additional representative monitoring wells and increased groundwater level monitoring data (quarterly) are needed to characterize the Subbasin and assess compliance with the minimum threshold criteria.

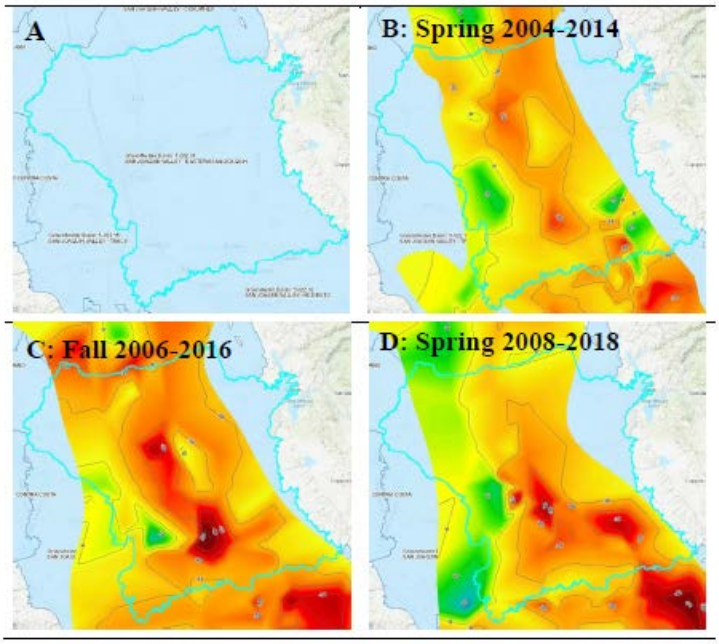


Figure 1. Change in Groundwater Elevation, Eastern San Joaquin Subbasin: Department of Water Resources Groundwater Information Center Interactive Map Application (A: ESJ Boundary; B: Change Spring 2004 – 2014; C: Change Fall 2006 – 2016; D: Change Spring 2008 – 2018)[4]

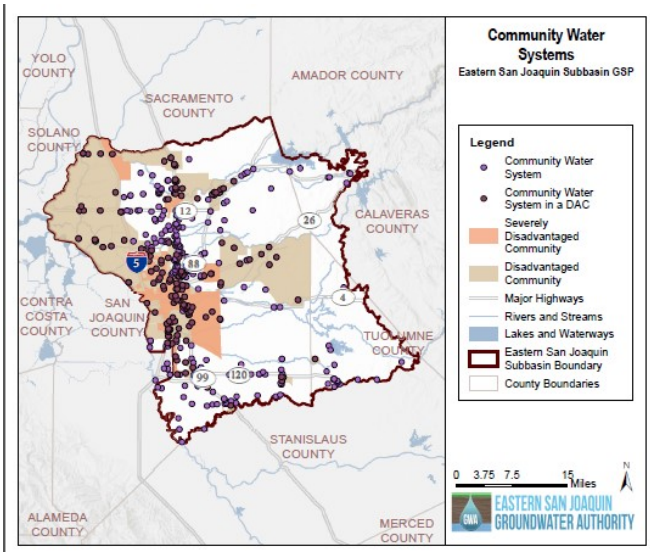
Well Permitting, Surface Water Interactions, and Well Head Protection

The Final GSP stated often that a radius of 3 miles around each representative monitoring well was used to identify the 10th percentile domestic well construction depth which is intended to protect 90% of wells in the Subbasin. For representative monitoring well 03N07E21L003, a 2-mile radius was used due to variations in groundwater levels due to its proximity to the Mokelumne River, suggesting a recognition of the potential for surface-groundwater interactions. Wells are not allowed to be drilled within 50 feet stream, creek, river, or a canal which likely is under some surface water interaction. Wells drilled 51 feet from a stream creek, river or a canal are similarly likely under some surface water interactions. Land use and well permitting changes are necessary to protect groundwater-surface water interactions.

The Final GSP did not include a description of how GSA's will coordinate with land use planning agencies to access activities that potentially create risks to groundwater quality or quantity and interactions with surface water. In California a 2018 ruling of the litigation between the Environmental Law Foundation and the State Water Resources Control Board found that groundwater hydrologically connected to navigable surface waters, or surface waters supporting fisheries are subject to Public Trust Doctrine when groundwater extractions or diversions affect or may affect public trust uses. The ministerial permitting of wells without regard to existing users access or interactions with surface waters should have been identified as a demand management study needed in the event that drought and or the proposed projects fail to achieve groundwater elevations that avoid undesirable effects such as wells going dry.

The Final GSP stated that each of the of the representative monitoring wells includes an average of 400 domestic wells each within a 3 mile or 2 mile radii. This number is reportedly representing 76 percent of the domestic wells within the Subbasin. Evidence to support this statement was not included in the Final GSP. The Subbasin has approximately 10,000 domestic wells and 76 percent would equal 7,600 which corresponds to approximately 8,000 wells (400 domestic wells/representative monitoring well). An actual summary for each representative monitoring well "nearby" wells showing the numbers and depths are needed to verify the distribution of well depths used to determine the 10th percentile well depths.

The distribution of community water systems and representative monitoring wells show that there is a concentration of community water systems in the central, northern-eastern, and western areas of the Subbasin are not co-located with representative monitoring wells. This creates significant uncertainty that the actions or lack of GWA and GSAs actions will result in lowering of groundwater levels that affect the ability of the domestic and public water system to supply groundwater to those served by these wells. The identification of community water systems, based on the list included in the Final GSP includes additional public water systems such as noncommunity non-transient systems like school and transient public water systems like gas stations, restaurants, and state facilities.



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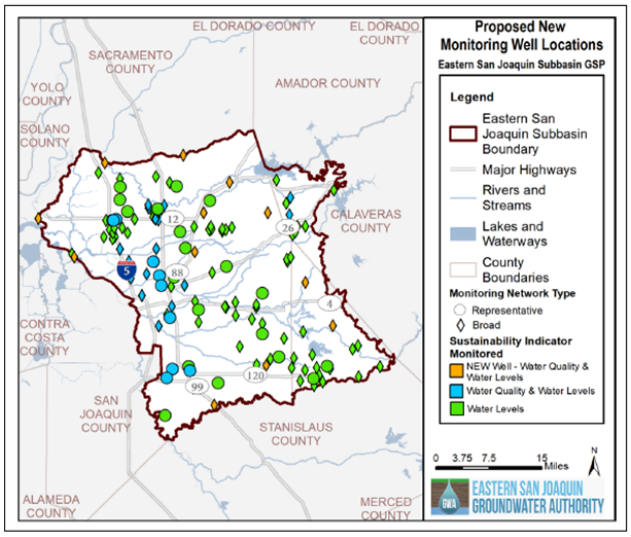
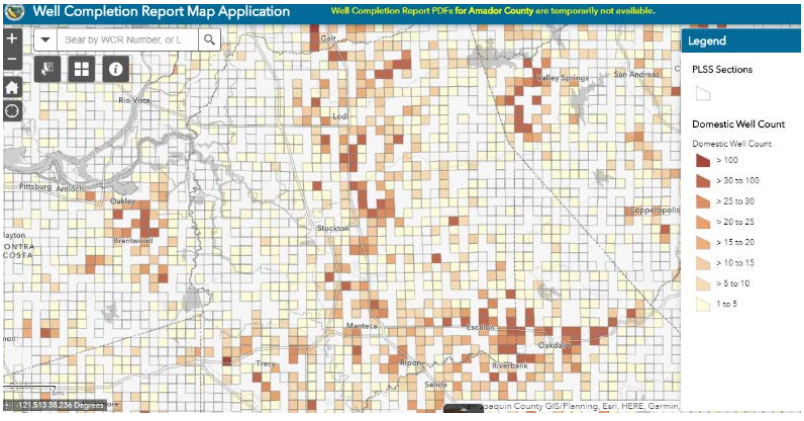


The DWR well log database domestic well counts are also shown below with the darker colors showing the higher density of domestic wells. The Final GSP stated that there are approximately 10,000 domestic wells within the Subbasin. The loss of a domestic well usually results in a loss of water for consumption, cooking, and sanitary purposes, which can often have substantial impacts on the users of the water and can be financially difficult for the well owner to replace. This hardship will be overly experienced by the lower income residents that rely on private domestic wells or small public water systems dependent on groundwater. Areas of high disadvantaged populations are shown on the community water system map. In order that the groundwater level monitoring network capture a greater area where these wells are located, additional representative monitoring wells are needed to ensure that these shallower wells are protected. Additional representative monitoring wells are needed to establish triggers in these areas so that appropriate responses can be initiated before groundwater levels decline due to ineffective GSP implementation measures or droughts relating to climate change.

DWR Domestic Well Counts[1]



[1] https://dwr.maps.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37

According to the Final GSP, wellhead protection was a topic that the GSAs had an opportunity to discuss including wellhead protection areas and well construction policies. The final GSP included a statement that "Analysis on variation of well construction standards and location requirements relating to wellhead protection areas can be considered in future updates to the GSP." Wellhead protection involves more than just well construction details. Public water systems are required to develop source water protection plans which specifically require public water systems to consider sources of contamination. These source water protection plans were not included in the analysis presented in the Final GSP for the Subbasin. The areas surrounding wells and the ability of a deeper neighboring well to impact shallower domestic and public supply wells is not sufficiently addressed with the low representative monitoring well density proposed in the Final GSP.

The adjacent figure from the Source Water Assessment Program guidance illustrates the non-point nature of groundwater wells[2]. The notion that groundwater movement is restricted to property boundaries must be eliminated if the Subbasin is to achieve sustainability while protecting the shallower wells within the Subbasin.
Some non-regulatory measures that have been shown to be effective to protect sources of drinking water and does not require any new ordinance or regulations and should have been considered as part of wellhead protection measures include:

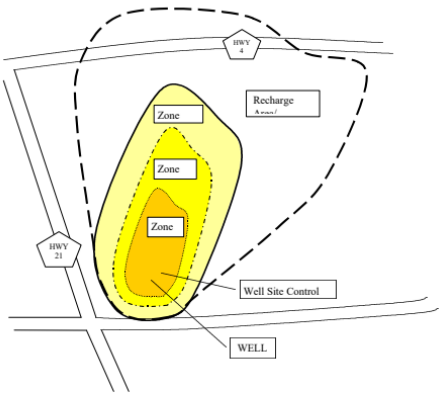


Figure 6-10. Illustration of conceptual ground water source area and protection zones (Adapted from Witten and Horsley, 1995)

- Good housekeeping practices at water sources and at industries, businesses, and homes
- Public education
- Land management to minimize release or runoff of contaminants
- Purchase of land, development rights, or easements
- Man-made systems and devices to prevent release of contaminants
- Emergency response planning

The State of California has developed the Safe and Affordable Funding for Equity and Resilience (SAFER) program. The Safe and Affordable Drinking Water Fund Expenditure Plan, which is adopted annually by the State Water Board, directs how money from the Fund can be spent. The Fund Expenditure Plan identifies public water systems, community water systems, state small water systems and regions where domestic wells consistently fail or are at risk of failing to provide adequate safe drinking water, the causes of failure, and appropriate remedies. Draft information indicates that several San Joaquin County public water systems have been identified as requiring treatment due to nitrates, arsenic, and organic constituents.[3]

Emergency planning involves not only emergency response from a release of contamination but also emergency planning in the event of our next drought. The GWA and GSAs are not able to respond proactively when groundwater levels decline affecting well use and groundwater dependent ecosystems, or wells intercept surface water causing impacts to surface water users including riparian and fish habitats because insufficient representative monitoring wells are established within the Subbasin. Public education efforts have been lacking during the development of the Final GSP. Minimum thresholds are not protective of all wells and require 5/20 representative wells to have groundwater levels at or below minimum threshold values over a 2 year period.

[2] https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwsapguidance/DWSAP_document.pdf

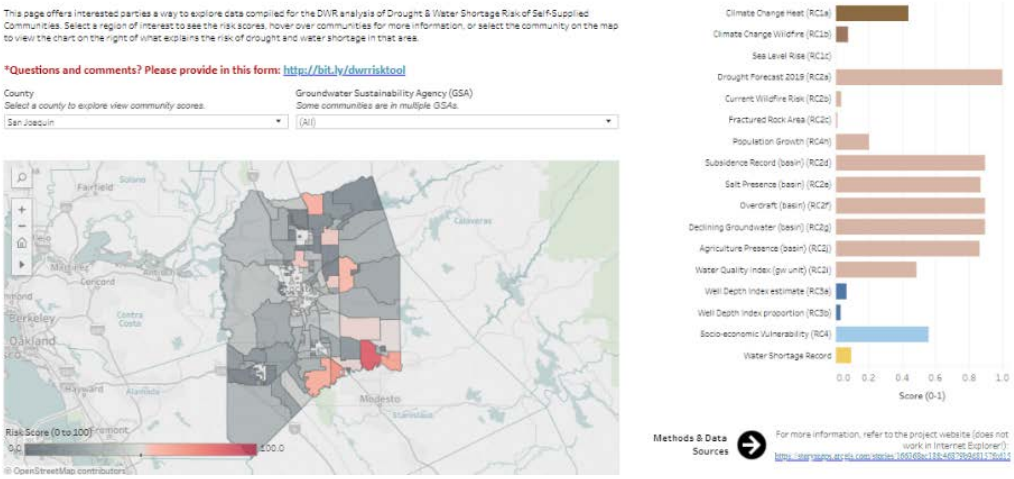
[3] https://www.waterboards.ca.gov/drinking_water/programs/safer_drinking_water/docs/safer_agm3_breakout_session_handouts.pdf

Protection of Shallower Domestic Wells in Rural Areas of the Subbasin

CWC Section 10609.42(a) requires DWR, in consultation with other agencies and stakeholders, to identify small water suppliers and rural communities (areas of households on private supplies, also called "self-supplied communities in this report") that may be at risk of drought and water shortage. DWR must then notify counties and groundwater sustainability agencies (GSAs) of suppliers or communities that may be at risk within its jurisdiction and may make the information publicly accessible on the website. The Draft Countywide Drought and Water Shortage Contingency Plan information is available for review. Several public water systems within San Joaquin County are identified vulnerable to drought effects.[4]

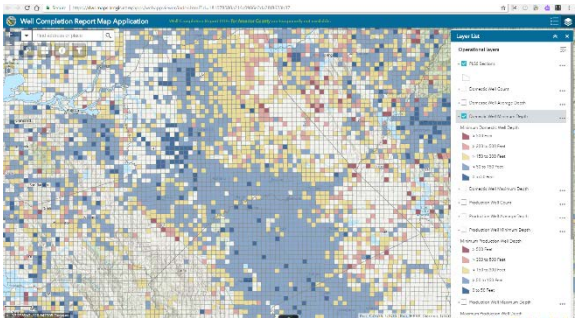
Drought planning based only on information from the few representative monitoring wells that are used for compliance under non-drought conditions may be to too slow to set the momentum for response to conditions which require emergency measures. The GSP fails to identify the demand control measures that will be implemented if groundwater falls below minimum threshold levels despite implementation of the Final GSP.

The following figure shows those areas of San Joaquin County that are of greatest risk for drought and water shortage.[5] The reddish colors relate to higher risk.



The following figures were obtained from the DWR Groundwater Well Log database referenced earlier and shows the distribution of domestic well minimum and maximum depths. Domestic wells with minimum depths of 50 and 200 feet appear most frequent (light blue and tan) corresponding to maximum depths of 150 to 500 feet (tan and rose), respectively.

Domestic Well Minimum Depth



Domestic Well Maximum Depth

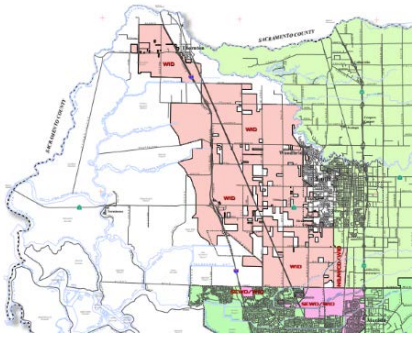
[4] https://water.ca.gov/Programs/Water-Use-And-Efficiency/Making-Conservation-a-California-Way-of-Life/County-Drought-Planning

[5] https://tableau.cnra.ca.gov/t/DWR_IntegratedDataAnalysisBranch/views/RC_01152020/Results?iframeSizedToWindow=true&%3Aembed=y&%3 AshowAppBanner=false&%3Adisplay_count=no&%3AshowVizHome=no

The GWA determined that dewatering of domestic wells may be a potential undesirable result that could be used to confirm the adequacy of the minimum threshold methodology. Domestic wells are generally shallower than agricultural and municipal wells and thus more sensitive to undesirable effects such as wells going dry.

The minimum threshold is used as a criterion to determine if a decline in groundwater levels is significant and unreasonable under SGMA. The minimum threshold for groundwater elevations used to monitor four sustainable indicators and was established as the 10th percentile domestic well depth (i.e., the depth of the top 10th percent most shallow well) within a radius around the 20 representative monitoring well locations (either 3 miles or 2 mile radii). As stated earlier the data was used to determine the minimum threshold, the approximately 400 well depths within the specified radii is not provided to demonstrate that the 10 percentile minimum well depth protects approximately 90 percent of the domestic wells in the Subbasin from dewatering. The 10th percentile well depth was chosen by the GWA and GSAs due to the uncertainty in the database and to account for the fact that domestic wells may have been drilled to a very shallow depth prior to the current well drilling standards enforced by local jurisdictions and/or have reached the end of their lifecycle. The existing San Joaquin County well standard adopted in 2005 requires a 100 foot annular seal. The exact date when the seal depth increased from a minimum of 50 feet is unavailable. The existing State standard has a minimum annular seal of 20 feet. Contact with San Joaquin County Environmental Health Staff confirmed that 25 years is a reasonable estimate for this change. Wells that are well maintained may be only half-way through their lifecycle if no additional wells draw down their groundwater levels that are accessed by the well. The Final GSP indicated that there were instances, for some groundwater wells within the radii of representative monitoring wells when the 10th percentile domestic well depth was shallower than the historical drought low with the buffer.

According to Table 3-1: Minimum Thresholds for Chronic Lowering of Groundwater Levels only 5 of the 20 representative monitoring well minimum thresholds were based on the 10 percentiles of the shallowest well depths were used. Additionally, there were 5 of the 20 representative wells radii containing 10 percentile well depths that were less than 100 feet below ground surface and 3 of those 5 are in the Woodbridge Irrigation District located in the western part of the Subbasin (shown in pink) where shallower groundwater levels are typical.[6]



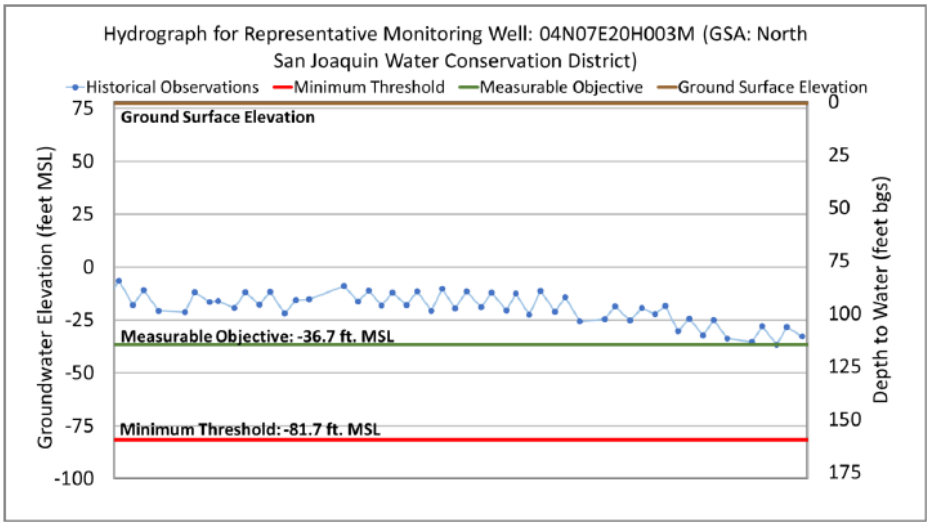
Since the 1990s, domestic wells in San Joaquin County have been deeper than 100 feet below ground surface which is the required annular seal necessary to decrease the likelihood of surficial contamination. Agricultural wells are still able to be shallower because only a 50 foot seal is required. One of those three representative monitoring wells within the Woodbridge Irrigation District is only 112 feet which unless specifically designed as a groundwater elevation well may be considered to " have reached the end of their lifecycle." There are no measures or proposals to protect or mitigate for the effects of reduced groundwater levels that will be allowed based on the Final GSP minimum thresholds. Mitigation measures to protect the most vulnerable are needed to be included in every GSP.

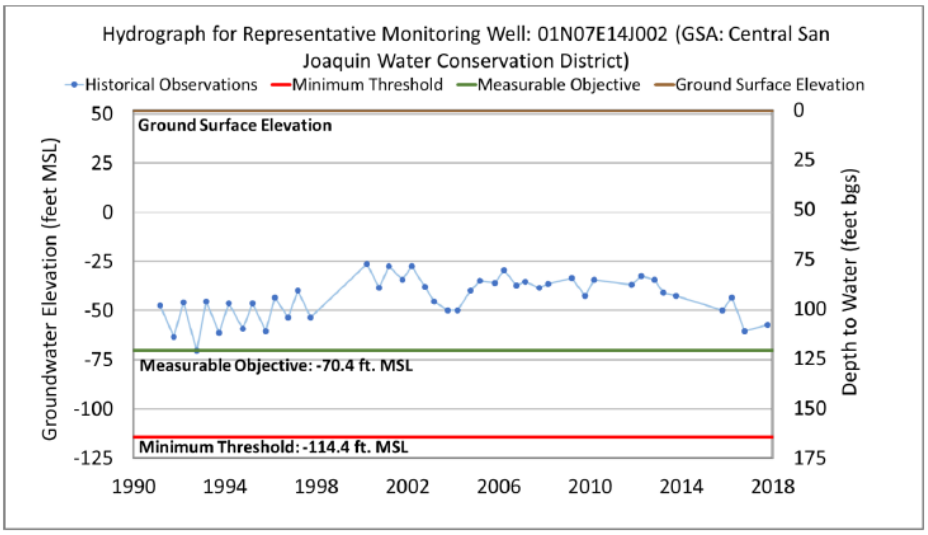
The sources of minimum thresholds for the representative monitoring well varied.

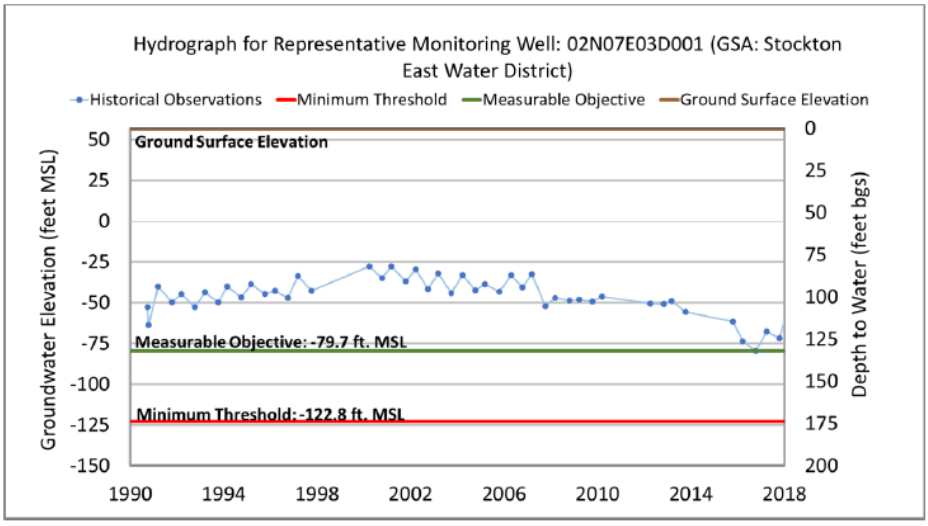
Representative Monitoring Well Sources of Minimum Thresholds
5/20 10th percentile
4/20 1992 groundwater level with a buffer of 100 percent of historical range (7.3-120.3 feet)
7/20 2015 groundwater level with a buffer of 100 percent of historical range (7.3-120.3 feet)
4/20 2016 groundwater level with a buffer of 100 percent of historical range (7.3-120.3 feet)

[6] http://www.sjmap.org/mapdocs/FrontCounter_Irrigation_Districts.pdf

The use of a 100 percent buffer of historical range is excessive and puts shallower domestic and small public water systems wells at greater risk of dewatering by creating a minimum threshold which if achieved would result in many wells affected The hydrographs included in Appendix 3A are illustrative of this point. Three examples are shown below from the Final GSP.







The Final GSP states:

> An undesirable result is considered to occur during GSP implementation when at least 25 percent of representative monitoring wells used to monitor groundwater levels (5 of 20 wells in the Subbasin) fall below their minimum level thresholds for two consecutive years that are categorized as non-dry years (below-normal, above-normal, or wet), according to the San Joaquin Valley Water Year Hydrologic Classification. The lowering of groundwater levels during consecutive dry or critically-dry years is not considered to be unreasonable, and would therefore not be considered an undesirable result, unless the levels do not rebound to above the thresholds following those consecutive non-dry years.

The lowering of groundwater levels without some kind of demand management option during a drought is unreasonable and represents poor sustainability planning because droughts happen. In California with climate change considerations droughts are expected to increase in frequency. Sustainability means that groundwater management efforts have provided for the groundwater for all users within the Subbasin. The Final GSP quoted SGMA: "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." Chromic lower of groundwater in the Subbasin has already been established. Existing practices will continue to occur until projects are implemented. Planning for drought effect on vulnerable domestic and small public water system wells as a contingency is reasonable and necessary especially since there have been no demand management measures identified for implementation.

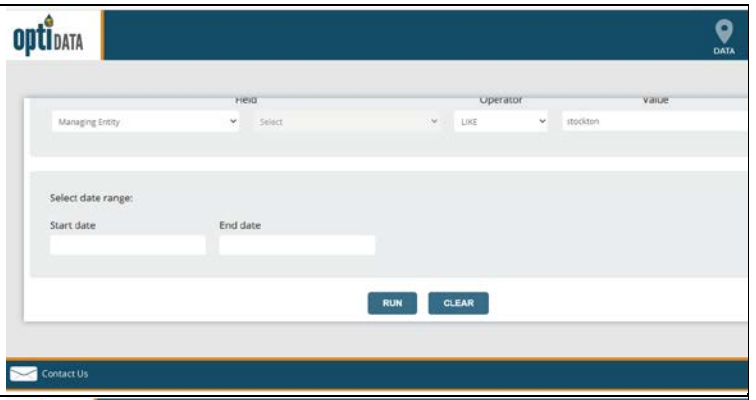
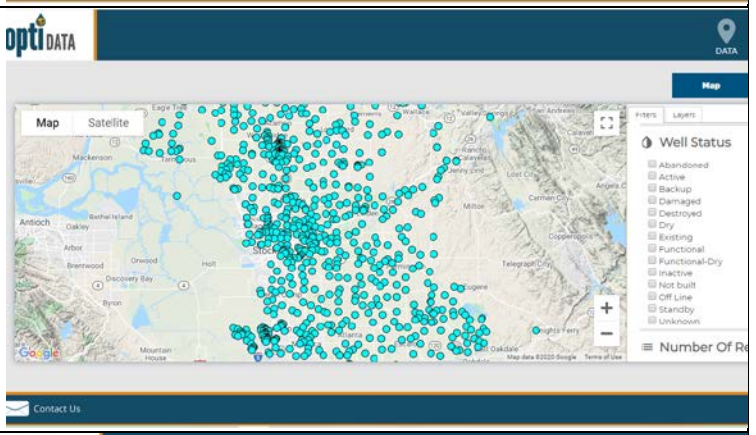
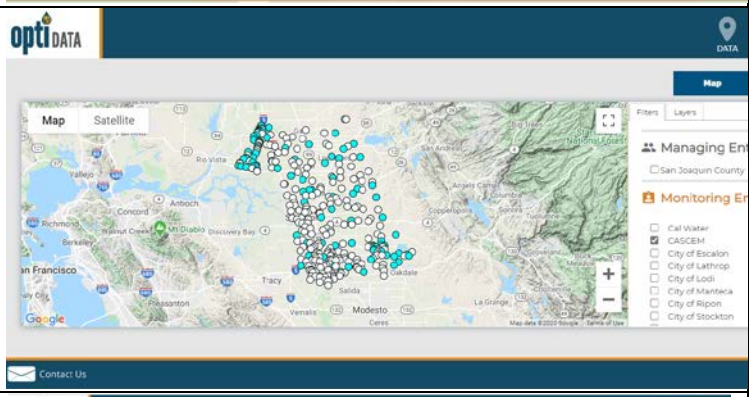
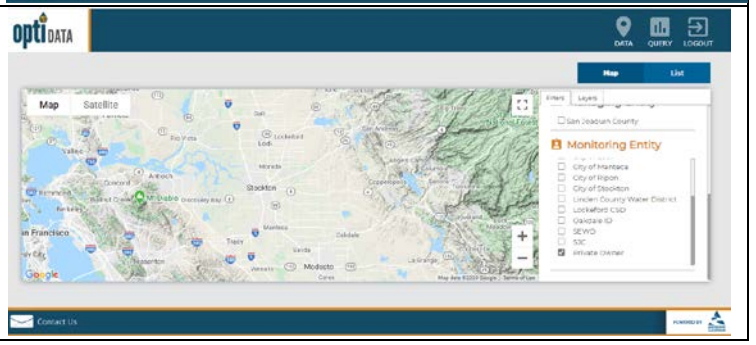
Those hydrographs of the representative monitoring wells (3 are shown above) provide a comparison of well levels during the droughts of 1992, 2015, and 2016 and the range between measurable objectives and minimum thresholds during significant drought periods. If minimum thresholds were achieved at the extent specified by the GWA and GSAs within the Subbasin, there will not be enough money to fix to the problem. Better that minimum thresholds are higher (that is higher groundwater levels) so that if an exceedance did occur the impacts on domestic well and small public systems and surface water uses could be mitigated with immediate demand reductions – an emergency situation. Waiting for two years before initiating a response relating to an undesirable result is not justified other than the GWA and associated GSAs did not think the situation was unreasonable. Given that the representative monitoring well density is low 1.7 wells/100 square miles a very large area would be impacted before "at least 25 percent of representative monitoring wells: used to monitor groundwater levels (5 of 20 wells in the Subbasin) fall below their minimum level thresholds for two consecutive years that are categorized as non-dry years (below-normal, above-normal, or wet). There is no justification for the "at least 25 percent" other than the GWA and associated GSAs did not think that large area of impact was unreasonable. This is not protective or proactive.

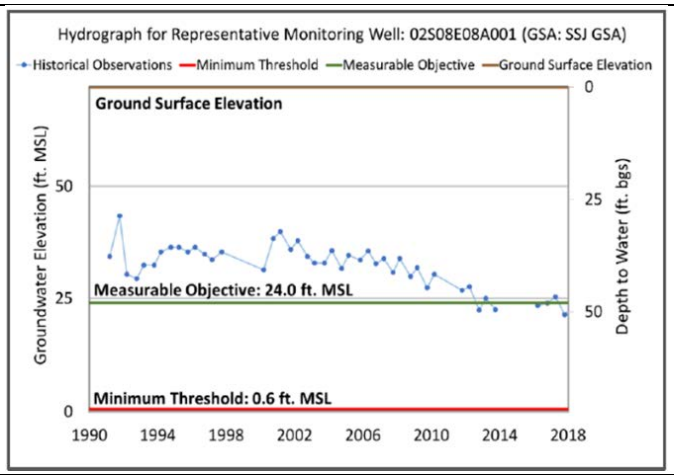
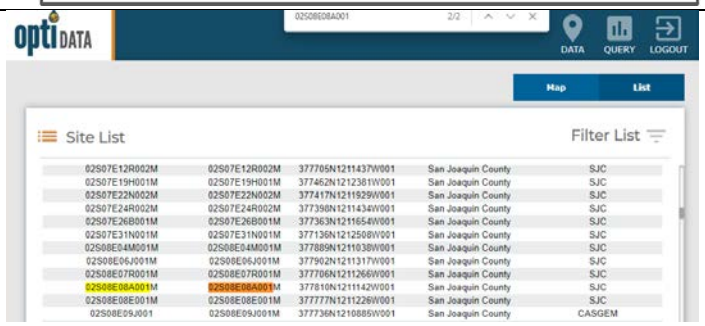
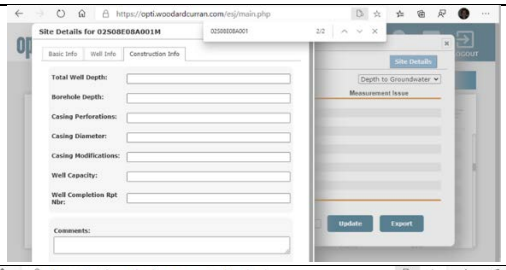
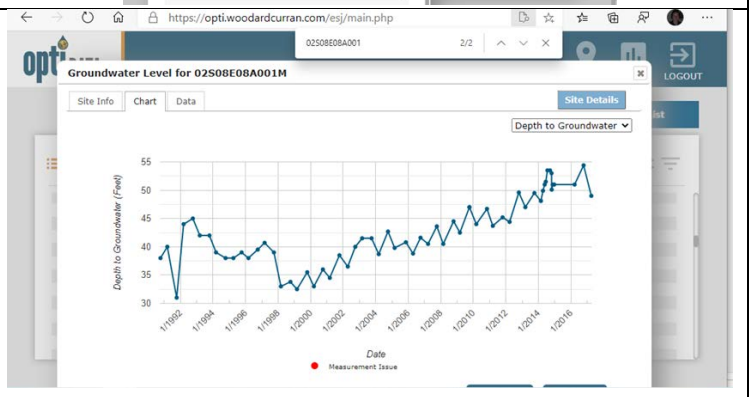
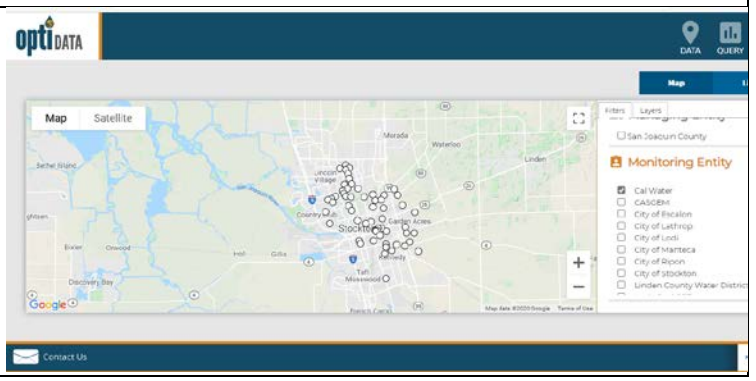
Data Management System

The final GSP included the statement that "The Data Management System Section of Final GSP that satisfies § 352.6 of the Sustainable Groundwater Management Act Regulations." Each Agency shall develop and maintain a data management system that is capable of storing and reporting information relevant to the development or implementation of the Plan and monitoring of the Subbasin.[7] The optidata tool powered by Woodward and Curran is found at https://opti.woodardcurran.com/esj/main.php. The tool

[7] https://govt.westlaw.com/calregs/Document/I5D5724D17CEE43DF8D0307D5645A6444?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

was used to search for representative wells used for monitoring the effectiveness of baseline programs and to estimate the fraction of CASGEM wells used for monitoring groundwater conditions that are private. The following screenshots and descriptions indicate that data is not being entered into the database by GSAs which significantly handicaps the public's access to data.

The Query Tool allows sorting by managing entity (but no field to select a particular managing entity) site name, groundwater and surface water quality, quality with the list of constituents included in the GSP but <u>no data was able to be retrieved using the query tool</u>.	
Using the Map Tool was more fruitful when trying to obtain groundwater well construction data and groundwater levels. However, the well status was difficult to distinguish as some terms are overlapping for example existing - functional and off line -inactive. The definition for these terms was not located.	
CASGEM wells reportedly involve public and private wells.	
Those CASGEM wells that are private are not distinguishable at the database level. This is a problem as these well owners may or may not continue to grant access.	

This is the example hydrograph of a representative well's data included in the Final GSP. This referenced well: 02S08E08A001 was used to check if the required well criteria was available for the public.	
There is no ability to filter or query the representative wells As filtering by representative well is not possible, the well ID was used in my browser to locate the well in the well list	
There is no well construction information in the database for this example representative well.	
This hydrograph looks different from the example hydrograph referenced above. The reason is that the example in the Final GSP starts at 0 feet depth to water (below ground surface) which is a typical way that groundwater elevation is illustrated whereas the database hydrographs starts at 55 feet. This presentation at first glance appears that the groundwater elevation is increasing. Data after 2017 is not in the database. GSAs need to update the database with any well construction details and contemporary groundwater data.	
Cal Water wells within the City of Stockton GSA are indistinguishable from wells within the San Joaquin County GSA #2.	

Modeling and Recharge Areas

Multiple requests to: the ESJ Groundwater Authority, Department of Water Resources, and San Joaquin County Counsel were needed to obtain the Model Report that was due to DWR March 2018 according to the contract. The August 2018 report was finally obtained January 2019 long after it was approved by the Groundwater Authority. The following figures show the model grid distribution and model subareas established. These subareas do not correspond to GSA boundaries so water budgets at a more detailed level are needed as GSAs are trying to obtain funding and needing to justify asking rate payers to pay their fair share. Hopefully, as this task is being completed there will be the opportunity for public education and engagement.

Figure 5: ESJWRM Grid Development Features

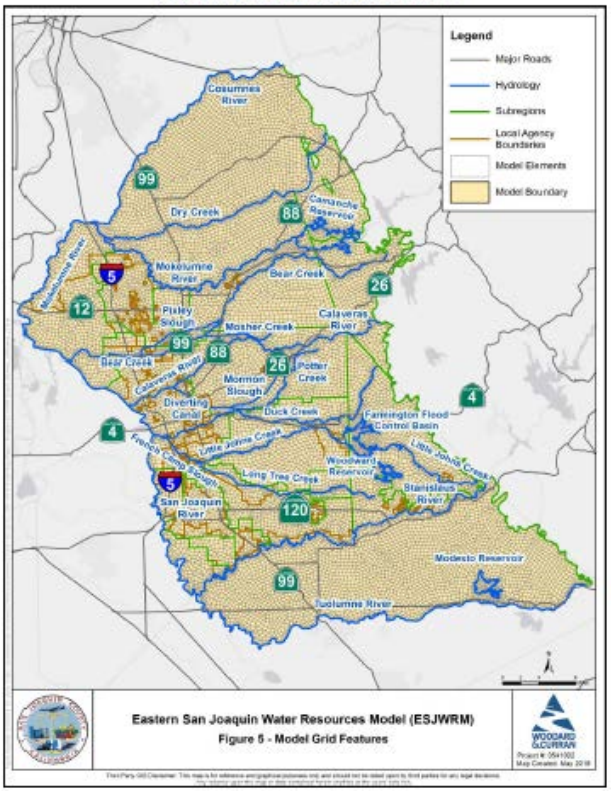


Figure 50: ESJWRM Groundwater Level Calibration Wells

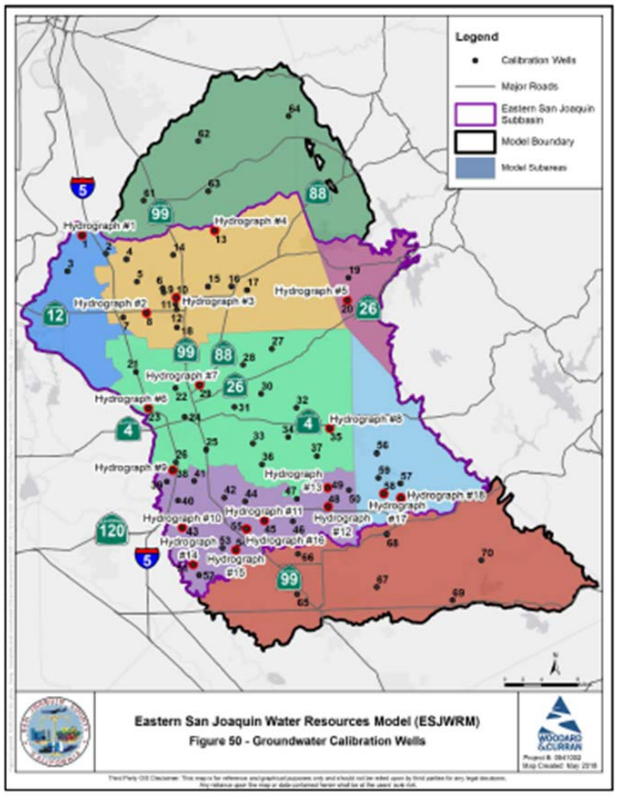
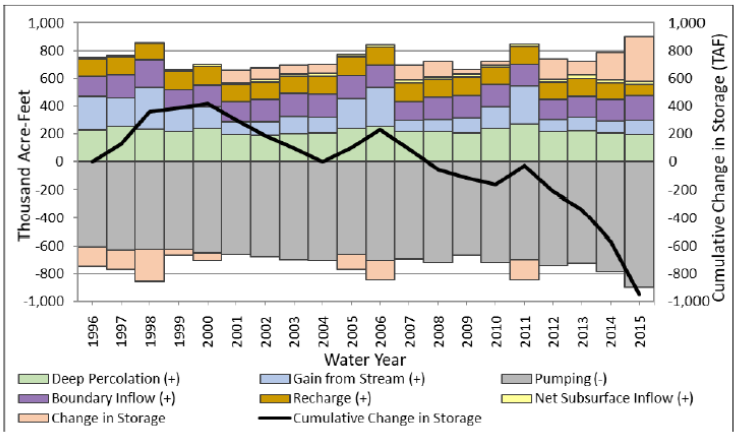


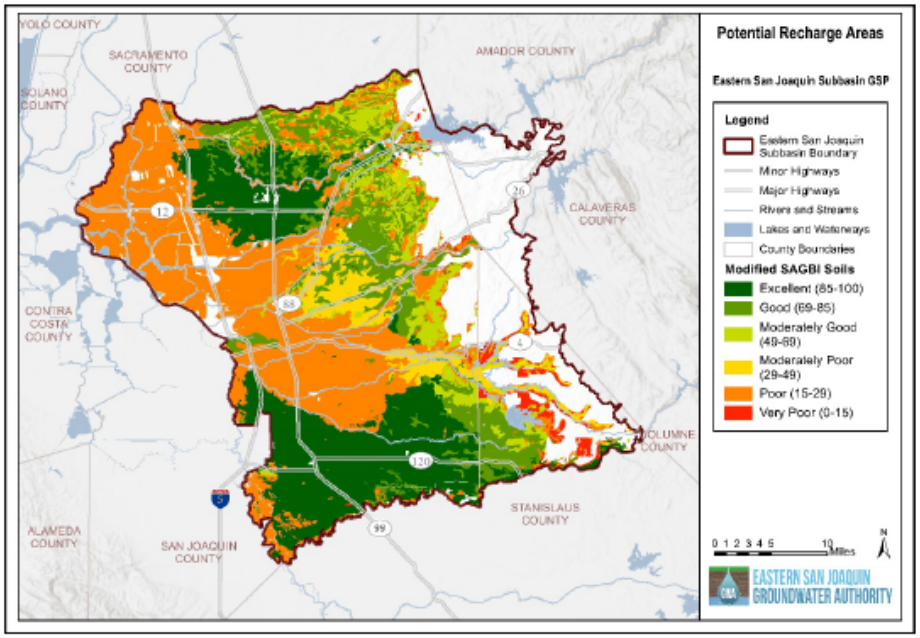
Figure 49a: ESJWRM Groundwater Budget – Eastern San Joaquin Subbasin



The model derived groundwater budget (above) from the Final GSP shows deep percolation in green bands and recharge in tiny tan bands.

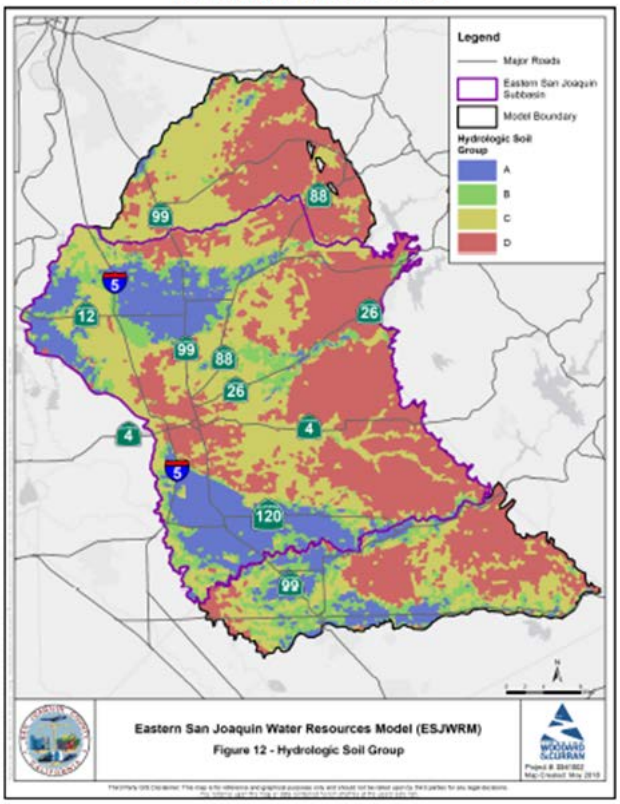
The Final GSP used the Groundwater Banking Index (SAGBI) to prepare the required map showing recharge areas in the Subbasin. SAGBI provides an index for the groundwater recharge for agricultural lands by considering deep percolation, root zone residence time, topography, chemical limitations, and soil surface condition. The Modified SAGBI data assumes that the soils have been or will be ripped to a depth of 6 feet, which can break up fine grained materials at the surface to improve percolation. The final GSP stated that the Modified SAGBI data categorizes 310,098 acres out of 610,890 acres (51 percent) of agricultural and grazing land within the Subbasin as moderately good, good, or excellent for groundwater recharge (University of California, Davis, 2018).

Figure 2-14: Potential Recharge Areas



The model included the figure below of soil groups relating to percolation potential. As both maps indicate some areas may be of greater benefit; therefore, additional refinement is needed so that these areas identified as having the best potential for recharge can be set aside and designated for that land use. No specific areas were identified where land use protections should be established to protect this resource. Without more detailed information these areas may have reduced value in the future due to competing land uses.

Figure 12: ESJWRM Hydrologic Soil Group

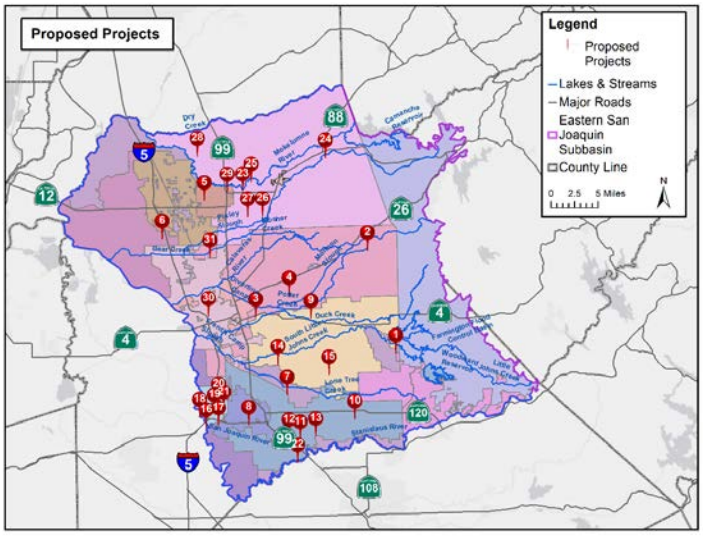


The Final GSP did not include any agricultural or urban groundwater pumping reduction goals. In order for the public to support GSA water management operations and infrastructure improvements, establish economic incentives to control groundwater pumping, establish economic incentives that maximize recharge, and be willing to pay for it, evidence is needed to demonstrate value.

Recharge in controlled ponding experiments are needed to develop better estimates of recharge potential volumes that might be expected if agricultural practices were promoted that improve the health of soils which in term can lead to increased recharge and flood protection. Additional support is needed at the state level and county level to coordinate water reduction and soil conservation programs. More demonstration farms are needed. Stakeholders in the Subbasin need to be educated about the consequences of overdraft and benefits of carefully managing both pumping and recharge. When water conservation is applied to help control groundwater nitrate pollution recharge is reduced creating increased needs for engineered or natural recharge areas.

Projects

November 13, 2018 Groundwater Sustainability Workgroup slides



The initial 31 Projects shown in the figure from Workgroup slides became 23 in the Draft and Final GSP. Six of the 31 projects were sponsored by the City of Lathrop which left the Eastern San Joaquin Subbasin to join the Tracy Subbasin. The Oct 10, 2018 GWA Advisory Committee meeting slides noted that highlighted projects were included in the baseline assumptions for modeling. As of October 10, 2018, there were 22 projects considered and of these there were 8 of projects included in the baseline assumptions. No document where the baseline projects were listed or characterized was located. It seems as if the project included as part of the model baseline should not be included as planed project to improve groundwater elevations.

Project Name/Description included in baseline	Submitting GSA	Included in Final GSP (#)	AF/year gH2O reduction
Raw Water Reliability and Recharge	SEWD	Not included	
Demand Management Measures/Advanced Metering Infrastructure Improvement - Conservation	City of Manteca	#3	272
Recycled Water Program Expansion	City of Lathrop	Not included	
Conjunctive Use of GW and SW	City of Lathrop	Not included	
City of Lathrop UWMO Water Conservation	City of Lathrop	Not included	
NPDES Phase 2 MS4 Compliance Program	City of Lathrop	Not included	
Water Meter Improvements	City of Lathrop	Not included	
Increase Nick DeGroot SW Deliveries	SSJ GSA	#17	2015

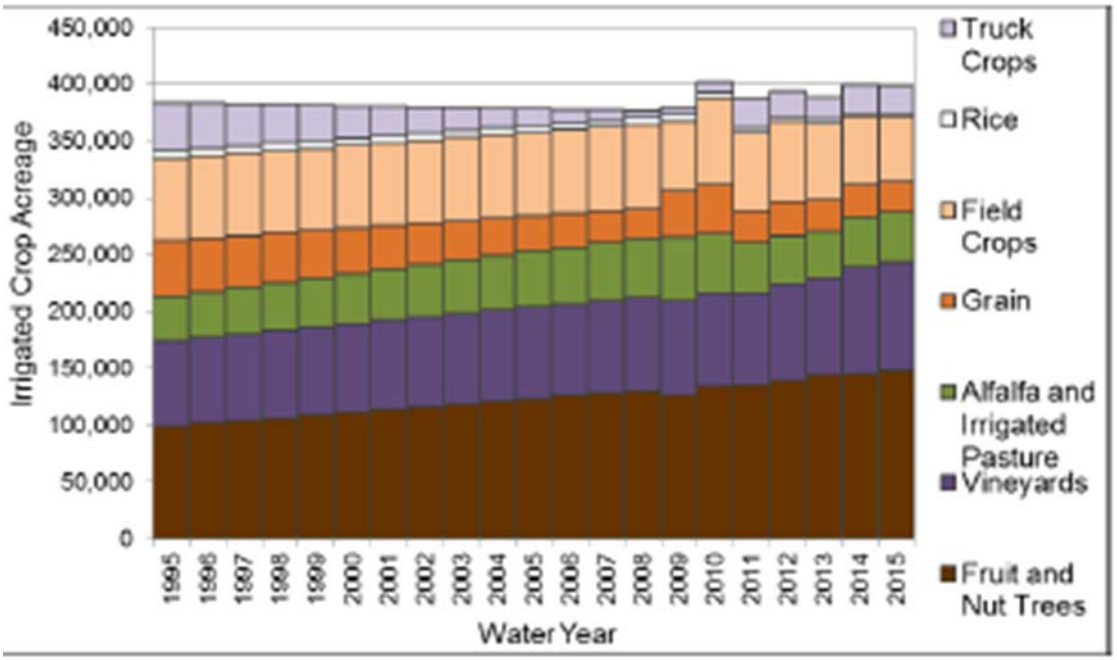
The model budget showed increased groundwater pumping and increased permanent crop acreage through 2015. This trend has continued where field crops are converted to orchards with higher water demand and various areas of the Subbasin undergoing urbanization with significantly different costs for water throughout the Subsbasin.

Work group slides October 2018

Water Year	Alfalfa*	Almonds	Cherries	Corn*	Cotton	Citrus & Subtropical	Cucurbits	Dry Beans	Field Crops	Grain*	Onion & Garlic	Orchard	Pasture*
1995	26,545	38,953	10,466	54,473	0	481	4,854	6,873	3,111	48,686	0	13,985	12,490
2015	29,063	57,069	12,060	53,949	196	2,801	1,924	1,286	201	26,756	309	2,859	14,975

Water Year	Pistachios	Potatoes	Rice	Safflower	Sugar Beets	Tomato Processing	Truck Crops	Vineyards	Walnuts	Native Vegetation	Riparian Vegetation	Urban Landscape	Water Surface	Total
1995	96	2,182	7,141	3,751	3,859	22,905	12,235	75,345	35,280	283,328	16,615	83,416	5,307	772,377
2015	33	2,268	2,792	1,532	0	18,576	791	95,240	73,416	242,942	15,148	110,884	5,307	772,377

Figure 19a: ESJWRM Annual Cropping Pattern – Eastern San Joaquin Subbasin



Stakeholder Engagement

The Draft Stakeholder and Public Outreach Plan dated June 2018 included in the Final GSP was not adopted by the Groundwater Authority or individual GSA's. No motion or action by the GWA was made to disband the Stakeholder/Workgroup which occurred in September 2019 referred to elsewhere as the Workgroup. No Stakeholder/Workgroup meeting has been held since. The Draft Stakeholder and Public Outreach Plan was not discussed at any meetings except to present to the Stakeholder/Workgroup during the first couple of meetings beginning June 2018, Following the Facilitation Outreach that was funded by a DWR Facilitation Agreement the GSP consultants was too late to start over when the concerns were summarized and process engagement documented at the end of 2018.

According to the Draft Stakeholder and Public Outreach Plan the Stakeholder's purpose is still very much needed relating to annual work plans and reports including the 5-year milestone reports, community outreach, amendment of the GSP, fee proposals, interbasin coordination activities, local regulations to implement SGMA within the Subbasin, modeling scenarios, projects and managements actions to achieve sustainability.

The GWA response to stakeholder engagement is still under consideration as the GSAs move into GSP implementation. Stakeholder engagement is addressed in the proposed GWA budget for 2020-2021 which includes $10,000 for a website (professional services http://www.esjgroundwater.org/), $10,000 outreach and $2,500 for mailing list maintenance.

What is included in the $10,000 outreach budget item is unknown. At an early point a newsletter budget item was included. The mailing list budget item might be related to physical mailings as the Final GSP reported that 433 community water systems water systems received hard copy outreach materials throughout the GSP development process. If each mailing represents $0.75 for postage and mailing materials, then one mailing would cost approximately $325. The Final GSP stated that outreach materials, promoting informational open house events in August 2018, October 2018, January 2019, and July 2019, were distributed via email to the stakeholder database, and hard copies were distributed to the 433 community water systems. Notice of a public meeting may not have stimulated involvement and given a small system with few residents those residents may not have learned of the open house in time.

The North San Joaquin Water Conservation District distributed a very informative newsletter informing those receiving the December 2019 newsletter that for now, the plan avoids pumping restrictions and now is the time to get serious about their projects. The newsletter also informed those receiving of nearby agencies charges for groundwater or acreage for comparison. The information was clear and disclosed the GSA's plan to reduce groundwater pumping.

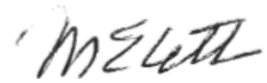
Stakeholder engagement at the GSA level was reviewed in correspondence submitted in July 2019. Increased stakeholder outreach consideration as the GSAs move into GSP implementation does not appear to be a priority for the Groundwater Authority or GSAs when broad public support is necessary to implements the proposed projects.

Facilitation of meetings ended with the retirement of long-time facilitator Carolynn Lott. Participating at appropriate times during public meetings became difficult at times. Groundwater Authority Board leadership would hold the vote before giving the public an opportunity to speak. This occurred multiple times and the Groundwater Authority Board was notified that public comments should be allowed prior to any action. Handwaving efforts sometimes could prompt opening the floor for public comments sometimes. But many times, public comments at the end of the meeting were to request that public comments be allowed prior to votes. This happened frequently enough that DWR staff in attendance might recall this issue and minute records of meetings include end of meeting comments. In fact, the same occurred at the April 2020 Groundwater Authority meeting prompting Counsel to remind the GWA leadership of the requirement to allow public comments.

This situation improved somewhat overall when other GSA attorneys started attending and they felt comfortable enough to speak without being invited. Meeting facilitation is needed as illustrated at the April 2020 Groundwater Authority meeting. The Final GSP did not demonstrate that the GWA or most GSAs have the ability to fulfill the requirements to seek stakeholder engagement during the GSP development or GSP implementation.

A few Ad Hoc Committees have been established that are not subject to the Brown Act and have not been open to the public. The Ad Hoc Steering Committee is now noticed and open for public attendance/viewing. A new committee: Ad Hoc TAC Committee is not noticed but I did receive the following information from San Joaquin County Public Works staff: "The meetings are open to the public but we do not widely invite participation because these are working groups and not subject to the Brown act. We try to keep them very focused. We will seek to notice them on the web page." The technical committee meetings are the best and only opportunity for the public to begin to understand more technical aspects of groundwater actions.

Thank you for allowing us an opportunity to submit comments for your consideration as you review the Eastern San Joaquin Groundwater Sustainability Plan.
Sincerely,



Mary Elizabeth M.S., R.E.H.S.
Delta-Sierra Group Conservation Chair
Sierra Club

Appendix A

January 2017	Member Comments on draft Joint Powers Agreement (JPA)via email as requested
November 2017	Sierra Club Support Letter for Disadvantaged Community Grant Application
April 2018	Delta Sierra Group Letter: Objecting to the Use of Zone 2 Money to Fund CalWater's share Requesting use of Funds be Directed Towards Disadvantaged Communities Outreach
June 2018	Delta Sierra Group Letter: Requesting Model and Water Budget information
November 2018	Delta Sierra Group Letter: Prop 1 Grant Deliverables - Model Report
January 2019	Delta Sierra Group Letter: Prop 1 Model Report
	Delta Sierra Group Public Information Request to San Joaquin County Counsel.
May 2019	Delta Sierra Group Letter: Calwater 2019 Stockton District Rate Hearing
February 2019	Delta Sierra Group Letter: Groundwater Dependent Ecosystem Identification
July 2019	NGO Collective Outreach Letter: Insufficient effort to engage Stakeholders
August 2019	Draft Plan Comment Letter
October 2019	Delta Sierra Group Letter: Support for Proposition 68 Grant Application

One letter was received in response stating that San Joaquin County could use public assessment funds to award California Water System a credit on their costs invoiced by the Groundwater Authority, despite the fact that California Water System agreed to pay all costs associated with their participation with San Joaquin County as a Groundwater Sustainability Agency.