- The draft GSP identifies a methodology used to distinguish between the applicability of either MCLs or agricultural WQOs as the MTs for a given RMW. As stated in Section 5.3.3.3, "If the majority of the beneficial use (greater than 50% of the pumping within a determined area) was agriculture and there were no public water systems (including schools) the minimum threshold would be a host of agricultural water quality constituents" and "If a monitoring well is located within an urban area, or near a public water system (e.g., within a mile), which includes schools, then the minimum threshold would be set at the MCL for drinking water." However, the draft GSP does not clearly identify on a map or otherwise which RMWs will use MCLs and which will use agricultural WQOs. The document also does not identify which monitoring wells are located within an urban area or near a public water system. **For transparency and completeness, the GSP should clearly identify on maps and in tables which set of MTs/MOs will be applied to which RMWs. These maps should clearly identify the location of DACs, small water systems, and other sensitive users so that the public is able to review and evaluate the proposed sustainability approach. Per 23 CCR §354.28, the draft GSP should provide a detailed explanation as to how the proposed water quality MTs may affect the interests of beneficial uses and users of groundwater or land uses and property interests.**

- **Figure 3** shows the water quality monitoring network identified in Figures 4-6 and 4-7 of the draft GSP, including the new proposed multi-level monitoring wells. The water quality RMWs are focused in the northern and eastern portions of the MKGSA area and the monitoring well density varies by two orders of magnitude across the MKGSA. Specifically, the density of water quality RMWs in the northern portion of the MKGSA area (Visalia area) is approximately two RMWs per square mile, the eastern portion (Tulare and surrounding area) has density of about 0.6 RMWs per square mile, and even with the new proposed wells, the western portion will have a density of about 0.06 RMWs per square mile. Although the western portion of the MKGSA, including the communities of Okieville and Waukena are more sparsely populated than the eastern portion, there are at least 200 domestic wells and several public water systems (including the Okieville/Highland Acres Mutual Water Company, Waukena Elementary School, and Buena Vista School systems) located in this area. **The GSP should clearly demonstrate how the proposed water quality monitoring network in the western portion of the MKGSA area is sufficient to monitor for impacts to beneficial users in this area, given the significant density discrepancy compared to the other portions of the MKGSA area.**

- The draft GSP stated that "An exceedance of any of the MCL or agricultural metrics as defined herein at any representative monitoring sites will trigger a management action within the applicable Management Area or GSA, subject to determination that the exceedance was caused by actions of the GSA" (Section 5.3.3.3). **However, the draft GSP does not identify which management action(s) will be implemented. Additional information is necessary in order to evaluated whether the proposed plan is protective of beneficial users in the subbasin.**

- The draft GSP states that "MKGSA will evaluate groundwater quality degradation by either directly performing groundwater sampling at representative monitoring sites and *[sic]* coordinating with other agencies responsible for the collection and reporting of groundwater quality through other regulatory programs" (Section 5.3.3.3). Appendix 2A of the draft GSP includes a discussion of groundwater quality conditions for the subbasin; however, it is not specific to the MKGSA area and it is difficult to readily understand what parts of this assessment are specifically applicable to the MKGSA. **It is therefore recommended that the GSP include specific discussions of the water quality**

conditions and trends for applicable constituents and uses within the MKGSA area. It is further recommended that this analysis clearly include an evaluation of the change in water quality constituent concentrations relative to change in water levels, particularly over drought periods, to evaluate the potential relationship between water quality and groundwater management activities.[3]

- The draft GSP identifies RMWs for water quality on Figure 4-6 and Figure 4-7, but does not include well construction information for these wells. Table 4-5 in the draft GSP shows well construction information for a subset of water level RMWs. **Without well construction information for monitoring wells included in the GSP, the public and DWR cannot evaluate if the monitoring wells are: (1) adequate for evaluating water levels relative to the MOs and MTs over the long term, and/or (2) how representative the water quality sampling depths are of the zones used for drinking water purposes by domestic well users and community water systems. Pursuant to 23 CCR § 352.4, this information is required to be provided in the GSP for all monitoring wells.**

Management Actions

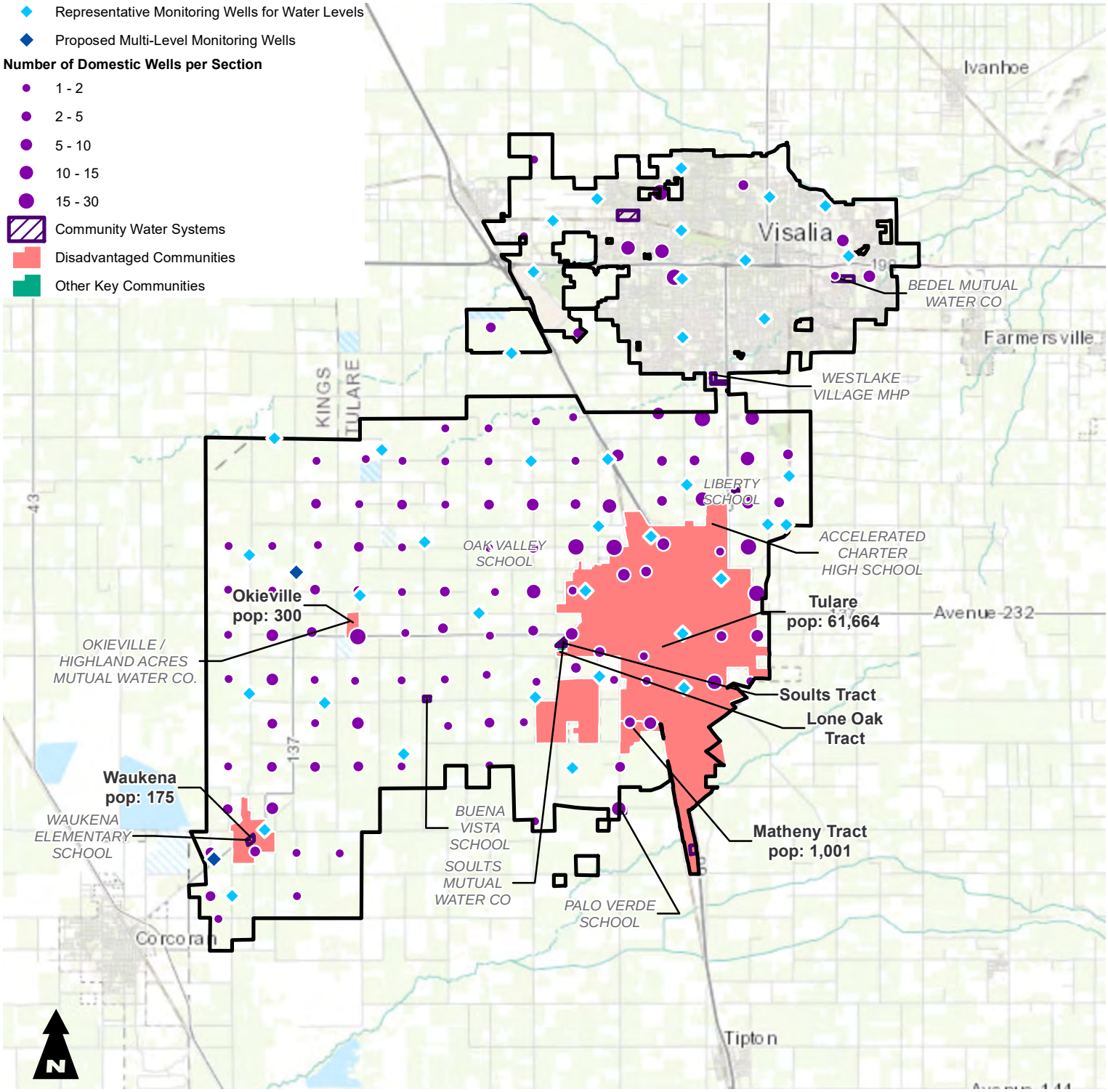
- The draft GSP describes a plan to develop a groundwater extraction allocation program between 2020 and 2025 (Section 7.4.2) and states that "this initial phase of an allocation program shall exclude those well owners who extract less than two AF per year (i.e., de minimis extractors)." Under Section 7.4.8.1, it is acknowledged that the early stages of planning for the assistance program will include "A determination by the GSA to not regulate any de minimis extractor, i.e., any well owner pumping two acre-feet or less annually." This provision is critical to ensure that drinking water users, including DACs and other domestic well users, will continue to have access to drinking water and **therefore, the GSP should provide stronger clarification that this provision will be included in any allocation program through and beyond the 2025 timeframe.**
- As described above, the draft GSP indicates that it will not impose pumping restrictions on well owners that extract less than two AF per year, but does not address small water systems that may extract over two AF per year, but serve critical drinking water needs, such as the Soults Mutual Water Company, Okieville/ Highland Acres Mutual Water Company, and the Waukena Elementary School system. **The GSP should therefore clearly identify how a groundwater allocation program would be designed to protect small water systems and the beneficial users that depend on them.**
- As discussed above, the draft GSP identifies an impact to 21% of rural/domestic wells, and based on our "quick and dirty" evaluation herein, the actual impacts could be much higher. Given these impacts to well owners, the draft GSP identifies assistance measures that are being considered for small water systems and domestic wells (Section 7.4.8.1). **If assistance measures are planned to mitigate impacts to drinking water wells, then the draft GSP should provide clear funding mechanisms and implementation plans for these assistance measures. The GSP should also consider the following in its implementation plan:**

[3] Stanford, 2019. *A Guide to Water Quality Requirements Under the Sustainable Groundwater Management Act,* Spring 2019.

- A secure and reliable funding source and mechanism for implementation of any assistance measures needs to be identified. While grant or emergency funding could potentially be available for such a program when needed, the availability of these funds is not certain. A more secure funding mechanism could be the establishment of a reserve fund that is paid into on an annual basis and accrues funds that would then available as water levels drop in the future.
- The implementation of an assistance measure program should be triggered before wells begin to become unusable, so that funding will be available, and the necessary planning and contracting will be completed such that the necessary construction will be implemented without unnecessarily leaving community members without access to drinking water. Thus, the measure should be designed to be proactive, rather than reactive.
- An assistance measure should not be established only in case of emergency, such as the emergency measures implemented in portions of the state during the last drought. Droughts are said to be becoming more and more frequent and severe, and as such should be included as part of the long-term sustainability planning for the subbasin.

Figure 1 - Representative Monitoring Network for GW Levels Relative to Domestic Wells, DACs, and Community Water Systems

Mid-Kaweah GSA



Notes

1. All locations are approximate.

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Disadvantaged community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/.
3. Community Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer.
4. Groundwater level monitoring well information are from Figure 4-4 and Figure 4-7 in Mid-Kaweah GSA GSP - Public Review Draft dated July 2019.

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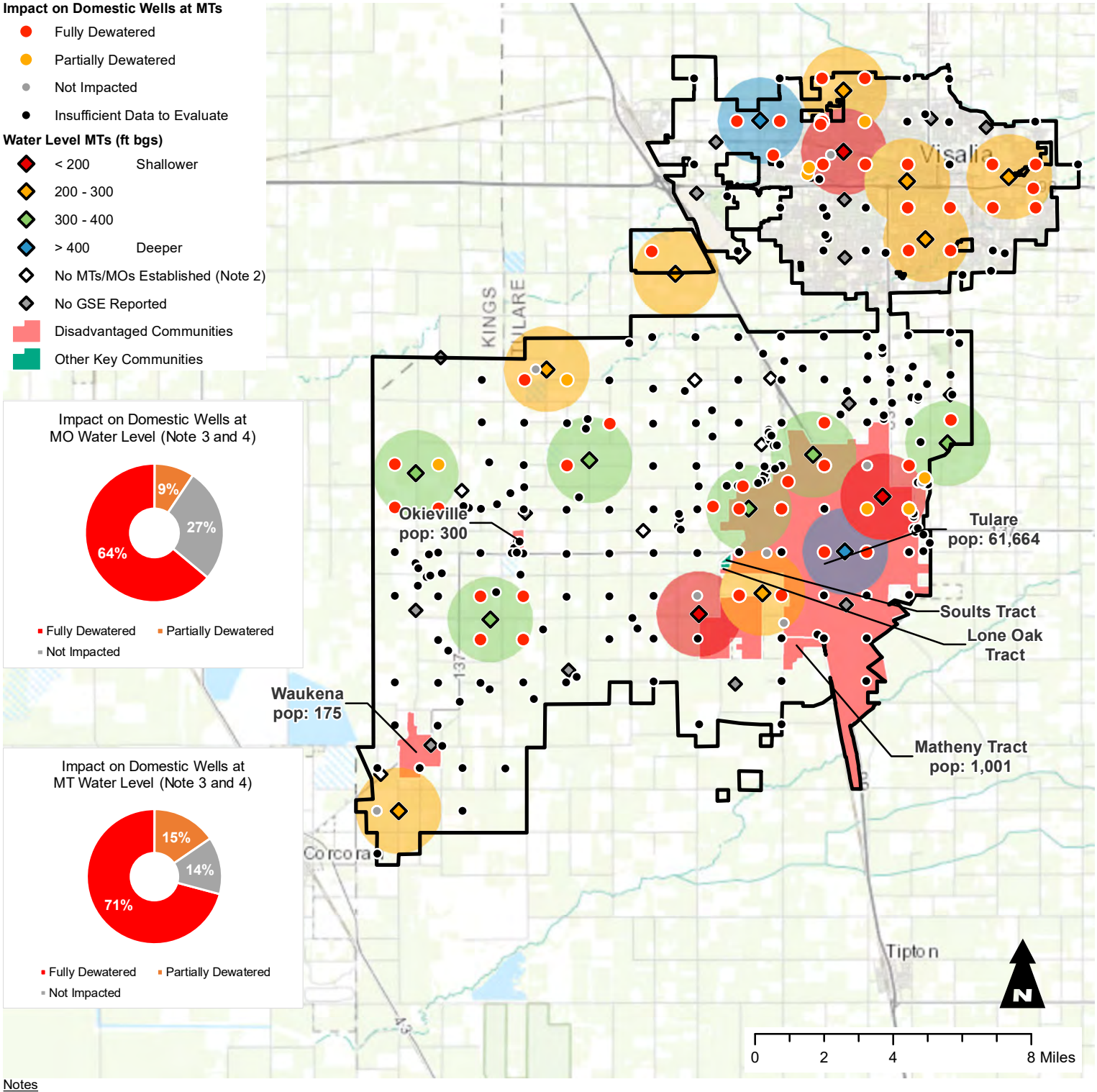
Figure 2 - Water Level Minimum Thresholds and Domestic Wells
Mid-Kaweah GSA



Notes

1. All locations are approximate.
2. There are four recently constructed wells for which MTs and MOs have not been established because "the wells are new and empirical groundwater level data was not available for the period 2006 to 2016", per the draft GSP.
3. For this assessment, the proposed MTs and MOs in ft above sea level presented in Table 5-3 were converted to depth below ground surface values, based on the ground surface elevation (GSE) from Appendix 2A. Approximately half of the monitoring wells do not have GSE reported in the GSP and therefore nearby domestic wells were not evaluated herein.
4. Where available, bottom of screen interval of a domestic well was used for this assessment, and bottom of well depth was used for the remaining domestic wells. A well is identified as fully dewatered if the MT (or MO) is below the bottom of the well screen interval; a well is identified as partially dewatered if the MT (or MO) is below the midpoint of well screen interval.

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Disadvantaged community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/. Last updated in 2016.
3. Groundwater level monitoring well information are from Figure 4-4 in Mid-Kaweah GSA GSP - Public Review Draft dated July 2019. MT and MO values are from Table 5-3 of the draft GSP. GSE values are from Appendix B Table of the draft GSP Appendix 2A.

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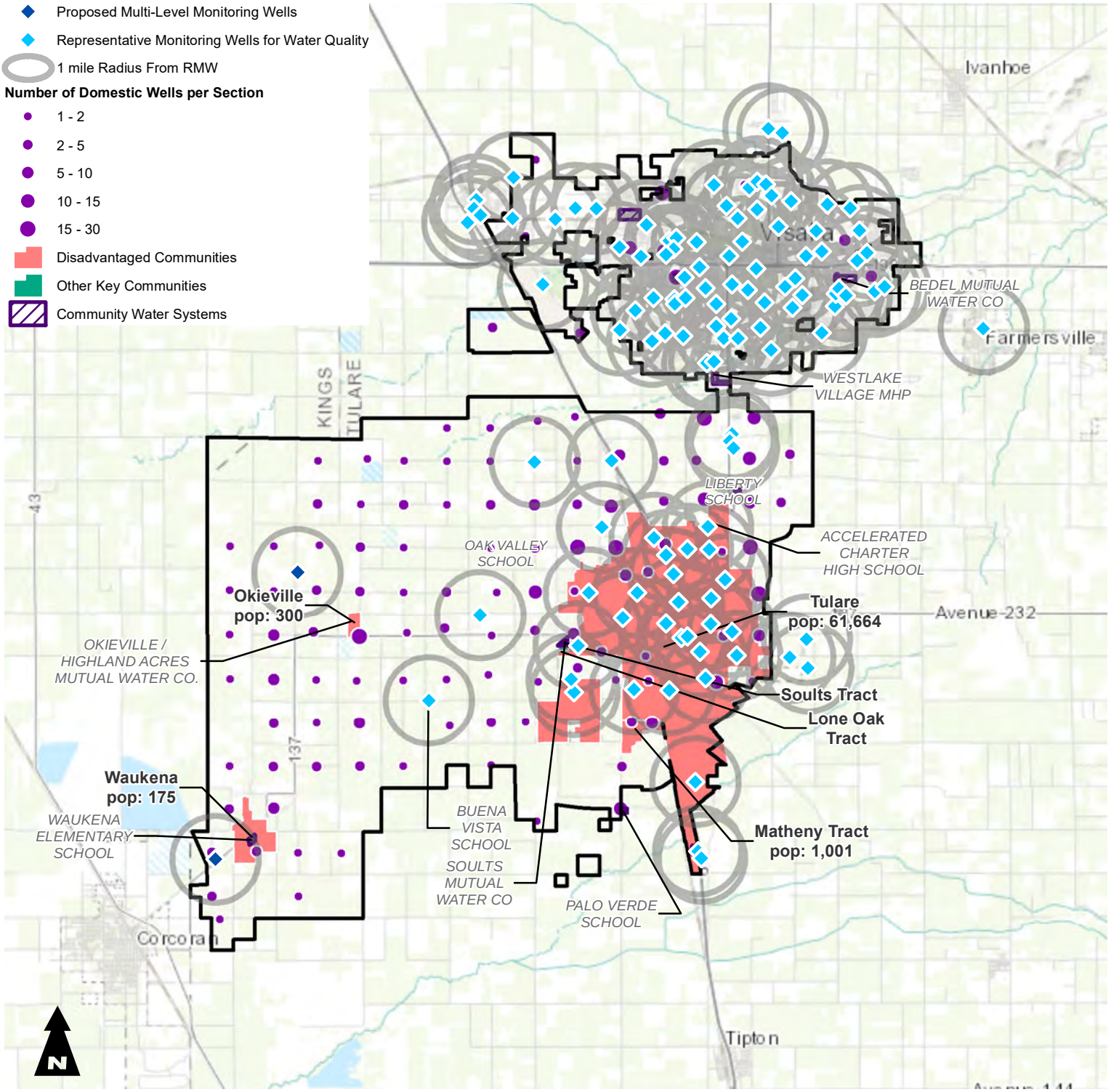
Figure 3 - Representative Monitoring Network for GW Quality Relative to Domestic Wells, DACs, and Community Water Systems

Mid-Kaweah GSA



Notes

1. All locations are approximate.

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Disadvantaged community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/.
3. Community Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer.
4. Groundwater quality monitoring well information are from Figure 4-6 and Figure 4-7 in Mid-Kaweah GSA GSP - Public Review Draft dated July 2019.

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Table of Contents

GSP Section: Introduction & Plan Area

Description of Plan 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 these communities are explicitly addressed early on in the GSP. In order to improve this section, we recommend the following:

- **Include a map indicating the location of public water systems serving SDACs and/or DACs as well as domestic well communities.** In order to contextualize the subsequent sections of the GSP, it is critical that the geographic locations of these communities be included. Maps overlaying the location of these communities should also be included in subsequent sections of the GSP, including but not limited to when describing management areas, threshold regions, or potential recharge locations. SH-001
- **Include a description of the amount of groundwater that each public water system serving SDACs and DACs is dependent on.** In addition to better quantify groundwater usage by each community, include a description of the amount of domestic wells located within the MKGSA and the estimated amount of total groundwater used by domestic well users.

Notice and Communication

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[1]. It invites citizens to get involved in deliberation, dialogue, and action on public issues that are important to them. More importantly, it helps leaders and decision-makers have a better understanding of the perspectives, opinions, and concerns of citizens and stakeholders, especially the underrepresented ones. This section of the GSP is generally in accordance with SGMA regulations and adequately captures beneficial uses and users of groundwater. Please consider the following recommendations to ensure more effective public engagement:

- **Within the GSP include a high level summary of strategies included in the plan.** The draft GSP currently only mentioned plan goals and requirements and would benefit from a more expanded description.
- **Revise Section 1.5.2 to include water supply for Soults Tract, Lone Oak Tract, and the water systems of Waukena Elementary, Buena Vista, Oak Valley and Liberty School** SH-002
- **Provide more information about stakeholder input and responses from the GSA to address the stakeholder input.**
- **Account for S/DAC outreach, engagement and translation services when applying for state funding, establishing and approving operating budgets and enacting groundwater fees:** In order to ensure proper engagement of underrepresented groundwater users or the next 20 years of GSP implementation, (disadvantaged communities, residents relying on domestic wells and other Spanish speaking users), MKGSA should account for S/DAC outreach, engagement and translation services when applying for state funding, establishing and approving operating budgets and enacting groundwater fees. The GSA should hire qualified consultants who have a record of proven demonstrated success and clear qualifications for working with these

[1] DWR. (2018) Stakeholder Communication and Engagement.

stakeholders. Effective community outreach and engagement includes, but is not limited to, conducting direct community outreach, hosting local community meetings, providing bilingual information, and making interpreting services available at meetings and workshops.

SH-002 (contd.)

- The current draft GSP provides limited information regarding how communication and updates related Plan implementation will take place and how this will be accomplished. Please consider the following suggestions:
    - **Utilize existing community venues for community meetings, workshops and events to provide information.** For example, consider conducting short presentations during water board and school district board meetings. Venues should be carefully selected in order to meet the needs of the targeted audience.
    - **Identify community social media (Facebook, Instagram, etc.) groups, pages and websites and post information.** Continue to develop media advisories, press releases and work with local media outlets, such as local radio stations, television stations, and local newspapers to captivate a broader audience that are not being reached via the electronic-based outreach currently used.

SH-003

    - **Identify, and work with key community leaders /trusted messengers to distribute information and encourage community participation.**
    - **Provide bilingual (English and Spanish) information and materials on the website, via email and consider inserting short notices (notices can include key messages, visuals and information that is relevant to the average water user) in water bills and/or community newsletters.** At a minimum, this information should be provided during plan updates, and prior to critical decisions. In particular, the draft GSP released during the formal comment period should include materials highlighting key summaries of the GSP. Critical decision points can also include the adoption of groundwater fees, development and adoption of the potential Assistance Program as well as the Groundwater Allocation Framework, and the Pumping Restriction Program.
    - **Partner with other educational programs to leverage resources and explore opportunities to educate different generational groups.**

GSP Section: Basin Setting

The GSP basin setting requirements are intended to describe the hydrological and groundwater historical changes that have affected the six sustainability indicators. Ultimately, this information is intended to document conditions and quantify the water budget in sufficient detail in order to build local understanding of how it will be used to predict how these same variables may affect or guide future management actions[2].

SH-004

The current GSP draft does not include information about local groundwater conditions for MKGSA, yet it encourages the reader to review Appendix 2A to understand the hydrogeologic and groundwater conditions within the context of the entire Subbasin. However, Appendix 2A is not specific to the MKGSA area and it is difficult to readily understand what parts of this assessment are specifically applicable to

[2] DWR, 2016. Best Management Practices for the Sustainable Management of Groundwater, Modeling (BMP #5), December 2016.

the MKGSA. Moreover, the lack of a summary highlighting the main conditions affecting groundwater use and users within MKGSA boundaries creates a challenge in understanding how the data will be further utilized in other sections of the GSP. It is therefore recommended to:

- **Include specific information of the Basin Setting and trends within the MKGSA area, in particular as it pertains to the groundwater conditions in section 2 of the GSP.** Providing context of local challenges in a single section within the Mid-Kaweah GSP draft GSP would improve the ability of the public to evaluate the basin setting assumptions for reasonableness and completeness to prevent and mitigate for undesirable results.

SH-004 (contd.)

Hydrogeologic Conceptual Model

In order to better depict the hydrogeologic considerations for vulnerable groundwater users, we recommend the following changes:

- **Summarize and highlight important information for the MKGSA from Appendix 2A.**
- **Include a description of how groundwater quality considerations also impact the potential of recharge suitability under the description of Potential Recharge Areas.**
- **Include the location of SDACs and DACs and domestic wells in Figure 16 and 18 of Appendix 2A.** By adding the spatial distribution of communities, stakeholders will be better able to assess which of these communities could benefit from future recharge projects.

SH-005

Groundwater Conditions

SHE strongly encourages that the Groundwater Conditions section be improved in order to better achieve the objectives described in the GSP regulations and be more aligned with the guidance provided in DWR's GSP Emergency Regulations Guide. In particular, it is of utmost importance that information specific to the MKGSA area from Appendix 2A is discussed in this section, and that data regarding the water issues affecting groundwater sources of S/DACs and households relying on domestic wells is improved.

As part of GSP Regulations Section §355.4, DWR is required to evaluate whether the interests of the beneficial uses and users of groundwater in the basin, as well as the land uses and property interests potentially affected by the use of groundwater in the basin, have been considered[3]. S/DACs and rural families relying on shallow domestic wells are extremely vulnerable to changes in groundwater conditions. As such, impacts to their drinking water sources caused by changes in groundwater levels, plume migration, increased degradation of groundwater quality, and subsidence should not be overlooked and these impacts deserve a more in-depth evaluation. A description of the current issues affecting these vulnerable users is key to demonstrating that the MKGSA is taking proactive actions to protect their human right to water. Without adequate characterization of current and historic challenges that communities dependent on groundwater face, MKGSA will not be able to effectively plan to quantify or avoid potential impacts related to groundwater management. Specific recommendations on how this section can be improved are provided in the forthcoming sections.

SH-006

[3] DWR. January 2018. Guidance Document for Groundwater Sustainability Plan Stakeholder Communication and Engagement.

Current and Historical Groundwater Elevation Trends

Changes in groundwater elevation can result in significant impacts to vulnerable communities, including: increased energy costs associated with additional lift pump costs; costs associated with cleaning of the well screen; cost of lowering well pumps; costs of drilling deeper wells; complete dewatering of wells; movement of contaminant plumes; and the financial, emotional, and physical costs associated with having to rely on bottled water. This section can be improved by including a description of the groundwater level conditions in and around S/DACs and by showing whether changing groundwater levels in these communities have led to dry wells or a decrease in water production. SHE recommends the following changes:

- **Include information of the groundwater conditions and trends that are specific to the MKGSA area from Appendix 2A.**
- **Identify communities burdened by or susceptible to changes in groundwater levels.** S/DACs and domestic well owners are extremely vulnerable to changes in groundwater levels. Therefore, it is imperative that the GSP properly identify vulnerable communities that have a higher risk of being affected by changes in groundwater levels to understand: (1) where drinking water wells that are more vulnerable to groundwater level changes are located, and (2) whether changes in groundwater levels may be exacerbated in specific areas by pumping volume or location, conjunctive management or other forms of active management as part of GSP implementation. Based on the Focused Technical Analysis and extensive work with S/DACs, we believe that the following communities are susceptible to changes in groundwater levels with the risk of having their water access impaired:
    - Okieville-Highland Acres: The community of Okieville-Highland Acres consists of approximately 100 homes located in Tulare County, five miles west of the City of Tulare. An unknown number of private wells which serve the remaining 20 homes not connected to the recently constructed water system (based on 3.76 people per household[4], the population is assumed to be 76) are susceptible to changes in groundwater levels and at risk of having their water access impacted. The depth of these wells are unknown, but typical domestic wells in the area are drilled to a depth of 130 to 225 feet. More recent domestic wells have been drilled to a depth of 360 feet in a preventive effort to declining groundwater levels.
    - Waukena: A severely disadvantaged private well community with a population of 175 residents. Private well communities face unique challenges and are more susceptible than most community water systems to changes in groundwater conditions, drought impacts, and water quality concerns. This is primarily due to the shallow nature of most private wells.
    - High density of domestic wells northwest of the City of Tulare: Similar to other private well communities, families relying on domestic wells face unique challenges and are more susceptible than most community water systems to changes in groundwater

SH-007

[4] As indicated by Census data from Tulare County Census Tract 21, Block Group 1 as average household size

conditions, drought impacts, and water quality concerns. This is primarily due to the shallow nature of most private wells.
    - Water systems serving Waukena Elementary School, Buena Vista School, Palo Verde School, Liberty School, Sycamore Valley Academy, and Oak Valley School.
- **Include a description of the impacts experienced during the 2012-2016 drought**. Include a description of the successes and challenges experienced by local agencies and stakeholders when addressing impacts of the last drought, including: number of wells that were dewatered; number of households utilizing the interim household water tank program; local cost of emergency drinking water services; amount of grants/loan programs developed and utilized for replacement wells; and an estimated number of homes currently without a sustainable water source. A good understanding of what happened, including what programs and strategies worked well in effectively addressing impacts to drinking water and what strategies could be improved, can aid the MKGSA with the development of management actions that adequately prepares the GSA to prevent and mitigate potential impacts of future droughts. This planning is important for wells that supply drinking water to vulnerable populations that have limited capacity and resources to respond to extreme weather conditions. Based on SHE extensive work with S/DACs in providing water supply emergency assistance, we recommend adding the following information:
    - Drought conditions between Spring 2012 and Spring 2016 lowered the groundwater table, significantly impacting water access for domestic well users. Households reported water supply shortages northwest of the City of Tulare and in Okieville/ Highland Acres, a severely disadvantaged community located 5 miles west of the City of Tulare[5]. During the drought, water levels in Okieville declined from 102 feet below ground surface to 171 feet, a drop of almost 70 feet. A survey of dry wells indicated that 17 wells serving 27 homes went dry. Interim water tanks were installed on 13 properties as a short-term solution while a permanent solution was pursued. Households that met income requirements received bottled water deliveries paired with the water tank program. In 2016, through a cooperative multi-agency effort involving the California State Water Resources Control Board, California Department of Water Resources, and the United States Department of Agriculture, emergency drought relief funding was identified for the construction of a new water system, which included drilling a well, constructing the distribution system including meters. The community secured $2,081,000 for the construction of the water system. Phase One of the project was completed in the summer of 2019; Phase Two includes construction of a second production well.
- **Include a groundwater surface water elevation map that includes location of vulnerable communities.** It is critical that MKGSA provide maps overlaid with location of DACs, SDACs, domestic wells, public water systems, and any other beneficial users to allow the reader to evaluate how groundwater issues correlate with drinking water supply areas.

SH-007 (contd.)

[5] Household Water Supply Shortage Reporting System: https://mydrywatersupply.water.ca.gov/report/publicpage

- **Specify well depth information by use type[6].** We recommend including the minimum, maximum, and average well depth by well type (agricultural, domestic, municipal, etc).

SH-007 (contd.)

Groundwater Quality

The current characterization of groundwater quality conditions in Appendix 2A fails to recognize that several public water systems within the GSA have experienced challenges remaining in compliance for safe drinking water standards. Further, because of these data gaps in measuring groundwater quality, the extent of groundwater quality contamination for domestic wells or state small water systems is not fully quantified or accounted for in the draft GSP. This section can be improved by including a better description of groundwater quality conditions near or within S/DAC communities as well as an improvement in understanding how potential groundwater management actions could potentially impact the extent of groundwater contamination. We recommend the following changes:

SH-008

- **Summarize and highlight important information for the MKGSA from Appendix 2A and include local knowledge of the groundwater conditions affecting groundwater use and users in MKGSA area.** This is particularly important considering that Appendix 2A, page 125, states that a "groundwater quality discussion" in the Basin Setting for the context of the entire Subbasin "is largely generalized, although constituents of concern are identified geographically." As such, the current characterization of groundwater quality conditions fails to adequately provide a narrative of issues affecting the supply and beneficial uses of groundwater as required by GSP Regulations Section §354.16.
- **Include a description of historical groundwater quality conditions for each public water system.** Cities, communities and schools within the MKGSA have historically had challenges meeting safe drinking water requirements. In order to prevent further degradation of groundwater quality conditions, it is important to adequately capture current challenges. At a minimum, consider including in the Mid-Kaweah GSP, section 2, information regarding cities and communities that have fluctuated in and out of compliance. According to the Human Right to Water portal, the water system of Buena Vista School has fluctuated in and out of compliance for Nitrates. The water system of Waukena Elementary School has been in and out of compliance for Uranium and Nitrates. The water system for Oak Valley School has also been in and out of compliance for Arsenic. Moreover, the water well recently drilled for Okieville only found water that meets primary water quality standards at the depth range between 894 ft to 1005 ft. Water depth less than 894 ft exceeds MCLs for Arsenic and Aluminium. Furthermore, SHE recommends providing a summary of the information regarding water quality for the City of Visalia and Tulare, including the city-wide PCE plume in Visalia.
- **Include an assessment of current 10-year average concentrations of contaminants of concern.** The maps depicting current groundwater quality conditions in Appendix 2-E only include individual contaminant concentrations over several different time periods. In order to develop the proposed minimum thresholds and measurable objectives, it is important that the current baseline conditions are established.
- **Include a map of current 10-year average groundwater quality conditions that includes locations of vulnerable communities.** Once current baseline conditions are established, it would

[6] § 354.16. Current and Historic Groundwater Conditions.

be helpful to include the 10-year average conditions overlaid with location of S/DACs, domestic wells, public water systems, and any other sensitive beneficial users. This is important in order to adequately evaluate how groundwater quality issues correlate with drinking water supply areas.

- **Include an analysis of how groundwater quality concentrations have fluctuated relative to changes in groundwater levels, particularly during drought periods.** The level of concentration of a few contaminants of concern included in the GSP are directly influenced by changes in groundwater levels, both by pumping and recharge.[7] Appendix 2-E does not include a statistical analysis of the change in contaminant concentrations relative to groundwater levels and groundwater storage. It is important to evaluate the relationship between changes in contaminant concentrations and groundwater management activities, in particular for arsenic[8].
- **Revise the description of arsenic to include the causes of arsenic mobilization due to over-pumping and compression of clay layers.**[9] The GSP's description of the chemical properties of arsenic currently attributes the mobility of arsenic to absorption/desorption. The GSP should be revised to include the following ways in which groundwater management can cause arsenic to be mobilized into the aquifer: pumping in areas of the aquifer with low-oxygen conditions and/or with a pH of over 8.5 as well as over-pumping (compression of clay layers). Accurately describing the conditions that result in the mobilization of arsenic is important in order to properly evaluate how potential groundwater management actions could further facilitate its release.
- **Revise the description of the sources and spatial distribution of nitrate to include dairies and other concentrated animal feeding operations as a source of contamination and revise the description of septic systems as a source of contamination.** Dairies are a major contributor to nitrate contamination of groundwater, and thus must be included in the description of the sources of nitrates and how nitrate contamination in the basin will be addressed. Further, the mere existence of septic systems does not necessarily mean they are a source of nitrogen contamination. While poorly maintained, leaky septic systems are a very serious source of localized nitrate contamination, well-maintained septics do not pose a similar risk. We appreciate the fact septics are called out, and hope that as implementation is carried out, more research and monitoring is conducted to determine what the impact, if any, septics are playing in the nitrate contamination within the GSA boundaries.
- **Include a discussion on the impact irrigated agriculture has upon nitrate contamination of groundwater.** Better integration with nitrate regulatory programs must also be included. While

SH-008 (contd.)

[7] See Community Water Center "Guide to Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act" for more information. https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858

[8] See Stanford, 2019. A Guide to Water Quality Requirements Under the Sustainable Groundwater Management Act, Spring 2019.

[9] See Community Water Center and Stanford University 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

the ILRP and other waste discharge programs are supposed to work on reducing nitrate loading to water sources, many of these dischargers are in still discharging above the MCL. Under SGMA, GSAs are required to address undesirable results, including addressing water quality impacts, that occurred after January 1, 2015. It is likely that in many areas nitrate concentrations have increased since the effective date of SGMA, and thus must be addressed within the GSP.

- **Provide all maps/figures overlaid with location of S/DACs, community water systems, and any other sensitive beneficial users to allow the reader to evaluate how groundwater issues correlate with drinking water supply areas.**

SH-008 (contd.)

Land Subsidence

The GSP's current evaluation of land subsidence states general impacts, such as impacts to infrastructure, in particular to the Friant Kern Canal, but fails to describe previous and potential impacts to vulnerable communities. Land subsidence could result in many direct and indirect impacts to vulnerable communities. Direct impacts can include damages to community infrastructure including bridges, pipe crossings, roads; collapsing of of well casings, that result in well rehabilitation or replacement; and the mobilization and release of arsenic from clay layers into the groundwater aquifer. Indirect impacts can include flooding and long-term environmental effects[10]. Since S/DACs, public water systems, and domestic well communities often lack the resources to address these damages, it is important to document and describe previous and potential impacts in order to prevent them from occurring or mitigate impacts if they occur. Please consider the following recommendations:

SH-009

- **Summarize and highlight important information for the MKGSA from Appendix 2A and include local knowledge of the groundwater conditions affecting groundwater use and users in MKGSA area.**
- **Include a description of possible impacts of land subsidence for S/DACs, public water systems, and domestic well communities.**
- **Include documentation of any historical impacts of land subsidence for S/DACs, public water systems, and domestic well communities in Past Land Subsidence.**

Water Budget

The GSP water budget requirements are intended to quantify the water budget in sufficient detail in order to build local understanding of how historical changes have affected the six sustainability indicators in the basin. Ultimately, this information is intended to be used to predict how these same variables may affect or guide future management actions[11]. Another important reason for providing adequate water budget information is to demonstrate that the GSP adheres to all SGMA and GSP regulation requirements and can demonstrate the ability to achieve the sustainability goal within 20 years, and maintain sustainability over the 50 year planning and implementation horizon.

SH-010

[10] Galloway, D., Jones, D, and Ingebritsen, S.E. Land Subsidence in the United States. U.S. Geological Survey Circular 1182.

[11] DWR, 2016. Best Management Practices for the Sustainable Management of Groundwater, Modeling (BMP #5), December 2016.

The water budget made available to the public is incomplete, and a full evaluation of the model and assumptions cannot be made at this time. Without a complete GSP draft that thoroughly explains the assumptions and methods used for the development of the water budget, the public is unable to provide meaningful comments and recommendations. The GSP is missing key information that includes all information on data and assumptions used in the development of the water budget. We recommend the following changes:

- **Summarize and highlight important information for the MKGSA from Appendix 2A.**
- **Include a single tabulation of all the sources used.** The sources of data used for the water budget components are identified throughout the text of the Appendix 2-A. However, the discussion and tabulation of all data sources in a single section would improve the ability of the public to assess the data sources and evaluate the water budget assumptions for reasonableness and completeness.
- **Provide additional information detailing how the water budget presented in Table 2-1 was estimated.** Little information is provided in the draft GSP on the methods and assumptions used to estimate groundwater inflow and outflow data presented in Table 2-1. Without a complete GSP draft that thoroughly explains the assumptions and methods used for the development of the water budget, the public is unable to provide meaningful comments and recommendations. Please clarify how data was compiled, including the methods and assumptions used to estimate the small water system and rural domestic water demand.
- **Provide additional information detailing how small water system demand was estimated in Appendix 2A.** No information was provided regarding Small water system demand was reported to be estimated from data in previously published reports. Very little specific information is provided in the draft GSP on the methods and assumptions used to estimate the small water system demand. The annual demand from small water systems is shown to increase throughout the water budget period but it is not possible to determine if the values are reasonable from the information and assumptions provided in the draft GSP.
- **Provide additional information detailing how rural domestic water demand was estimated in Appendix 2A.** Appendix 2A states that rural domestic water demand and consumptive use was estimated using an assumed demand rate of 2 AFY per dwelling and the density of rural domestic dwellings. The draft GSP reports that the density of these dwellings has not changed significantly over time and, therefore, rural domestic pumping has not changed over time. The method and data used to determine the density of these dwellings is not reported and cannot be evaluated and no maps are provided in the Appendix 2A showing the locations of these rural domestic users.
- **Revise percentage of return flow from rural domestic water to address inconsistencies:** Page 99 of Appendix 2-1 states that "Similar to the rural small water system analysis above, a 70 percent portion of the pumped rural domestic water is assumed to return to groundwater via septic system percolation and irrigation return flows (Dziegielewski and Kiefer, 2010). Throughout the Subbasin, an annual total pumpage for rural users was 2,272 AF/WY on average, 30 percent of which returned to groundwater." The assumed fraction of total rural domestic pumping that returns to groundwater and the calculation of net rural domestic pumping

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reported in Appendix 2-A is inconsistent. It is unclear if the assumed fraction of pumping that returns to groundwater is 30% or 70%.

- **Provide additional information regarding the assumptions used to define changes in land use and how that was incorporated into the projected water demand presented in Table 2-1 and Appendix 2A.** Based on the draft GSP, current land use was determined using the 2014 DWR land use survey data. Historical changes in land use area are not reported and, at this time, it cannot be determined if land use changes, including changes in urban areas, were incorporated into the water budget as is required by GSP Regulation Section §354.18.
- **Provide water budget annual component results broken down for each subarea in order to allow for the assessment of the spatial variability of the water budget components.** Section 2.3 presents annual water budget components for water years 1997-2017 for the MKGSA area and Appendix 2-A presents the same information for the subbasin. Components related to urban and rural domestic water use are lumped into two components (wastewater inflow and M&I pumping). The relative contribution of rural domestic and small water system users to these components cannot be evaluated at this scale, thus it would be helpful to provide information to better support the evaluation of the impacts on DACs and community water systems.
- **Include an uncertainty analysis to identify the plausible range in water budget results and an indication of the magnitude of the effects these inherent uncertainties may have on the water budget results.**The draft GSP does not include any discussion of the uncertainty in the data used for the model and its effect on the water budget results, a key requirement as prescribed by GSP Regulations Section §354.12.
- **Include an in depth discussion regarding the forthcoming sustainable yield evaluation and describe the potential implications the sustainable yield, the safe yield, and the water accounting framework could have on drinking water use in the MKGSA.** The draft GSP includes minimal discussion of the sustainable yield of the subbasin or the MKGSA area, but does note that the subbasin is in overdraft and that a groundwater modeling will be used to estimate the sustainable yield through the use of initial thresholds and objectives. A Water Accounting Framework is included, which provides each GSA with a groundwater supply that is the beginning of a potential groundwater allocation, but there is no discussion of how the allocation will impact each GSA or the rural domestic and small water system users. In addition, the discussion of the sustainable yield does not address how to account for undesirable results that occurred between January 2015 and when GSPs are submitted.
- **Include a discussion and analysis in the GSP that evaluates the projected water budget conditions, specifically focusing on climate change impacts for domestic well users, S/DACs, and community water systems.** The adjustments made to the climate change assessment and data sets were made based on guidance and climate change data provided by DWR. However, the draft GSP does not include a discussion of the effects of these changes on the MKGSA water budget and there is no discussion of the impacts to specific areas, such as areas of rural domestic water users or small community water systems. No information is provided on how projected demand will be met or reduced to meet sustainability goals.

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Management Areas

The proposed three management areas consist of the respective jurisdictional areas of MKGSA's three Members, i.e., the City of Visalia, City of Tulare, and the Tulare Irrigation District. Our main concern is that the current proposal for management areas and threshold regions has limited consideration for vulnerable communities dependent on groundwater and does not adequately describe how the area will operate under different minimum thresholds. We recommend the following changes:

- **Revise the description of the management areas to describe the S/DACs and number of domestic well users within each boundary.** As described in the draft GSP, management areas are responsible for implementing projects and management actions within their area. Without a clear understanding of the S/DACs and domestic well users within the management area boundaries, the current draft GSP does not adequately describe conditions in these areas as required by Reg 354.20.
- **Consider developing management areas or threshold regions around vulnerable communities.** Vulnerable communities within the MKGSA do not have access to surface water and are dependent on groundwater. In order to develop more protective thresholds for vulnerable communities, it would be important to consider developing a protective buffer, management area, or threshold region around them. This recommendation can also be considered under projects and management actions. Key communities that could benefit of such protection include Okieville and Waukena and the water systems serving Waukena Elementary, Buena Vista, Oak Valley and Liberty School.
- **Revise the description of the Monitoring and Analysis to better describe how the management areas will operate to avoid undesirable results.** As currently drafted, the description of management areas could be improved by better clarifying how the different management areas can operate under different minimum thresholds and measurable objectives without causing undesirable results. The chart indicates which threshold regions are within each management area, but there is no description of how each management area will address the different water surface elevation conditions. Since S/DACs and domestic well users are the most vulnerable beneficial users within the MKGSA, it is important to clearly indicate how undesirable results will be avoided.

SH-011

GSP Section: Sustainable Management Criteria

Sustainability Goal

The Kaweah Subbasin sustainability goal draft included in the draft GSP focuses on protecting groundwater for industry uses, which does not satisfy SGMA's intention, and does not reflect the collaborative stakeholder-driven process that took place over the course of several MKGSA Advisory Committee and Kaweah Subbasin Management Team meetings. Beginning in November 2018 and continuing over the course of several meetings, the MK Advisory Committee spent a great deal of time discussing what should and should not be included in the Sustainability Goal statement. While perspectives were varied, there was general support among committee members to set a Sustainability Goal that includes a protective stance toward groundwater quality. SHE would like to see more

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proactive steps taken to improve groundwater quality and tools necessary. This needs to be clearly stated in the language in the MKGSA final draft. Including human consumption in the language will make the statement stronger and demonstrate to residents they their water needs are a priority. Water quality is another important component to strengthening the Sustainability Goal. This will help the GSP meet SGMA standards. SGMA further requires a transparent and inclusive process; therefore it is critical that all GSAs within the subbasin respect guidance and recommendations previously provided by various stakeholders. Revising the sustainability goal without proper explanation or discussion with the public is not appropriate nor is it in accordance with SGMA.

Additionally, upon reviewing the draft GSP, community participants at a SHE workshop in Okieville brought attention to the lack of mentioning the need for drinking water in the proposed GSP's Sustainability Goal. At the workshop, participants were provided information about SGMA, their local GSA and presented general information about the draft GSP. Participants were asked to share their vision for sustainability and provide recommendations for what should be included in the Subbasin's sustainability goal. Participants primary question if agricultural enterprises should be prioritized over human consumption. Other feedback provided at the workshop included the importance of ensuring preserving drinking water supplies and addressing groundwater quality.

Based on participants' feedback and SHE involvement at several MKGSA Advisory Committee meetings and Kaweah Subbasin Management Team meetings where sustainability goal for Kaweah were discussed, SHE recommends considering the revision of the current Sustainability Goal in order to fully integrate stakeholders' vision for groundwater management. We recommend the following:

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- **Adopt the sustainability goal that was previously and extensively discussed during public meetings. The sustainability goal should include language that demonstrates MKGSA's intent to support the protection of the human right to water by "preserv[ing] the viability of cities and existing agricultural enterprises as well as the viability of school districts, smaller communities, and households relying on shallow domestic wells[12]".** As stated by our organizations during several meetings and in written comments, Kaweah Subbasin GSAs should strive for the viability of unincorporated communities and schools, both now as well into the future.
- **Add a clear statement of the efforts the Agency plans to take to address groundwater quality.** From our understanding and based on SGMA's inclusion of UR No. 4, it is clear that water quality degradation must be addressed in a GSP. As DWR will consider the "human right to water" policy when implementing these regulations, we recommend for a clearer statement of how the GSA plans to include and address groundwater quality issues in the area.

[12] Quote from draft Kaweah Subbasin sustainability goal previously developed.

Undesirable Results, Minimum Thresholds, and Measurable Objectives

Chronic Lowering of Groundwater Levels

The Focused Technical Review of the July 2019 Draft MKGSA GSP identified several data gaps and potential significant impacts to public water systems and domestic wells. As expressed by our organizations during MKGSA meetings, the current GSP does not adequately consider the groundwater impacts that may affect the supply and beneficial uses of groundwater as required by GSP Regulations Section 354.16.

Additionally, during the previously mentioned community GSP review workshops, participants were asked to share their opinions and provide recommendations for what should be included in the Subbasin's sustainable management criteria. Participants were concerned with the proposed MT/MOs and what it could mean to their access to water. , Feedback provided at the workshop included ensuring preserving drinking water supplies and addressing groundwater quality.

Though we are pleased that MKGSA is considering providing assistance to small-system and domestic well owners without the financial wherewithal to service or replace their pump and well facilities, particularly those that provide potable water, we would like to highlight the following concerns and recommendations:

- **Conflicting information:**

SH-013

The draft GSP presents water level MTs by: (1) hydrogeologic zones that reportedly share similar groundwater conditions and hydrogeologic behavior (Table 5-2); and (2) by Representative Monitoring Wells (RMWs) (Table 5-3). According to the draft GSP, the hydrogeologic zone MTs are based on the average of the RMW MTs for a particular area. As stated in Section 5.3.1.3, "Consistent with this requirement, the minimum elevation thresholds in this Plan are set at specific levels based on four different hydrogeologic zones as defined herein." However, well impact analyses are performed based on the MTs developed for each individual RMW, and the MOs are only established at the RMWs (i.e., not by hydrogeologic zones). Based on the conflicting information presented in the draft GSP, it is not clear which set of MT values will be used for compliance purposes through the GSP implementation phase. **Please ensure that the Sustainable Management Criteria, including MTs and MOs, be clearly identified and applied consistently in the GSP.**

- **Minimum thresholds are established without regard to well depths or other potential impacts:**

With a collective population of over 63,000 people, communities within the MKGSA area are entirely dependent on groundwater for drinking water purposes. The MKGSA includes 13 community water systems, 11 of which have less than 300 service connections but collectively serve over 5,300 people. Despite the broad and diverse dependence on groundwater for drinking water use, the approach to setting water level MTs/MOs and URs does not explicitly take these drinking water beneficial users into account. The MTs for each threshold region are set based on an assumed trajectory of decreasing water levels over the next 20 years, without regard to well depths or other potential impacts.

The draft GSP includes a limited evaluation of well impacts (Section 5.3.1.3 and Appendix 5c) that compares the known screened intervals of agricultural, public, and domestic wells with the projected 2040 groundwater elevation at each well to estimate the number of wells that would be dewatered. The

results of the well impact analyses are categorized by zone and well type. However, this analysis does not appear to actually evaluate the potential well impacts based on either the hydrogeologic zones MTs (Table 5-2) or the RMWs MTs/MOs (Table 5-3). In addition, which wells are within the MKGSA and the locations of these wells that are expected to be impacted are not clearly stated or mapped in the draft GSP. Therefore, the well impact analyses performed in the draft GSP does not appear to actually evaluate the potential impacts to subbasin wells associated with the MTs/MOs developed by the MKGSA.

Moreover, based on the well impact evaluation in Section 5.3.1.3 and Appendix 5C, "18 percent of agricultural wells, 9 percent of public wells, and 21 percent of rural residential wells including domestic wells, would be subject to groundwater levels that would be below their constructed depth" if water levels reach the MTs, as identified at the hydrogeologic zone level. This assessment appears to have been done relative to the bottom of the total well construction depth. However, water supply wells become unusable or subject to decreased performance and longevity as water levels fall within the screened interval, which will occur before water levels reach the bottom of the well. Therefore, the actual number of domestic wells that would be significantly impacted at the proposed water level MTs would be expected to be higher than represented in the draft GSP.

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Lastly, our assessment of the water levels (Focused Technical Review, Figure 2) compared the well screens of the domestic wells located within a one-mile radius of RMWs to the proposed MOs and MTs. Approximately 30% of domestic wells in the MKGSA are located within the one-mile buffer of RMWs with both MT/MO and GSE data. Based on our assessment of the water levels, approximately 71% of these domestic wells would be expected to be fully dewatered and an additional 15% of these wells would be expected to be partially dewatered. Even at the MO water levels, approximately 64% of these domestic wells would be expected to be fully dewatered and 9% of these wells would be expected to be partially dewatered. These estimates are much higher than the 21% of rural residential/domestic wells identified as being impacted in Section 5.3.1.3 of the draft GSP. We acknowledge that this is a quick assessment of domestic well impacts; however, these results do not appear to be consistent with the analysis presented in the draft GSP. Furthermore, as identified in a previous comment, the draft GSP is not clear on whether MTs are intended to be applied at the RWM-level or the hydrogeologic zone level. Given that the hydrogeologic zone MTs are the average of the RMW MTs, the way the criteria are applied may have a significant difference in the level of impacts experienced at localized areas.

It is therefore recommended that the assessment be revised regarding the potential impacts on drinking water users of the minimum thresholds, measurable objectives, and proposed undesirable results. Based on a revised assessment, MKGSA should develop more protective thresholds near vulnerable communities, schools, and high density areas of domestic wells to ensure the protection of these important water sources.

- **Undesirable Results (UR):**

Given that water levels in one-third of all RMWs across all three subbasin GSAs must drop below MTs in order for an UR to be triggered, significant and unreasonable impacts could occur within significant portions of the subbasin without triggering a subbasin UR. The draft GSP acknowledges that 'what was evident, from stakeholder input, as the largest impact on declining groundwater levels historically was the dewatering of some wells, forcing homeowners, businesses, farmers, and other groundwater well owners to drill new replacement wells" (Section 5.3.1.2). The draft GSP, however, does not provide

information on how many wells in fact would be considered an undesirable result and does not clearly indicate how the proposed water level URs will preserve the quality of life or support population growth, in particular for domestic well users and S/DACs reliant on groundwater.

We recommend including a definition of a local undesirable result. The definition should clearly indicate how the MKGSA will locally define and address an undesirable result within its service area and protect beneficial users of groundwater.

- **Lack of consideration for drinking water beneficial users:**

The draft GSP acknowledges that impacts to small water systems and domestic wells will be greater than impacts to other well users, but according to the draft GSP, the MTs were determined to be acceptable with the implementation of potential assistance measures (Section 5.3.1.3). However, according to Section 7.4.8.1 of the draft GSP, none of the identified potential assistance measures for small water systems and domestic wells have been approved by the MKGSA Board and it is not clear how the assistance measures will be implemented or funded.

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The GSP should describe how this approach is protective of the diverse drinking water users in the MKGSA without a clear implementation plan for the identified assistance measures.

- **Ensure that the coordination agreement with the other neighboring GSAs does not negatively impact the MKGSA's local undesirable results and MTs/MOs.**

Degraded Water Quality

We are pleased that the draft GSP establishes MTs/MOs based on maximum contaminant levels (MCLs) for contaminants of concern for municipal use. However, the water quality monitoring network and analysis presented does not clearly illustrate how the MOs/MTs will adequately ensure that the water quality UR of impacting the long-term viability of the groundwater resource will be avoided, particularly for domestic water users and S/DACs. The proposed MT to allow contaminants to further degrade appears to be inconsistent with state water quality laws and policies. We recommend the following changes:

- **Include an assessment of the concentrations of COCs at all monitoring wells to establish MT baseline conditions.** The draft GSP indicates COC concentrations will be evaluated for compliance with water quality MTs in the future and where MCLs are already exceeded prior to GSP implementation, this will be considered a baseline condition that MKGSA is not responsible for remediating. It is critical that the GSP draft includes an assessment of the current concentrations in order to present the baseline conditions relative to the proposed MOs/MTs.

SH-014

- **For transparency and completeness, clearly identify on maps and in tables which set of MTs/MOs will be applied to which RMWs. These maps should clearly identify the location of DACs, small water systems, and other sensitive users so that the public is able to review and evaluate the proposed sustainability approach.** The draft GSP identifies a methodology used to distinguish between the applicability of either MCLs or agricultural WQOs as the MTs for a given RMW. As stated in Section 5.3.3.3, "If the majority of the beneficial use (greater than 50% of the pumping within a determined area) was agriculture and there were no public water systems (including schools) the minimum threshold would be a host of agricultural water quality constituents" and "If a monitoring well is located within an urban area, or near a public water

system (e.g., within a mile), which includes schools, then the minimum threshold would be set at the MCL for drinking water." However, the draft GSP does not clearly identify on a map or otherwise which RMWs will use MCLs and which will use agricultural WQOs. The document also does not identify which monitoring wells are located within an urban area or near a public water system. Per 23 CCR §354.28, the draft GSP should provide a detailed explanation as to how the proposed water quality MTs may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

- **Expand groundwater quality monitoring network near Okieville.** Figure 3 from the Focused Technical Review shows that there are no Representative Monitoring Wells (RMWs) with established water quality minimum thresholds set at the MCL for drinking water near the community of Okieville. We recommend expanding current RMW network to include additional representative monitoring wells both in the confined and unconfined aquifers when applicable, particularity near vulnerable communities and groundwater stakeholders.
- **Provide a detailed explanation of how the proposed water quality MT approach and monitoring network will result in protection of groundwater for DACs and other drinking water beneficial users in the subbasin.** Specifically, the draft GSP indicates that "an exceedance of any of the MCL or agricultural metrics as defined herein at any representative monitoring sites will trigger a management action within the applicable Management Area or GSA, subject to determination that the exceedance was caused by the actions of the GSA" (Section 5.3.3.3). SHE greatly appreciates MKGSA and stakeholder intention to address an exceedance of any of the MCLs or agricultural metrics if the exceedance was caused by the actions of the GSA. However, the draft GSP does not identify which management action(s) will be implemented and provide very limited description on how MKGSA will evaluate and determine if the exceedance was caused by the actions of the GSA or not. Additional information is necessary in order to evaluate whether the proposed plan is protective of beneficial users in the subbasin.
- **Revise MT to prevent further degradation of contaminants.** The draft GSP indicates that where MCLs are already exceeded prior to GSP implementation, this will be considered a baseline condition that MKGSA is not responsible for remediating. SGMA requires the prevention of undesirable impacts to water quality, including degradation of water quality. An undesirable impact is one that is "significant and unreasonable". Public water systems are required by state law to be in compliance with water quality objectives. Increased contamination levels necessitate water systems to utilize more expensive treatment methods and/or the need to purchase additional alternative supplies as blending may become more difficult or impossible. Further, communities reliant on domestic wells, who are aware of contamination in their water (while also acknowledging that many reliant upon private wells are unaware of the water quality), and use a POU/POE may no longer be able to use their devices if contaminant levels rise beyond levels where water cannot be treated. Increased contamination levels result in unreasonable impacts to safe and affordable water access and is thus inconsistent with SGMA. Therefore, the MT must be revised to prevent impacts to domestic water uses (which is listed as the highest priority use in Water Code Section 106) due to further groundwater degradation. Furthermore, there should be plans as to how to mitigate impacts in the short-term.
- **Develop a warning system that informs MKGSA stakeholders when contaminants of concern have reached 80% of the MCL.** This system is especially important for wells with COC

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concentrations less than 80% the MCL that experience impacts due to groundwater management activities. For wells with contaminant levels approaching the MCL, MKGSA could consider taking the following actions: notify nearby domestic well owners and community water systems; undertake an analysis to pinpoint the cause; provide information to groundwater users regarding impacts of groundwater management actions;reassess pumping allocation; and/or if the contaminant is clearly under the purview of another agency, confer with that agency to confirm a plan to address the groundwater quality problem.

- **Clarify how the GSA plans to align the sustainable management criteria with any emerging contaminants of concern and new MCLs.** Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOAs) have been identified as emerging contaminants in the basin. Due to their emergence, it is important that MKGSA includes these contaminants as COCs to be monitored and evaluated. In addition to these two contaminants, the draft GSP would benefit from an explanation of how the plan will be updated to align groundwater monitoring efforts and the sustainable management criteria with any emerging contaminants in the basin and any future new MCLs.
- For contaminant levels that are near, or exceed, existing MCLs and for groundwater quality problems that arose or were exacerbated after January 1, 2015, consider the following approaches[13]:
    - **Consider aligning monitoring and management actions to allow MKGSA to meet a minimum threshold at 80% the MCL over the 50-year planning and implementation horizon.** This could be accomplished by monitoring groundwater quality trends to ensure that naturally occurring contaminants, like arsenic and uranium, are not exacerbated through groundwater management practices and by working with appropriate agencies to remediate quality issues, where feasible.
    - **Where there is a significant groundwater quality problem that is clearly under the purview of another agency, confer with that agency and to confirm a plan to address the groundwater quality problem.** If such a plan exists, the water quality problem and the plan should be referenced in the GSP reviews.
    - **Where a significant groundwater quality problem is not clearly under the purview of another agency, or the responsible agency is unable to confirm a reasonable plan to address the problem, confer with Regional or State Water Board staff and affected parties, to identify a reasonable plan to address the problem.** If no reasonable plan is identified and remediating the problem is impractical or infeasible, the GSA should include in the Plan an explanation of the problem and the reasons why remediation is impractical or infeasible.
- **Include consideration for the state's anti-degradation policy into the GSP.** California's anti-degradation policy ("Policy") is modeled off the Federal policy. It protects our state's high quality waters, both surface and groundwater, from degradation. The Policy prohibits the degradation of waters unless there is a finding that it is "...consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of

SH-014 (contd.)

[13] Moran, T. and Belin A. (2019) A guide to Water Quality Requirements Under the sustainable Groundwater Management Act. Stanford Digital Repository. Available at: hhtps://purl.stanford.edu/dw122nb4780.

such water."[14] The Policy has been interpreted to mean that best practicable treatment or control is required to protect high quality water (water meeting water quality objectives) and best efforts for already degraded waters. Inclusion of this Policy into the GSP will aid the GSA in achieving the goals of SGMA by creating a baseline for how water quality is considered within the basin.

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Land Subsidence

As mentioned previously, land subsidence could have significant impacts on vulnerable community infrastructure. In communities that do not have the financial capacity to address costly infrastructure damages, impacts of land subsidence should be evaluated more closely. We recommend the following changes:

- **Expand the description of potential impacts for S/DAC communities and rural domestic well users under the description of the Potential Impacts on Beneficial Uses and Users .**
- **Clarify the relationship between groundwater quality and land subsidence.** Researchers have found that there is a relationship between land subsidence caused by overpumping and increases in contaminants like arsenic[15]. The section on the Relationship for each Sustainability Indicator needs to be revised to clarify that this is not applicable to the MKGSA.

SH-015

GSP Section: Monitoring Network

Groundwater Levels

Robust monitoring networks are critical to ensuring that the GSP is on track to meet sustainability goals. As currently developed, the monitoring network can be improved to adequately monitor how groundwater management actions related to groundwater levels could impact vulnerable communities. We recommend the following changes:

- **Include drinking water sources susceptible to groundwater level changes as a criteria in selecting wells for the representative groundwater level monitoring program.**
- **Identify which monitoring wells will be used to assess impacts to drinking water wells caused by changes on groundwater levels and describe how that assessment will be conducted.** As required by 23 CCR § 354.28, DWR will evaluate the ability of the proposed monitoring program to properly assess impacts to beneficial users of groundwater and to protect beneficial users within the subbasin. In particular, it is important to clarify how MKGSA plans to monitor and assess drinking water wells at risk of dewatering.
- **Include the location of S/DACs, areas with high density of domestic wells, and GDEs in Figure 4-3 and 4-4.** Maps overlaying the location of these communities will allow stakeholders to evaluate the adequacy of the network to monitor conditions near these beneficial users.

SH-016

[14] Resolution 68-16.
[15] Smith, R., Knight, R., & Fendorf, S. (2018). Overpumping leads to California groundwater arsenic threat. Nature communications, 9(1), 2089. doi:10.1038/s41467-018-04475-3

Water Quality

For the reasons identified below, the water quality representative monitoring wells (RMW) are inadequate for determining if the actions of the MKGSA degrade the beneficial use of water and for ensuring that the stated water quality UR of impacting the long-term viability of the groundwater resource will be avoided —particularly for domestic water users and S/DACs.

GSAs undertaking recharge, significant changes in pumping volume or location, conjunctive management or other forms of active management as part of GSP implementation, must consider the interests of beneficial users, including domestic well owners and S/DACs. For these vulnerable groups, GSAs should avoid disproportionate impacts. The draft GSP lacks representative monitoring wells in areas where drinking water users may be particularly vulnerable to groundwater supply and quality issues, leaving MKGSA with no ability to adequately measure and avoid significant and unreasonable impacts to those users. It is critical that MKGSA develop sufficient monitoring networks, capable of detecting changes in groundwater quality conditions related to groundwater management. We recommend the following changes:

- **Identify which monitoring wells will be used to assess impacts to drinking water wells caused by groundwater quality degradation and describe how that assessment will be conducted.** As required by 23 CCR § 354.28, DWR will evaluate the ability of the proposed monitoring program to properly assess impacts to beneficial users of groundwater and to protect beneficial users within the subbasin. In particular, it is important to clarify how MKGSA plans to monitor and assess drinking water wells at risk of further contamination. In specific:
    - **For transparency and completeness, the GSP should clearly identify on maps and in tables which set of MTs/MOs will be applied to which RMWs.** These maps should clearly identify the location of DACs, small water systems, and other sensitive users so that the public is able to review and evaluate the proposed sustainability approach.
    - **Provide a focused and detailed explanation of how the proposed water quality MT approach and monitoring network will result in the protection of groundwater for S/DACs and other drinking water beneficial users in the subbasin, as required by 23 CCR § 354.28.**
- **Expand groundwater quality monitoring network near Okieville.** Based on the spatial distribution of the wells dedicated to monitoring water quality presented in Figure 4-6 and 4-7 of the draft GSP, the network is not spaced evenly across the area. The water quality RMWs are located in the northern and eastern portions of the MKGSA area and the monitoring well density varies by two orders of magnitude across the MKGSA. Although the western portion of the MKGSA, including the communities of Okieville and Waukena, are more sparsely populated than the eastern portion, there are at least 200 domestic wells and several public water systems, including the Okieville/Highland Acres Mutual Water Company, Waukena Elementary School, and Buena Vista School water systems, located in this area. Figure 3 from the Focused Technical Review shows that there are no RMWs with established water quality minimum thresholds set at the MCL for drinking water near the community of Okieville. SHE recommends expanding the current RMW network to include additional representative monitoring wells, particularity near vulnerable communities and groundwater stakeholders. **Specifically, consider incorporating the**

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new well serving Okieville/Highland Acres Mutual Water Company as a RMW with established water quality minimum thresholds and quantifiable measurements of sustainability.

- **Clarify how the GSA plans to align groundwater monitoring efforts with any emerging contaminants of concern and new MCLs.** Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid(PFOAs) have been identified as emerging contaminants in the basin. Due to their emergence, it is important that MKGSA include these contaminants as COCs to be monitored and evaluated. In addition to these two contaminants, the draft GSP would benefit from an explanation of how the plan will be updated to align groundwater monitoring efforts with any emerging contaminants in the basin and any future new MCLs.
- **Include well construction information for all RMWs included in the GSP.** The draft GSP identifies 43 RMWs for water levels, but does not include well construction information for these wells as is required for all monitoring wells by 23 CCR § 352.4. This type of information is critical to allow the public and DWR evaluate if the RMWs are adequate in evaluating water levels relative to the MOs and MTs over the long term.

SH-017 (contd.)

GSP Section: Projects and Management Actions

Projects

Recharge, Injection Wells, and On-farm Recharge Project Types

We are pleased with the inclusion of Okieville Recharge Basin Project. A partnership has been established between Okieville and TID in order to construct the recharge basin upstream from the community that can bring mutual benefits. Indeed, groundwater recharge projects can have multiple benefits such as increasing groundwater storage and levels, as well as diluting contaminant plumes and improving groundwater quality. Carefully designed and implemented recharge projects, dry wells, on-farm recharge and storage projects type can simultaneously provide benefits to communities, farmers, and ecosystems. Moreover, these types of partnerships can enhance community engagement in projects, increase community awareness of the issues being addressed and establish a framework to support communities in their efforts to secure safe and reliable water.

SH-018

However, if not properly designed, recharge projects may mobilize nitrates, pesticides, and fertilizers, as well as naturally occurring contaminants, and can lead to the further degradation of groundwater quality, impacting drinking water wells. Currently, it is unclear if recharge, injection wells, and on-farm recharge proposed projects include precautions of groundwater quality degradation or if groundwater quality is included in the monitoring plan of these projects. In order to develop recharge projects that move the subbasin towards sustainability, avoid the further degradation of groundwater, and improve drinking water conditions, we recommend the following considerations and changes:

- **Strengthen partnerships between Okieville and other DACs such as Waukena.** MKGSA and TID should continue to partner with communities for the development of projects with multiple benefits that addresses overdraft while ensuring the protection and viability of important drinking water sources. When feasible, MKGSA should continue to prioritize and provide additional recognition for recharge projects near or up gradient to drinking water systems that have shared benefits: increase groundwater baseflow while at the same time addressing drinking supply needs, including improving GW quantity and quality.

- **Include a map that overlays all of the potential recharge projects onto one map and include the location of S/DAC, domestic wells, and public water systems**. As currently described, stakeholders are unable to effectively evaluate the collective potential benefits or impacts of recharge projects for drinking water users in the MKGSA.
- **Develop criteria for recharge projects that prevent unintended impacts to drinking water.** We recommend providing security considerations to ensure that all recharge and storage projects do not cause nor increase groundwater contamination. Attention should be placed on monitoring water quality, avoiding the use of contaminated soils through which water will percolate or use of surface water that is contaminated, and proposing strategies that can avoid/prevent/mitigate for any potential short and/or long term impact to drinking water wells, including domestic wells. For more information please refer to back to the guide Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act [16].

SH-018 (contd.)

Management Actions

Groundwater Extraction Allocation Framework

SHE appreciates MKGSA's intent to conduct a full stakeholder outreach program during the development of the Mid-Kaweah Groundwater Extraction Allocation Framework such that well owners will be afforded the opportunity to provide input on the proposed implementation of the program. We are also pleased that MKGSA also plans to exclude those well owners who extract less than two AF per year (i.e., de minimis extractors) at least for this initial phase of an allocation program. Nonetheless, we recommend the GSP provide stronger clarification regarding provisions that the GSA plans to implement and consider to ensure that drinking water users will continue to have access to drinking water. When developing a groundwater allocation framework, consider the following measurements to ensure that the framework is protective of the Human Right to Water (AB 685):

SH-019

- **Sustainable yield allocation:** In order to best protect drinking water needs we recommend that GSAs establish an allocation amount of groundwater as part of the calculation for the sustainable yield to adequately meet drinking water needs for public health and safety, both now as well into the future. Small water systems serving disadvantaged communities, domestic well owners, and water systems serving schools should be excluded from an allocation program. In order to determine this baseline for drinking water, GSAs will need to work with small community water systems, cities, and/or the county to determine current and future daily drinking water needs.
- **Fees:** The draft GSP indicates that it will not impose pumping restrictions on well owners that extract less than two AF per year. However, it does not address small water systems that may extract over two AF per year and serve critical drinking water needs, such as the Okieville/Highland Acres Mutual Water Company, and the Waukena Elementary School system. When developing a groundwater user fee structure, please consider that small communities

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

have fewer economic resources. Additional fees increase families' water bills that are frequently already above the California water affordability threshold of 1.5% of MHI. Moreover, it is important to recognize and value other ways DACs and low-income residents contribute to the implementation of SGMA. For example, the Kaweah Subbasin, like many others around the State, was granted a DAC waiver and qualified for $1.5 million in grant funds to offset the costs of developing the GSP. The DAC waiver was granted by demonstrating the number of DACs that are located within the subbasin. Additional grants were obtained to construct monitoring wells and a recharge basin. For these reasons, we recommend exempting small drinking water systems managed by DACs and De Minimis Extractors from any GSAs fees (use permits and penalty fees) to support their efforts to provide affordable safe water.

- **Financial penalties:** Penalties for DAC water providers with limited technical, managerial, and financial capacity have often been found by the SWRCB to be counter-productive. If MKGSA consider implementing a sort of penalty for over-use, at a minimum consider 1) creating a more flexible warning and appeal process with these users, 2) proactively assisting SDWS that may be at risk of over-extraction, and 3) conditional forgiveness and reduction of penalties should be considered. This would encourage transparency and working collaboratively with MKGSA to take corrective actions addressing the underlying causes of overuse. Ideally, we recommend that MKGSA consider exempting SDWS serving DACs be from financial penalties for over-use.
- **Allocation decisions time-frame:** In the context of extreme weather events and given the unique set of factors that play a role in the recharge of the aquifers within the GSAs area, we recommend that allocations decisions are not tied to a time frame but to an adaptive management methodology that can respond timely to undesirable results and adjust allocations accordingly. The adaptive management methodology could guide allocation decisions and be used as a corrective tool to avoid localized drawdown impacts on communities and ecosystems, such as dewatering of shallower wells and streams. Particular attention should be placed on protecting groundwater levels for drinking water beneficial uses in the vicinity of community water systems of all kinds (municipal and unincorporated) and domestic well communities.
- **Banking allocation of groundwater:** Susceptibility to experiencing undesirable results from a given amount of pumping depends on hydrogeologic, climatic, biological, and other factors that can vary significantly within short and long periods. We recommend a short period for banking allocation to avoid significant negative externalities. We also recommend that any allocation period be strictly tied to an adaptive management methodology that can respond timely to undesirable results and adjust allocations accordingly. This is particularly important in the context of changing climate and data uncertainties.
- **Transitional allocations and period:** The following protective measures can be considered if excessive pumping is allowed during the transition period or if transitional buffer allocations are made available to eligible groundwater users:
    - Develop an adaptive management methodology based on SGMA monitoring requirements to guide any allocation decisions and to be used as a corrective tool to avoid impacts of localized drawdown on vulnerable communities and ecosystems.

SH-019 (contd.)

- Restrict transitional pumping in excess of the sustainable yield near drinking water systems and households relying on private wells if negative impacts are observed through monitoring or if protective thresholds are exceeded.
- Develop mitigation measures that support communities, schools, and drinking water well owners in case negative impacts are observed/experienced.

- **Prolonged droughts:** When developing the MKGSA Groundwater Allocation Framework, clarify how the program will respond or be updated during a long-term drought. Particularly, with respect to the potential significant impacts that domestic well users, S/DACs face during these extreme weather events. We recommend the following:
  - Recognize and appropriately account for negative externalities especially during prolonged droughts by designing allocation rules that support progress toward sustainability and sufficiently address negative impacts.
  - Provide security considerations to support access to safe drinking water for DACs, SDACs, and underrepresented communities within GSA boundaries during prolonged drought periods.
  - Provide security considerations to ensure that allocations during prolonged drought periods do not individually or cumulatively hinder communities and domestic well owners access to water.
  - Develop an adaptive management methodology to be used as a corrective tool to avoid any localized drawdown impacts on communities and ecosystems, such as dewatering of shallower wells and streams.
  - Develop a drought drinking water prevention/mitigation plan that is capable to timely respond to families at risk or impacted by prolonged droughts.

SH-019 (contd.)

Groundwater Market / Trading Management Actions

There are a number of important foundational steps agencies need to take before considering a groundwater market as a possible tool for groundwater management. Changing where and when groundwater is pumped or the place, method, timing, or purpose of its use, can significantly change the impacts experienced by people and ecosystems. Whether a groundwater market leads to harmful or beneficial impacts all depends on how the market is designed, governed, implemented, and what feedback mechanisms are included and utilized throughout the life of the market. Groundwater markets are not a viable option where the potential impacts of trading are not well understood— which is the case in areas that have significant data gaps and data uncertainties— where trading rules cannot sufficiently address negative externalities, or where the expected benefits of a market do not outweigh the burdens and uncertainties associated with designing and implementing a market[17].

SH-020

The foundation of a well-designed trading program requires a fair and adequate allocation of groundwater for drinking water uses, an additional margin for future growth prior to allocating water for trading purposes, and trading rules that avoid undesirable results as well as avoid or mitigate potential

[17] Green Nylen, Nell, Michael Kiparsky, Kelly Archer, Kurt Schnier, and Holly Doremus. 2017. Trading Sustainably: Critical Considerations for Local Groundwater Markets Under the Sustainable Groundwater Management Act. Center for Law, Energy & the Environment, UC Berkeley School of Law, Berkeley, CA. 90 pp1

impacts to communities dependent on groundwater supplies. If these components are missing, the market can have significant negative impacts upon a community's drinking water supply. Some impacts include, but are not limited to: localized drying of community and domestic wells, increased contamination levels, or unaffordable water rates. Before considering a groundwater market framework, consider the following:

- **Establish a non-tradeable allocation for drinking water:** A non-tradable allocation amount of groundwater should be included as part of the calculation for the sustainable yield to adequately meet current and future drinking water needs for public health and safety.
- **Ensure that monitoring networks are in place to detect the status and trends of groundwater conditions,** and to ensure that the market is running well and is not resulting in adverse impacts to groundwater quality and/or groundwater levels.
- **Implement an early warning system** utilizing data collected through the monitoring network that helps identify at-risk groundwater users and anticipate potential negative impacts, such as groundwater level declines or worsening groundwater quality. Provide security considerations to ensure that transfers do not individually or cumulatively cause or contribute to violations of water quality standards.
- **Implement interim and long-term solutions to mitigate for negative impacts to drinking water users caused by the groundwater trading.**
- **Outreach and engagement:** Devise ways to help engage, communicate and translate technical information to stakeholders, particularly to rural communities, private well owners, and small farmers.

SH-020 (contd.)

Assistance to Small Water Systems, Domestic Wells

SHE appreciates MKGSA and stakeholder interest in providing assistance to small water systems and domestic well owners without the financial impacts to service or replace their pump and well facilities.

As the assistance measures described in the draft GSP have not yet been approved to be carried out, we would like to further express the importance in providing such an assistance program to prevent and mitigate for impacts to drinking water users. The draft GSP identifies an impact to 21% of rural/domestic wells and, based on our Focused Technical Review, the actual impacts could be much higher. Moreover, rural domestic and small water system demand does not contribute substantially to the overdraft conditions, yet the risks imposed on these drinking water users are overlooked, creating a disproportionate impact on already vulnerable communities. With the decision of postponing the implementation of a groundwater allocation program or addressing reductions in groundwater pumping, drinking water users could face significant impacts, particularly if the region faces another drought. If MKGSA defines its sustainability criteria in a way that allows for the dewatering of drinking water wells, it is critical that MKGSA develops a robust drinking water assistance program to prevent impacts to drinking water users and mitigate the drinking water impacts that occur.

SH-021

The draft GSP presents a couple of mitigation measures that are being considered by the GSA's Advisory Committee and Governing Board. We would like to provide a set of additional considerations for establishing such an Assistance Program. Mainly, we recommend that mitigation measurements are tied

back to a monitoring network and an adaptive management framework (trigger system) to evaluate groundwater conditions and predict potential groundwater impacts to drinking water wells. The framework should forecast how groundwater levels and quality could change based on potential project impacts, identify at-risk domestic wells, identify areas for additional monitoring, and determine if monitoring triggers have been met. Please consider the following for the development of an Assistance Program:

i. Drinking Water Wells Monitoring Network: Expand and improve the monitoring network described by the GSP draft to assess impacts to drinking water wells caused by changes on groundwater levels and quality, in particular for groundwater conditions near the Okieville and Waukena communities, areas with high density of private domestic wells, and water systems serving schools. This will allow MKGSA to better comply with GSP regulations section 354.34, which requires GSAs to describe how potential impacts to groundwater users and uses will be monitored, ensure the success of the Assistance Program, and take a proactive approach to protect S/DACs and domestic well owners access to safe and affordable drinking water.

SH-021 (contd.)

ii. Adaptive Management/Trigger System: Develop a protective warning system, also referred to as an adaptive management approach, which can alert groundwater managers when groundwater levels are dropping to a level that negatively affects drinking water users. Such triggers are essential for groundwater management but can be adjusted to fit the needs of different management actions as well as the basin as a whole. The table below provides an example of what a warning system might look like, using green, yellow, and red light indicators or "triggers", and some potential corrective actions groundwater managers can take to remedy the problem. Ultimately, this approach allows for evaluating what is happening and responding accordingly to prevent or mitigate negative impacts.

Triggers	Groundwater Status	Potential Corrective Actions
"Green-light"	Groundwater levels are stable.	No action required
"Yellow-light"	Groundwater levels are approaching concerning levels and impacts may occur or are occurring at a low rate. Some corrective actions are needed.	- Undertake an analysis to pinpoint the cause - Undertake targeted water quality testing for selected domestic wells as mentioned in the draft GSP as one of the measures being considered by the GSA's Advisory Committee and Governing Board - Provide support to groundwater users experiencing impacts - Reassess pumping allocation and pumping patterns and consider restricting or limiting groundwater extraction near the triggered area.
"Red-light"	Time to stop and mitigate as significant impacts are imminent or are occurring.	- Reassess pumping allocation and pumping patterns and consider further restricting or limiting groundwater extraction near the triggered area. - Provide interim emergency solution while pursuing a permanent solution to impacted groundwater users.

iii. Drinking Water Well Impact Tool/Model: Develop a tool/model tied to the monitoring network and the adaptive management framework (trigger system) to evaluate groundwater levels and predict potential groundwater impacts to drinking water wells. Update model regularly and develop a prediction of the potential groundwater impacts to drinking water wells. The tool/model could be used to: monitor and forecast changes in groundwater levels, monitor and forecast any localized areas for special attention and/or monitoring, attempt to identify domestic wells at risk of impacts, and determine if triggers have been met based on the adaptive management framework. Results of this assessment could be incorporated into the annual SGMA progress report to domestic well owners mentioned in the draft GSP as one of the measures being considered by the GSA's Advisory Committee and governing board.

SH-021 (contd.)

Iv. Mitigation Measurements: Groundwater should be managed to avoid reaching a 'red light' trigger and the implementation of a mitigation program should be implemented before wells begin to become unusable. This will allow communities working with the GSA to access funding, and the planning and contracting will be completed such that the necessary construction will be implemented without unnecessarily leaving community members without access to drinking water. The program should be designed to be proactive, rather than reactive. When mechanical failure or other operational problems are likely to occur, or have occurred, due to declining water levels, mitigation should be provided as described below:

- Define mitigation based on a field inspection to determine static depth to groundwater levels within the well and verify well construction information and pump setting information, if possible;
- Provide short-term water supply while a permanent solution is pursued. Short-term interim solutions serve to address the immediate impacts and ensure access to safe drinking water and water for domestic uses, including health and sanitation. Short-term emergency supplies shall be provided as soon as reasonably possible and can include bottled water, bottled water paired with water tank, or another combination. Since short-term solutions are expensive over a prolonged period of time, it would be important to quickly identify potential long-term solutions. As an example, GEI's feasibility study for East Porterville in 2016 estimated tank and bottled water programs cost $633,500 per month just for East Porterville at the height of the drought.[18]
- Long-term water supply can include: financial and technical support to complete a connection to a nearby public water system/provider; providing funding to lower a well pump; providing an equivalent water supply from an alternate source; providing funding to replace affected well with a deeper well that meets county well ordinance standards; reducing or adjusting pumping near the impacted drinking water well as necessary to avoid the impact, and/or; providing other acceptable mitigation through a collaboration with the affected drinking water well responsible.

[18] California Department of Water Resources. East Porterville Water Supply Project Feasibility Study. 2016. Page 3523. https://water.ca.gov/LegacyFiles/waterconditions/docs/East%20Porterville%20Feasibility%20Study_Public%20Draft_Rev_060316-1.pdf

- For long-term water supply option, a strong preference for connecting current domestic well users to a public water system should be given whenever possible. Public water systems have an obligation to test water quality for water served, and although some public water systems typically have limited resources, they do have a greater ability to install treatment systems to address water quality impacts, recoup funds for litigated contamination such as 1,2,3-TCP, and apply for and receive grant funding for beneficial projects. Because of this, public water systems, including small community water systems, provide a more reliable drinking water source than privately-owned domestic wells.
- For example, in Okieville-Highland Acres an unknown number of private wells which serve the remaining 20 homes not connected to the recently constructed water system (based on 3.76 people per household[19], the population is assumed to be 76) are more susceptible to changes in groundwater levels and at risk of having their water access impacted. The depth of these wells are unknown, but typical domestic wells in the area are drilled to a depth of 130 to 225 feet. More recent domestic wells have been drilled to a depth of 360 feet in an effort to avoid being impacted by declining groundwater levels. Groundwater levels and the domestic well conditions in Okieville should be closely monitored. If impacts cannot be avoided and a domestic well is at risk of dewatering, MKGSA should implement mitigation measurements before wells become unusable. Mitigation measures should include funding connection fees and work on private property in order to help impacted families connect to the Okieville-Highland Acres water system.

SH-021 (contd.)

v. Funding: A secure and reliable funding source and mechanism for the implementation of this type of mitigation program needs to be identified. While grant or emergency funding could potentially be available for such a program when needed, the availability of these funds is not certain. A more secure funding mechanism could be the establishment of a reserve fund that is paid into on an annual basis and accrues funds that would then be available as water levels decline in the future. The following are potential sources of funding to also consider:

- Implementing service or land-based fee assessments using Proposition 26 or Proposition 218;
- Utilizing SWRCB programs such as Proposition 1 Groundwater Grant Program and Prop 68 Groundwater Treatment and Remediation Grant Program;
- Utilizing DWR funding programs for groundwater projects and technical assistance programs to aid SGMA implementation;
- Utilizing CV-SALTS project funding: Implementation of a new proposed Central Valley basin plan amendment on salts and nitrates may result in additional funding sources for nitrate contaminated aquifers. If appropriate, MKGSA should consider coordinating with nitrate dischargers forming a Management Zone under CV-SALTS in order to streamline administrative costs and leverage resources.

[19] As indicated by Census data from Tulare County Census Tract 21, Block Group 1 as average household size

Lastly, please consider the **Kern County Well Mitigation Strategy** developed and implemented by Rosedale Rio-Bravo Water Storage District, Kern County Water Agency, Pioneer Project Recovery Participants, and Kern Water Bank Authority. The Kern County Well Mitigation Strategy is designed to prevent, eliminate or mitigate significant adverse impacts caused by the Agencies groundwater banking operations and is an example to consider when developing a drinking water well prevention/ mitigation program. It includes tools for both identifying potential harmful impacts caused by management actions and how to mitigate or rectify those impacts. If a well failure was caused by the District's actions, the District is committed to implementing a combination of the following:

SH-021 (contd.)

- Providing short term emergency water supply to domestic well owners;
- Providing funds to lower well pump or drill a deeper well;
- Providing funds to connect to a water provider;
- Providing an alternative water supply;
- Reduce recovery pumping as necessary to avoid the impact.

The MKGSA could consider implementing a similar type of mitigation strategy for wells that go dry due to groundwater management activities.

Collaboration with Other Agencies

SHE appreciates MKGSA and stakeholder proposal to further collaborate and partner with other regulatory agencies during GSP implementation to ensure that its minimum thresholds and measurable objectives are maintained and that the water quality objectives of these other entities are achieved. As expressed previously, SHE believes that the strategic governance structure of GSAs can uniquely leverage resources, provide local empowerment, centralize information, and help define a regional approach to groundwater quality management unlike any other regional organization. When implemented effectively, GSAs have the potential to be instrumental in reducing levels of contaminants in their regions, thus reducing the cost of providing safe drinking water to residents. GSAs are the regional agency that can best comprehensively monitor and minimize negative impacts of declining groundwater levels and degraded groundwater quality that would directly impact rural domestic well users and S/DAC within their jurisdictions. When potential projects are proposed, MKGSA should consider taking leadership in coordinating regional solutions.

SH-022

TULARE COUNTY RMA

[Page 1-1]: “It is one of the prime agricultural regions in the Central Valley and home to numerous small towns and communities, as well as the larger cities of Tulare and Visalia.” Should reference a specific map or diagram.

[Page 1-6]: “Urban land use is located within the limits of the cities of Tulare and Visalia and the surrounding unincorporated areas within the sphere of influence for the cities.” General Plan Land Use Diagrams should be referenced or included in the GSP. Tulare County General Plan Land Use Diagram Figure 4-1 (page 4-5) at a minimum should be referenced or included here.

[Page 1-12]: “Each of the two incorporated cities in MKGSA’s area have adopted General Plans. For the areas not within the limits of the incorporated cities, the Tulare County General Plan applies. The General Plans for the cities and the General Plan for the county each have land use elements which address water usage. These elements were considered in this GSP.” General Plan Land Use Diagrams should be referenced or included in the GSP. Tulare County General Plan Land Use Diagram Figure 4-1 (Page 4-5) at a minimum should be referenced here. This statement should describe the specific general plan elements that were reviewed.

[Page 1-12]: “However, the Tulare County 2012 General Plan has a Water Resources Element…” Note that the County’s GP also has other elements that address water. These should be referenced. The Tulare County General Plan includes both policies and implementation measures that address water supply, wastewater treatment, adequate infrastructure, plans, programs, and funding in the following elements:

Planning Framework (Chapter 2)
Agriculture (Chapter 3)
Land Use (Chapter 4)
Economic Development (Chapter 5)
Housing (Chapter 6)
Environmental Resources Management (Chapter 8)
Health and Safety (Chapter 10)
Water Resources Chapter 11)
Public Facilities and Services Chapter 14)

Gen Plan Water Resources Element policies Include:
Water Supply
WR-1.1 Groundwater Withdrawal
WR-1.3 Water Export Outside County
WR-1.4 Conversion of Agricultural Water Resources
WR-1.5 Expand Use of Reclaimed Wastewater
WR-1.6 Expand Use of Reclaimed Water
WR 1.7 Collection of Additional Groundwater Information
WR-1.8 Groundwater Basin Management
WR-1.9 Collection of additional Surface Water Information
WR-1.10 Channel Modification
WR-3.1 Develop Additional Water Sources
WR-3.2 Develop an Integrated Regional Water Master Plan

WR-3.3 Adequate Water Availability
WR-3.4 Water Resource Planning
WR-3.5 Use of Native and Drought Tolerant Landscaping
WR-3.6 Agricultural Irrigation Efficiency
WR 3.7 Emergency Water Conservation Plan
WR-3.8 Educational Programs
WR-3.9 Establish Critical Water Supply Areas
WR-3.10 Diversion of Surface Water
WR-3.11 Policy Impacts to Water Resources
WR-3.12 Joint Water Projects with Neighboring Counties
WR-3.13 Coordination of Watershed Management on Public Land
PFS-2.1 Water Supply
PFS-2.2 Adequate Systems
PFS-2.3 Well Testing
PFS-2.5 New Systems or Individual Wells
Water Quality
WR-1.2 Groundwater Monitoring
WR 1.7 Collection of Additional Groundwater Information
WR-1.8 Groundwater Basin Management
WR-2.1 Protect Water Quality
WR-2.2 NPDES Enforcement
WR-2.3 Best Management Practices
WR-2.4 Construction site Sediment
WR-2.5 Major Drainage Management
WR-2.6 Degraded Water Resources
WR-2.7 Industrial and Agricultural Sources
WR-2.8 Point Source Control
WR-2.9 Private Wells
PFS-2.1 Water Supply
PFS-2.5 New Systems or Individual Wells
Implementation Measures should also be included.

[Page 1-13]: "…the MKGSA will address these issues with the adoption…" Might want to reference the GSA's authority to address these issues here and specifically detail how adoption of the GSP will address these issues.

[Page 1-14]: "…"work with the county and other organizations to protect prime farmland and farmland of statewide importance outside the city's Urban Development Boundary…" Should policies from the County General Plan be specifically referenced here? This discussion could reference County Adopted City General Plans (Visalia Area Community Plan) as the appropriate mechanism to coordinate land use and policy decisions within the UAB and UDB. See Tulare County General Plan Planning Framework Chapter 2 Section PF-4 and 4-A. In addition, groundwater recharge is not solely determined by FMMP designations (See Tulare County General Plan Health and Safety Element Figure 10-7 areas for groundwater recharge.

In addition the following County General Plan policies including but not limited to primarily address farmland protection:
AG-1.1 Primary Land Use
AG-1.2 Coordination
AG-1.3 Williamson Act
AG-1.5 Substandard Williamson Act Parcels
AG-1.6 Conservation Easements
AG-1.7 Preservation of Agricultural Lands
AG-1.8 Agriculture Within Urban Boundaries
AG-1.9 Agricultural Preserves Outside Urban Boundaries
AG-1.10 Extension of Infrastructure Into Agricultural Areas
AG-1.11 Agricultural Buffers
AG-1.12 Ranchettes
AG-1.13 Agricultural Related Uses
AG-1.14 Right-to-Farm Noticing
AG-1.15 Soil Productivity
AG-1.16 Agricultural Water Resources
AG-1.18 Farmland Trust and Funding Sources
AG-2.8 Agricultural Education Programs
LU- 1.5 Paper Subdivision Consolidation
LU-2.1 Agricultural Lands
LU 2.2 Agricultural Parcel Splits
LU-2.5 Residential Agriculture Uses
LU- 2.7 Industrial Development
RVLP- 1.1 Development Intensity
RVLP- 1.2 Existing Parcels and Approvals
RVLP- 1.3 Tulare County Agricultural Zones
RVLP- 1.4 Determination of Agricultural Land
RVLP- 1.5 Non Conforming Uses
RVLP- 1.6 Checklist

[Page 1-17]: “The county is revising their well permit application based on GSA input. The proposed revised application is provided on the following pages.” For clarification purposes, this section could clearly delineate what revisions to the well permitting application are being proposed.

[Page 1-19, Contractor Disclaimers]: This section notes the role for the GSA’s in the process that you may want noted above.

[Page 1-25]: “As shown in Figure 1-2, the MKGSA region includes three areas identified as a Census Designated Place by the 2016 U.S. Census Bureau as disadvantaged or severely disadvantaged. The City of Tulare has been identified as a Disadvantaged Community, while the community of Matheny Tract and Waukena have both been determined as a Severely Disadvantaged Community. The community of Okieville/Highland Acres is located within a 2016 U.S. Census Bureau Disadvantaged Community Tract. Stakeholders in these communities have the opportunity to consult on the plan during the agency’s

Board of Directors and Advisory Committee meetings and during review of this Plan." Seems to be a repeat of Section 1.5.2.3

[Page 3-3]: "Placement of recharge projects and management of pumping regimes in each GSA/Management Area such that acceleration of contaminant plume migration that impairs domestic and municipal supply well production as induced by GSP projects and management actions is avoided." this is important for any new community, as well as for existing communities that fall under the County's purview. Acquisition of property for public purposes may require a General Plan Referral.

[Page 3-5]: "…one-third of the representative monitoring sites in all three GSA jurisdictions combined exceed their respective minimum threshold water level elevations." Over what time period?

[Page 3-5]: "…a determination has been made that the percentage of wells completely dewatered by 2040 should the minimum thresholds not be exceeded would not constitute an undesirable result." For clarification should that actual percentage be stated here?

[Page 5-3]: "During this 20-year period, pumping costs will rise due to higher lifts and higher energy pricing, but this condition is considered by the MKGSA as a manageable impact that has been occurring for many years and is comparable to inflationary costs experienced by agricultural businesses, municipalities, and small-system and domestic households." Can you further detail the costs comparisons?

[Page 6-3]: "Comparing these resulting groundwater inflow assignments to MKGSA to annual groundwater pumping for the same current period (1997-2017), as identified in Table 6-3, results in an imputed water balance surplus for MKGSA of about 38,000 AF on an average basis. Yet, as acknowledged in Section 2 of this Plan, MKGSA, like the balance of the Subbasin, experiences a historical decline in groundwater levels and attendant depletion of groundwater in storage within its jurisdictional region." This might be a good place to describe the imputed water balance in greater detail to describe the difference from the previous budget.

[Page 6-4]: "Whereas the average water accounting framework water balance is positive, the comparable hydrogeologic water budget is negative by about 13,000 AF. This reduction in storage is to be expected, as water levels decline in the range of 3 feet per year over much of the GSA region. The relative contributions of multiple causes of these declines is the subject of further study and hydrogeologic analyses." Please provide greater of the detail in regards to the cooperative agreement to help understand why groundwater levels are trending down in the overall Kaweah, even if there is 'surplus' according to the budget in the Mid-Kaweah.

[Page 6-4]: "It is the intent of the Subbasin GSAs, as stipulated in the Coordination Agreement, to continue to discuss water balances and groundwater conditions during GSP implementation and, in so doing, manage the location, extent, and financial contributions to projects and management actions of

each." This would be a good place to discuss the Coordination Agreement? Specific language or chapter/section citations in the coordination agreement should be referenced here.

[Page 7-4]: "As an irrigation district under Division 11 of the California Water Code, TID has authority to manage, regulate, and engage in groundwater recharge operations for the benefit of its landowners." Can you state here that the water rights under the existing contracts?

[Page 7-33]: "…a GSA has the authority to regulate groundwater extractions
and impose an allocation mechanism." "…and an arrangement to apportion responsibilities…" Could we say this is achieved through the Coordination Agreement?

[Page 7-41]: "…capped at 55 gallons per capita per day (gpcd) in 2019 and ramped down to 50 gpcd by 2030…" It might be better to say, "May be adjusted back up from 50, based on science."

[Page 8-3]: "Table 8-1: Sample Groundwater Extraction Summary" May want to add 'small community water systems' as a separate line from M&I and Domestic?

CLEAN WATER ACTION | CLEAN WATER FUND

The Nature Conservancy
Protecting nature. Preserving life.™

Local Government Commission
Leaders for Livable Communities

Audubon | CALIFORNIA

Union of Concerned Scientists
Science for a healthy planet and safer world

COMMUNITY WATER CENTER
EL CENTRO COMUNITARIO POR EL AGUA

September 16, 2019

Sent via email to midkaweah@gmail.com

Re: Comments on Draft Groundwater Sustainability Plan for Mid-Kaweah Subbasin

To Whom It May Concern,

On behalf of the above-listed organizations, we would like to offer the attached comments on the draft Groundwater Sustainability Plan for the Mid-Kaweah Subbasin. Our organizations are deeply engaged in and committed to the successful implementation of the Sustainable Groundwater Management Act (SGMA) because we understand that groundwater is a critical piece of a resilient California water portfolio, particularly in light of our changing climate. Because California's water and economy are interconnected, the sustainable management of each basin is of interest to both local communities and the state as a whole.

Our organizations have significant expertise in the environmental needs of groundwater and the needs of disadvantaged communities.[1]

[1]
- The Nature Conservancy, in collaboration with state agencies, has developed several tools (https://groundwaterresourcehub.org/) for identifying groundwater dependent ecosystems in every SGMA groundwater basin and has made that tool available to each Groundwater Sustainability Agency.
- Local Government Commission supports leadership development, performs community engagement, and provides technical assistance dealing with groundwater management and other resilience-related topics at the local and regional scales; we provide guidance and resources for statewide applicability to the communities and GSAs we are working with directly in multiple groundwater basins.
- Audubon California is an expert in understanding wetlands and their role in groundwater recharge and applying conservation science to develop multiple-benefit solutions for sustainable groundwater management.
- Clean Water Action and Clean Water Fund are sister organizations that have deep expertise in the provision of safe drinking water, particularly in California's small disadvantaged communities, and co-authored a report on public and stakeholder engagement in SGMA. (https://www.cleanwater.org/publications/collaborating-success-stakeholder-engagement-sustainable-groundwater-management-act)
- Community Water Center (CWC) acts as a catalyst for community-driven water solutions through organizing, education, and advocacy. CWC seeks to build and enhance leadership capacity and local community power around water issues, create a regional movement for water justice in California, and enable every community to have access to safe, clean, and affordable drinking water. CWC has supported SGMA implementation through hosting several technical capacity building workshops, developing SGMA education materials, and supporting local leadership and community engagement.
- The Union of Concerned Scientists has been working to ensure that future water supply meets demand and withstands climate change impacts by supporting stakeholder education and integration, and the creation and implementation of science-based Groundwater Sustainability Plans.

Because of the number of draft plans being released and our interest in reviewing every plan, we have identified key plan elements that are necessary to ensure that each plan adequately addresses essential requirements of SGMA. A summary review of your plan using our evaluation framework is attached to this letter as Appendix A. Our hope is that you can use our feedback to improve your plan before it is submitted in January 2020.

This review does not look at data quality but instead looks at how data was presented and used to identify and address the needs of disadvantaged communities (DACs), drinking water and the environment. In addition to informing individual groundwater sustainability agencies of our analysis, we plan to aggregate the results of our reviews to identify trends in GSP development, compare plans and determine which basins may require greater attention from our organizations.

Key Indicators

Appendix A provides a list of the questions we posed, how the draft plan responds to those questions and an evaluation by element of major issues with the plan. Below is a summary by element of the questions used to evaluate the plan.

1. Identification of Beneficial Users. This element is meant to ascertain whether and how DACs and groundwater-dependent ecosystems (GDEs) were identified, what standards and guidance were used to determine groundwater quality conditions and establish minimum thresholds for groundwater quality, and how environmental beneficial users and stakeholders were engaged through the development of the draft plan.
2. Communications plan. This element looks at the sufficiency of the communications plan in identifying ongoing stakeholder engagement during plan implementation, explicit information about how DACs were engaged in the planning process and how stakeholder input was incorporated into the GSP process and decision-making.
3. Maps related to Key Beneficial Uses. This element looks for maps related to drinking water users, including the density, location and depths of public supply and domestic wells; maps of GDE and interconnected surface waters with gaining and losing reaches; and monitoring networks.
4. Water Budgets. This element looks at how climate change is explicitly incorporated into current and future water budgets; how demands from urban and domestic water users were incorporated; and whether the historic, current and future water demands of native vegetation and wetlands are included in the budget.
5. Management areas and Monitoring Network. This element looks at where, why and how management areas are established, as well what data gaps have been identified and how the plan addresses those gaps.
6. Measurable Objectives and Undesirable Results. This element evaluates whether the plan explicitly considers the impacts on DACs, GDEs and environmental beneficial users in the development of Undesirable Results and Measurable Objectives. In addition, it examines whether stakeholder input was solicited from these beneficial users during the development of those metrics.
7. Management Actions and Costs. This element looks at how identified management actions impact DACs, GDEs and interconnected surface water bodies; whether mitigation for impacts to DACs is discussed or funded; and what efforts will be made to fill identified data gaps in the first

five years of the plan. Additionally, this element asks whether any changes to local ordinances or land use plans are included as management actions.

Conclusion

We know that SGMA plan development and implementation is a major undertaking, and we want every basin to be successful. We would be happy to meet with you to discuss our evaluation as you finalize your Plan for submittal to DWR. Feel free to contact Suzannah Sosman at suzannah@aginnovations.org for more information or to schedule a conversation.

Sincerely,

Jennifer Clary
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Clean Water Action/Clean Water Fund

Danielle V. Dolan
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Appendix A
Review of Public Draft GSP

Groundwater Basin/Subbasin: Kaweah Subbasin (DWR #5-22.11)
GSA: Mid-Kaweah GSA
GSP Date: July 2019 Public Review Draft

1. Identification of Beneficial Users

Were key beneficial users identified and engaged?

Selected relevant requirements and guidance:
GSP Element 2.1.5, "Notice & Communication" (§354.10):
(a) A description of the beneficial uses and users of groundwater in the basin, including the land uses and property interests potentially affected by the use of groundwater in the basin, the types of parties representing those interests, and the nature of consultation with those parties.
GSP Element 2.2.2, "Groundwater Conditions" (§354.16):
(d) Groundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and map of the location of known groundwater contamination sites and plumes.
(f) Identification of interconnected surface water systems within the basin and an estimate of the quantity and timing of depletions of those systems, utilizing data available from the Department, as specified in Section 353.2, or the best available information.
(g) Identification of groundwater dependent ecosystems within the basin, utilizing data available from the Department, as specified in Section 353.2, or the best available information.
GSP Element 3.3, "Minimum Thresholds" (§354.28):
(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page[1])
1. Do beneficial users (BUs) identified within the GSP area include: a. Disadvantaged Communities (DACs)				"Beneficial users of groundwater in MKGSA include agricultural users, domestic well owners, municipal well operators, public water systems, local land use planning agencies, California Native American Tribes, disadvantaged communities, and entities engaged in monitoring and reporting groundwater elevations." DACs include "those served by private domestic wells or small community water systems (Water Code §10723.2(i)"	1.5.2.1, page 34 NP-001
	X			"The MKGSA region includes three areas identified as a Census Designated Place by the 2016 U.S. Census Bureau as disadvantaged or severely disadvantaged communities. The City of Tulare has been identified as a Disadvantaged Community, with portion of its boundaries includes a neighborhood referred to as Matheny Tract, a Severely Disadvantaged Community. The unincorporated community of Waukena have [sic] been determined as a Severely Disadvantaged Community. The community of Okieville/Highland Acres is located within a 2016 U.S. Census Bureau Disadvantaged Community Tract. Stakeholders in these communities have had the opportunity to consult on the plan during the agency's Board of	1.5.2.3, page 35

[1] Page numbers refer to the page of the PDF.

					Directors meetings, Advisory Committee meetings, and during review of this Plan.""As shown in Figure 1-2, the MKGSA region includes three areas identified as a Census Designated Place by the 2016 U.S. Census Bureau as disadvantaged or severely disadvantaged. The City of Tulare has been identified as a Disadvantaged Community, while the community of Matheny Tract and Waukena have both been determined as a Severely Disadvantaged Community. The community of Okieville/Highland Acres is located within a 2016 U.S. Census Bureau Disadvantaged Community Tract. Stakeholders in these communities have the opportunity to consult on the plan during the agency's Board of Directors and Advisory Committee meetings and during review of this Plan."	1.5.2.11, page 36
	b. Tribes	X			"Beneficial users of groundwater in MKGSA include agricultural users, domestic well owners, municipal well operators, public water systems, local land use planning agencies, California Native American Tribes, disadvantaged communities, and entities engaged in monitoring and reporting groundwater elevations." "As part of the MKGSA's 2015 formation notification to DWR, the agency preliminarily identified two California Native American Tribes for potential engagement in the planning process as beneficial water users: the Santa Rosa Rancheria Tachi-Yokut Tribe of Lemoore, California, and the Waksache Tribe. No details were available for the later tribe and the Santa Rosa Rancheria Tachi-Yokut Tribe's reservation is located in the Tulare Lake Subbasin."	1.5.2.1, page 34 1.5.2.9, page 36
	c. Small community public water systems (<3,300 connections)	X			"Beneficial users of groundwater in MKGSA include agricultural users, domestic well owners, municipal well operators, public water systems, local land use planning agencies, California Native American Tribes, disadvantaged communities, and entities engaged in monitoring and reporting groundwater elevations." DACs include "those served by private domestic wells or small community water systems (Water Code §10723.2(i)" The number and sizes of the public water systems within the MKGSA are not clearly described.	1.5.2.1, page 34
2. What data were used to identify presence or absence of DACs?	a. DWR DAC Mapping Tool[2]	X			"As shown in Figure 1-2, the MKGSA region includes three areas identified as a Census Designated Place by the 2016 U.S. Census Bureau as disadvantaged or severely disadvantaged. The City of Tulare has been identified as a Disadvantaged Community, while the community of Matheny Tract and Waukena have both been determined as a Severely Disadvantaged Community. The community of Okieville/Highland Acres is located within a 2016 U.S. Census Bureau Disadvantaged Community Tract. Stakeholders in these communities have the opportunity to consult on the plan during the agency's Board of Directors and Advisory Committee meetings and during review of this Plan."	1.5.2.11, page 36

[2] DWR DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/

					Figure 1-2 MID-KAWEAH GSA ADJUDICATED AREAS AND DISADVANTAGED COMMUNITIES	Figure 1-2, page 47
	i. Census Places	X				
	ii. Census Block Groups			X		
	iii. Census Tracts	X				
	b. Other data source	X			"The MKGSA region includes three areas identified as a Census Designated Place by the 2016 U.S. Census Bureau as disadvantaged or severely disadvantaged communities."	1.5.2.3, page 35
3. Groundwater Conditions section includes discussion of:	a. Drinking Water Quality	X			"This water quality discussion is divided by constituent to explain the drinking water standard, agricultural standard (sodium and chloride), and how these constituents impact beneficial uses in the different regions of the Subbasin."	Appendix 2A 2.7.3, (page 128)
	b. California Maximum Contaminant Levels (CA MCLs)[3] (or Public Health Goals where MCL does not exist, e.g. Chromium VI)	X			"Groundwater quality is generally good, but available data are primarily located in the northern and eastern portions of the MKGSA. Several constituents of concern have been identified due to concentrations near Maximum Contaminant Levels (MCLs) or due to increasing trends, including arsenic, nitrate, certain volatile organics, and 1,2,3-trichloropropane." "Table 39 provides a summary of the range of these constituents within the Kaweah Subbasin referenced to the MCL."	2.2, page 56 Appendix 2A 2.7.3, (pages 128-140)
4. What local, state, and federal standards or plans were used to assess drinking water BUs in the development of Minimum Thresholds (MTs)?	a. Office of Environmental Health Hazard Assessment Public Health Goal (OEHHA PHGs)[4]		X			
	b. CA MCLs[3]	X			"MKGSA recognizes MCLs are relevant to public drinking water as a beneficial use. Since a large portion of this Plan area is in agriculture, with agricultural irrigation as the beneficial use, the MKGSA will also avoid degradation above the Agricultural Water Quality Objectives (Ag WQO) presented and described in the Basin Setting report (Appendix 2A)." "The minimum thresholds shall be set at the MCLs or the Agricultural WQOs, whichever is applicable at the representative monitoring site."	5.3.3.2, page 102 5.3.3.3, page 103
	c. Water Quality Objectives (WQOs) in Regional Water Quality Control Plans		X			
	d. Sustainable Communities Strategies/ Regional Transportation Plans[5]		X			
	e. County and/or City General Plans, Zoning Codes and Ordinances[6]		X			
5. Does the GSP identify how environmental BUs and environmental stakeholders were engaged throughout the development of the GSP?			X		Surface water users and the following groups were listed as Beneficial Users: "Environmental and ecosystem interests in MKGSA include representatives of	1.5.2.7, page 1-25

[3] CA MCLs: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.html

[4] OEHHA PHGs: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.html

[5] CARB: https://ww2.arb.ca.gov/resources/documents/scs-evaluation-resources

[6] OPR General Plan Guidelines: http://www.opr.ca.gov/planning/general-plan/

				the Tulare Basin Wildlife Partners, Sierra Club Mineral King Group, and Sequoia Riverlands Trust (p. 1-25)."	

Summary/ Comments

The draft GSP used the DWR Mapping Tool to identify DACs. The GSP only clearly identified CA MCLs as a source for developing MTs, while PHGs or Regional Water Quality Control Plan WQOs were not considered in the assessment of drinking water users. NP-002

The GSP should identify whether or not the following beneficial uses and users of groundwater in the subbasin are present: Protected Lands, including preserves, refuges, conservation areas, recreational areas; and other protected lands; and Public Trust Uses, including wildlife, aquatic habitat, fisheries, and recreation. NP-003

The types and locations of environmental uses, species and habitats supported, and the designated beneficial environmental uses of surface waters that may be affected by groundwater extraction in the Subbasin should be specified. NP-004

The GSP should clarify what criteria it uses to characterize groundwater quality as "generally good" and should ensure that, at minimum, groundwater quality conditions should include the most recent SDWIS data. NP-005

2. Communications Plan

How were key beneficial users engaged and how was their input incorporated into the GSP process and decisions?

Selected relevant requirements and guidance:

GSP Element 2.1.5, "Notice & Communication" (§354.10):

Each Plan shall include a summary of information relating to notification and communication by the Agency with other agencies and interested parties including the following:

(c) Comments regarding the Plan received by the Agency and a summary of any responses by the Agency.

(d) A communication section of the Plan that includes the following:

(1) An explanation of the Agency's decision-making process.

(2) Identification of opportunities for public engagement and a discussion of how public input and response will be used.

(3) A description of how the Agency encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin.

(4) The method the Agency shall follow to inform the public about progress implementing the Plan, including the status of projects and actions.

DWR Guidance Document for GSP Stakeholder Communication and Engagement[7]

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Is a Stakeholder Communication and Engagement Plan (SCEP) included?	X			"The outreach and education policies and actions are addressed in the Communication & Engagement (C&E) Plan, developed by Stantec for MKGSA and adopted on August 14, 2018 and included as Appendix 1C." "The Mid-Kaweah Groundwater Sustainability Agency (Mid-Kaweah GSA) Communication and Engagement Plan provides a high-level overview of near- and long-term outreach strategies, tactics and tools that support public and stakeholder communication actions, as required by the Sustainable Groundwater Management Act (SGMA) of 2014. While primarily focused on achieving the communication needs of the Mid-Kaweah GSA, this Plan also describes certain intra-basin activities that serve to accomplish the needs of the agency and its fellow Kaweah Subbasin GSAs: East Kaweah GSA and Greater Kaweah GSA."	1.5.3, page 37, page 27 Appendix 1, (page 43)
2. Does the SCEP or GSP identify that ongoing engagement will be conducted during GSP implementation?	X			"Following GSP adoption, the MKGSA will continue to inform beneficial users and interested parties through continuation of activities implemented to develop this Plan. Key activities for the public to follow and engage in GSP implementation include attendance at regularly scheduled meetings of the MKGSA Board of Directors, the MKGSA Advisory Committee, and the Kaweah Subbasin Management Team." "This document identifies and presents the public and stakeholder	1.5.7, page 44 Appendix 1, 1.0,

[7] DWR Guidance Document for GSP Stakeholder Communication and Engagement https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Guidance-Document-for-Groundwater-Sustainability-Plan---Stakeholder-Communication-and-Engagement.pdf

				communication and engagement activities to be implemented by the Mid-Kaweah Groundwater Sustainability Agency (GSA) in support of development and eventual implementation of a Groundwater Sustainability Plan (GSP) within the agency's jurisdictional boundaries." "The Mid-Kaweah GSA Advisory Committee intends to conduct and monitor a variety of public outreach activities each aimed to inform, engage and respond to stakeholders and other interested parties during GSP development, adoption and, later, implementation."	(page 48) Appendix 1, 3.2, (page 60)
3. Does the SCEP or GSP specifically identify how DAC beneficial users were engaged in the planning process?	X			"As shown in Figure 1-2, the MKGSA region includes three areas identified as a Census Designated Place by the 2016 U.S. Census Bureau as disadvantaged or severely disadvantaged. The City of Tulare has been identified as a Disadvantaged Community, while the community of Matheny Tract and Waukena have both been determined as a Severely Disadvantaged Community. The community of Okieville/Highland Acres is located within a 2016 U.S. Census Bureau Disadvantaged Community Tract. Stakeholders in these communities have the opportunity to consult on the plan during the agency's Board of Directors and Advisory Committee meetings and during review of this Plan." Advisory Committee: "Membership on the board seeks to staff a committee whose membership represents the various social, economic and environmental stakeholder communities affected by SGMA. To achieve this balance, the following topical and geographic objectives are sought when selecting committee members: • Up to three members representing governmental organizations operating within the GSA; • Up to three members representing environmental interests and/or disadvantaged communities; • Up to three members representing the agricultural community; and • All remaining positions are appointed at-large and based, in part, on geographic location." "Regardless of the extent of partnership opportunities available with these and other organizations, the Mid-Kaweah GSA intends to engage with each of the disadvantaged communities within its jurisdictional area or potentially dependent on infrastructure of its member agencies."	1.5.3, page 37 Appendix 1, 2.2.4, (page 53) Appendix 1, 3.3, (page 62)
4. Does the SCEP or GSP explicitly describe how stakeholder input was incorporated into the GSP process and decisions?	X			"Meetings of the Board of Directors served, in part, as a venue for planning staff to receive direction for major technical and policy issues. Comments on these topics from the public, Advisory Committee members and other stakeholders were welcomed during scheduled public comment sessions. Comments received during these sessions were responded to by Board members or staff, as appropriate. These meetings also served as key opportunities for the public and stakeholders to engage and consult in development of the GSP and to track its progress."	1.5.4.2, page 40

				"The publicly noticed Advisory Committee meetings are important venues for development of recommendations to the Board of Directors to key technical and policy issues. The public was encouraged to engage and consult in these discussions and assist Advisory Committee members in their consideration of a preferred approach. These recommendations were later provided to the Board of Directors for their consideration."	1.5.4.3, page 41

Summary/ Comments

The GSP listed venues for stakeholders to provide input and also stated that the MKGSA responded to stakeholders' comments during the development of the GSP. However, detailed information about stakeholder input and responses from the GSA to address the stakeholder input are not presented. NP-006

The SCEP identifies an intent to have up to 3 members representing DACs and/or environmental users, but the GSP does not identify who the actual members of the Advisory Committee were through the GSP development process and what organizations/interests were represented. NP-007

3. Maps Related to Key Beneficial Uses

Were best available data sources used for information related to key beneficial users?

Selected relevant requirements and guidance:

GSP Element 2.1.4 "Additional GSP Elements" (§354.8):

Each Plan shall include a description of the geographic areas covered, including the following information:

(a) One or more maps of the basin that depict the following, as applicable:

(5) The density of wells per square mile, by dasymetric or similar mapping techniques, showing the general distribution of agricultural, industrial, and domestic water supply wells in the basin, including de minimis extractors, and the location and extent of communities dependent upon groundwater, utilizing data provided by the Department, as specified in Section 353.2, or the best available information.

GSP Element 3.5 Monitoring Network (§354.34)

(b) Each Plan shall include a description of the monitoring network objectives for the basin, including an explanation of how the network will be developed and implemented to monitor
groundwater and related surface conditions, and the interconnection of surface water and groundwater, with sufficient temporal frequency and spatial density to evaluate the affects and effectiveness of Plan implementation. The monitoring network objectives shall be implemented to accomplish the following:

(c) Each monitoring network shall be designed to accomplish the following for each sustainability indicator:

(1) Chronic Lowering of Groundwater Levels. Demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features by the following methods:

(A) A sufficient density of monitoring wells to collect representative measurements through depth-discrete perforated intervals to characterize the groundwater table or potentiometric surface for each principal aquifer.

(4) Degraded Water Quality. Collect sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators, as determined by the Agency, to address known water quality issues.

(6) Depletions of Interconnected Surface Water. Monitor surface water and groundwater, where interconnected surface water conditions exist, to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions. The monitoring network shall be able to characterize the following:

(A) Flow conditions including surface water discharge, surface water head, and baseflow contribution.

(B) Identifying the approximate date and location where ephemeral or intermittent flowing streams and rivers cease to flow, if applicable.

(C) Temporal change in conditions due to variations in stream discharge and regional groundwater extraction.

(D) Other factors that may be necessary to identify adverse impacts on beneficial uses of the surface water.

(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:

(3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.

	Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP Include Maps Related to Drinking Water Users?	a. Well Density	X			"Figure 1-6, Figure 1-7, and Figure 1-8 are well-density maps which show the general distribution of domestic, production, and public supply wells within the MKGSA and are based on information from the DWR's website for the Well Completion Report Map Application"	1.4.2, page 19
	b. Domestic and Public Supply Well Locations & Depths		X		The well locations and depths are not specifically identified in the GSP.	NP-008

	i. Based on DWR Well Completion Report Map Application[8]?	X			"Figure 1-6, Figure 1-7, and Figure 1-8 are well-density maps which show the general distribution of domestic, production, and public supply wells within the MKGSA and are based on information from the DWR's website for the Well Completion Report Map Application. … This GSP was not intended to produce any finer resolution than provided by the DWR map application."	1.4.2, page 19
	ii. Based on Other Source(s)?		X			
2. Does the GSP include maps related to Groundwater Dependent Ecosystem (GDE) locations?	a. Map of GDE Locations		X		Figure 19 of Appendix 2A is titled "Potential Groundwater Dependent Ecosystems", however the figure does not actually present this. The NC dataset is a starting point for GSAs to identify GDEs in their basin. The NC dataset comprises 3,488 acres of potential GDEs for the entire Kaweah basin, representing a significant amount of GDEs to be considered.	Figure 19 (Appendix 2A page 172) NP-009
	b. Map of Interconnected Surface Waters (ISWs)	X				Figure 20 (Appendix 2A page 173)
	i. Does it identify which reaches are gaining and which are losing?		X		ISWs are best estimated by first determining which reaches are completely disconnected from groundwater. This approach would involve comparing groundwater elevations with a land surface Digital Elevation Model that could identify which surface waters have groundwater consistently below surface water features, such that an unsaturated zone would separate surface water from groundwater. Groundwater elevations that are always deeper than 50 feet below the land surface can be used to identify the aboveground reaches as disconnected surface waters.	Appendix 2., (page 147) NP-010
	ii. Depletions to ISWs are quantified by stream segments.		X		"Depletions of interconnected surface waters are minimal and, to the extent they occur, impact only vegetation along the banks of unlined channels within the forebay regions of the aquifer system where natural channels exhibit gaining reaches from time to time. Undesirable results may occur should any such groundwater-dependent vegetation disappear from locations of known historic existence." This discussion is inadequate and is not supported by data.	3.2.1.5, page 64
	iii. Depletions to ISWs are quantified seasonally.		X			3.2.1.5, page 64 NP-011
3. Does the GSP include maps of monitoring networks?	a. Existing Monitoring Wells	X			"Within the MKGSA boundaries, there are local, regional, state, and federal programs to monitor groundwater levels, groundwater and surface water quality, surface water inflow, weather and precipitation, and land subsidence. A brief description of these programs and their applicability to groundwater management are provided below." "Figure 4-2 (at the end of this Section) provides the current distribution of wells throughout the entire Subbasin with available data through CASGEM, local and regional agencies, and Management Areas. Figure 4-3 (at the end of this Section) shows the current groundwater level monitoring wells in the MKGSA only, with aquifer designations if known."	4.1.1, page 70 4.4.2, page 76 NP-012

[8] DWR Well Completion Report Map Application: https://www.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37

						The map of existing monitoring wells for groundwater levels is included in the Appendix 2A. No map of existing water quality monitoring networks is found in this GSP.	NP-012 (contd.)
						"Twenty-three-member agencies have collaborated and contributed data, which has been compiled and used for this Basin Setting effort. Table 4 provides a summary of the groundwater level monitoring programs being conducted in each jurisdiction throughout the Subbasin. Groundwater level monitoring locations are shown on Figure 20.	Appendix 2A, 2.3.1, page 39
	b. Existing Monitoring Well Data sources:	i. California Statewide Groundwater Elevation Monitoring (CASGEM)	X			"In addition to the local agency monitoring, the Kaweah Delta Water Conservation District (KDWCD) and TID participate in the CASGEM program. CASGEM was established by DWR in 2009 and is used to track seasonal and long-term groundwater elevation trends in groundwater basins statewide in collaboration with local monitoring entities."	4.1.1, page 71
						"Within the Kaweah Subbasin, water level data were compiled using data from DWR's CASGEM program, the three GSAs within the Subbasin and the cooperating agencies are listed below."	Appendix 2A, 2.3.1, page 39
		ii. Water Board Regulated monitoring sites	X			"Other agencies such as the Regional Water Quality Control Board, state and federal Environmental Protection Agency, USGS, SWRCB, City of Tulare, and various neighboring irrigation and water districts monitor groundwater quality in the region. TID collects and reviews data released from these agencies. "	Appendix 2A, 2.3.2.6, (page 42)
						"2.3.2.6 Groundwater Ambient Monitoring and Assessment (GAMA) Program The GAMA Program was created by the SWRCB in 2000. It was later expanded by the Groundwater Quality Monitoring Act of 2001 (AB 599). AB 599 required the State Water Board to integrate existing monitoring programs and design new program elements as necessary to monitor and assess groundwater quality. The GAMA Program is based on collaboration among agencies including the State and Regional Water Boards, CDWR, DPR, USGS, and USGS National Water Information System (NWIS), and Lawrence Livermore National Laboratory (LLNL)."	Appendix 2A, 2.3.2.6, (page 45)
		iii. Department of Pesticide Regulation (DPR) monitoring wells	X			Table 4-2: Existing Groundwater Quality Monitoring Programs	4.1.2, page 71
						"DPR obtains groundwater sampling data from other public agencies, such as SDWIS, USGS, and Groundwater Ambient Monitoring and Assessment Program (GAMA), and through its own sampling program. Sampling locations and constituents are determined by pesticides used in a region, and from review of pesticide detections reported by other agencies. Because of their sample selection methodology, DPR typically only collects one sample per well. Repeat sampling is not performed if there are positive detections. Rather, their focus is on validating contamination through their research and sampling program. These data are reported annually along with the actions taken by DPR and the SWRCB to protect groundwater from	Appendix 2A, 2.3.2.4, (page 44)

					contamination by agricultural pesticides. Annual reports are reviewed, and contaminant detections are identified in the groundwater quality characterization. In the Kaweah Subbasin, only legacy pesticides (dibromochloropropane (DBCP) and 1,2,3-TCP) are detected in the public water system wells. No pesticides currently in use were identified."	
	c. SGMA-Compliance Monitoring Network	X			"Figure 4-4 (at the end of this Section) presents the representative groundwater level monitoring program wells for the MKGSA. The 37 key wells will be used for the representative monitoring wells relative to their respective sustainable management criteria. Criteria considered in selecting wells for the representative groundwater level monitoring program included the following: • Long record of historical data • Current data • Well accessibility • Well construction information • Total well depth • Uniform geographical distribution"	4.4.4, page 76
	i. SGMA Monitoring Network map includes identified DACs?		X		The GSP does not include the identified DACs in the proposed monitoring network maps.	NP-013
	ii. SGMA Monitoring Network map includes identified GDEs?		X		The GSP does not include the identified GDEs in the proposed monitoring network maps.	NP-014

Summary/ Comments

The GSP should include detailed information about the location and depths of domestic wells. Providing maps of the monitoring network overlaid with location of DACs, domestic wells, community water systems, GDEs, and any other sensitive beneficial users will allow the reader to evaluate the adequacy of the network to monitor conditions near these beneficial users. NP-015

The original NC dataset should be mapped and the GSP should document which polygons were added (and what local sources were used to identify them), removed (and the removal reason), and kept (from the original NC dataset). TNC guidance on best practices should be used for the method to use local groundwater data to verify whether polygons in the NC dataset are supported by groundwater in an aquifer, in particular BMP #3, which emphasizes that GDEs should not be excluded due to partial reliance on surface water.. 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. Once GDEs are identified, the GSP should describe how existing groundwater monitoring programs are protective of GDEs, or propose additional monitoring that specifically targets GDEs. NP-016

The GSP should identify interconnected surface waters in the Basin by relying on groundwater elevation and stream gauge data, specifying any data gaps that exist so that they can be resolved in the monitoring network, and reconcile data gaps (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP to improve ISW mapping. NP-017

4. Water Budgets

How were climate change projections incorporated into projected/future water budget and how were key beneficial users addressed?

Selected relevant requirements and guidance:

GSP Element 2.2.3 "Water Budget Information" (Reg. § 354.18)

Each Plan shall include a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions, and the change in the volume of water stored. Water budget information shall be reported in tabular and graphical form.

*Projected water budgets shall be used to estimate future baseline conditions of supply, **demand**, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components. The projected water budget shall utilize the following methodologies and assumptions to estimate future baseline conditions concerning hydrology, water demand and surface water supply availability or reliability over the planning and implementation horizon:*

(b) The water budget shall quantify the following, either through direct measurements or estimates based on data:

(5) If overdraft conditions occur, as defined in Bulletin 118, the water budget shall include a quantification of overdraft over a period of years during which water year and water supply conditions approximate average conditions.

(6) The water year type associated with the annual supply, demand, and change in groundwater stored.

(c) Each Plan shall quantify the current, historical, and projected water budget for the basin as follows:

*(1) Current water budget information shall quantify current inflows and outflows for the basin using the most recent hydrology, water supply, **water demand**, and land use information.*

DWR Water Budget BMP[9]
DWR Guidance for Climate Change Data Use During GSP Development and Resource Guide[10]

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Are climate change projections explicitly incorporated in future/ projected water budget scenario(s)?	X			"The development of this MKGSA Basin Setting Section was informed by DWR's Water Budget Best Management Practices (BMP), Hydrogeologic Conceptual Model BMP, and Guidance for Climate Change Data Use During Sustainability Plan Development. These documents are provided in Appendix 2B." "Under this initial scenario, MKGSA considered the impact of future demands and climate change as described in the Basin Setting Report (Appendix 2A), without any projects or management actions." "This section describes the retrieval, processing, and analysis of DWR-provided climate change data to project the impact of climate change on	2.4, page 60 5.4.1, page 109 Appendix 2A, 2.5.2.1, (page 115)

[9] DWR BMP for the Sustainable <management of Groundwater Water Budget: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-4-Water-Budget.pdf

[10] DWR Guidance Document for the Sustainable Management of Groundwater Guidance for Climate Change Data Use During GSP Development: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Climate-Change-Guidance_Final.pdf

					precipitation, evapotranspiration, upstream inflow, and imported flows in the Kaweah Subbasin under 2030 and 2070 conditions."	
2. Is there a description of the methodology used to include climate change?		X			"This section describes the retrieval, processing, and analysis of DWR-provided climate change data to project the impact of climate change on precipitation, evapotranspiration, upstream inflow, and imported flows in the Kaweah Subbasin under 2030 and 2070 conditions. The precipitation and evapotranspiration change projections are computed relative to a baseline period of 1981 to 2010 and are summarized for the EKGSA, GKGSA and MKGSA areas. For upstream inflow into Kaweah Lake and imported water from the Friant-Kern Canal, change projections are computed using a baseline period of 1981 to 2003. The choice of baseline periods was selected based on the baseline analysis period for the Basin Settings report (which includes water years from 1981 to 2017), and the available of concurrent climate projections (calendar years 1915 to 2011) and derived hydrologic simulations (water years 1922 to 2011) from the SGMA Data Viewer." The Technical Memorandum, Estimate of Future Friant Division Supplies for Use in Groundwater Sustainability Plans, in Appendix 2B discusses the methodology used to include climate change for projecting water budget.	Appendix 2A, 2.5.2.1, page 115 Appendix 2B, (Page152)
3. What is used as the basis for climate change assumptions?	a. DWR-Provided Climate Change Data and Guidance[11]	X			"The 2030 and 2070 precipitation and ET data are available on 6 km resolution grids. The climate datasets have also been run through a soil moisture accounting model known as the Variable Infiltration Capacity (VIC) hydrology model and routed to the outlet of subbasins defined by 8-digit Hydrologic Unit Codes (HUCs). The resulting downscaled hydrologic time series are available also on the SGMA Data Viewer hosted by DWR. Precipitation and ET data used in this analysis were downloaded from the SGMA Data Viewer for 69 climate grid cells covering the Kaweah Subbasin. Separate monthly time series of change factors were developed for each of the three Kaweah Subbasin GSAs by averaging grid cell values covering each GSA area. Monthly time series of change factors for inflow into Kaweah Lake and flow diversions from the Friant-Kern Canal were similarly retrieved from the SGMA Data Viewer. Mean monthly and annual values were computed from the subbasin time series to show projected patterns of change under 2030 and 2070 conditions."	Appendix 2A, 2.5.2.1, page 115
	b. Other		X			
4. Does the GSP use multiple climate scenarios?		X			"The resulting climate change conditions used in this analysis include:	Appendix 2B,

[11] DWR Guidance Document for the Sustainable Management of Groundwater Guidance for Climate Change Data Use During GSP Development: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Climate-Change-Guidance_Final.pdf
DWR Resource Guide DWR-Provided Climate Change Data and Guidance for Use During GSP Development: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Resource-Guide-Climate-Change-Guidance_v8.pdf

				1. 2015 Conditions: This represents a historical hydrology modified to match climate and sea level conditions for a thirty-year period centered at 1995 (reference climate period 1981 – 2010). 2. Near-Future 2030 Central Tendency: This represents a 2030 future hydrology with projected climate and sea level conditions for a thirty-year period centered at 2030 (reference climate period 2016 – 2045). 3. Late-Future 2070 Central Tendency: This hydrology represents a 2070 future condition with projected climate and sea level conditions for a thirty-year period centered at 2070 (reference climate period 2056 – 2085). 4. Late-Future 2070 Drier/Extreme Warming Conditions (DEW): This hydrology represents a 2070 DEW future condition with projected climate and sea level conditions for a thirty-year period centered at 2070 (reference climate period 2056 – 2085). 5. Late-Future 2070 Wetter/Moderate Warming Conditions (WMW): This hydrology represents a 2070 WMW future condition with projected climate and sea level conditions for a thirty-year period centered at 2070 (reference climate period 2056 – 2085)." Projected Changes in imported flow diversions are estimated under the five climate change scenarios, and summarized in Table 36 of Appendix 2A.	(Page163) Appendix 2A, (page 120)
5. Does the GSP quantitatively incorporate climate change projections?	**X**			"Under 2030 conditions, all three GSAs in the Kaweah Subbasin are projected to experience annual increases of 3.2% relative to the baseline period. Table 34; Figures 59 and 60 signify the largest monthly changes would occur in Winter and early Summer with projected increases of 4.3% to 4.8% in January and 3.8% to 4% in June. Under 2070 conditions, annual evapotranspiration is projected to increase by 8.2% relative to the baseline period in all three GSA areas. The largest monthly changes would occur in December with projected increases of between 12.8% to 13.5%. Summer increases peak approximately 8% in May and June." "Sharp decreases are projected early Fall and late Spring precipitation accompanied by increases in Winter and Summer precipitation. Table 35; Figures 61 and 62 display that under 2030 conditions, the largest monthly changes would occur in May with projected decreases of 14% while increases of approximately 9% and 10% are projected in March and August, respectively. Under 2070 conditions, decreases of up to 31% are projected in May while the largest increases are projected to occur in September (25%) and January (17%). All three GSA areas are projected to experience minimal changes in total annual precipitation. Annual increases in annual precipitation of 0.8% or less under 2030 conditions relative to the baseline period. Under 2070 conditions, small decreases in annual precipitation are projected with changes ranging from 0.6% in East Kaweah	Appendix 2A, (page 116) Appendix 2A, (page 117)

						to 1.7% in Greater Kaweah and 1.9% in Mid-Kaweah."	
						"The quantity of inflows into Kaweah Lake, which is the main source of local water, are projected to decrease from 465 trillion acre-feet (TAF) per year under current climate conditions to 442 TAF under both 2030 and 2070 conditions. Figure 63 shows peak flows are similarly projected to decrease from monthly peaks of 102 TAF under current climate conditions to 82 TAF by 2030 followed by a minimal decline to 81 TAF under 2070 conditions. However, significant changes in the seasonal timing of flows are expected. Under current and 2030 conditions, the monthly inflows into the reservoir are projected to peak in May. By 2070, inflows are projected to occur much earlier in the water year, with peak monthly inflows occurring in March."	Appendix 2A, (page 118)
						"Table 36 shows future projections of water deliveries to the Kaweah Subbasin from Friant with climate change and SJRRP implementation. The results indicate that relative to baseline conditions, the central tendency of water deliveries from the Friant-Kern system to the Kaweah Subbasin would decrease by 8.5% to 154.4 TAF under 2030 conditions and by 16.8% to 140.4 TAF under 2070 conditions. The two extreme climate conditions for 2070 would results in a 37.9% decrease to 104.7 TAF for the Drier/Extreme Warming Conditions and a 10.4% increase to 186.3 TAF for the Wetter/Moderate Warming Conditions, respectively. These projections suggest that the Kaweah subbasin needs to prepare for decreasing water deliveries from Friant in the Near-Future and under most scenarios in the Far-Future."	Appendix 2A, (page 120)
6. Does the GSP explicitly account for climate change in the following elements of the future/projected water budget?	a. Inflows:	i. Precipitation	**X**			"The seasonal timing of precipitation in the Kaweah Subbasin is projected to change. Sharp decreases are projected early Fall and late Spring precipitation accompanied by increases in Winter and Summer precipitation."	Appendix 2A, (page 117)
		ii. Surface Water	**X**			"The quantity of inflows into Kaweah Lake, which is the main source of local water, are projected to decrease from 465 trillion acre-feet (TAF) per year under current climate conditions to 442 TAF under both 2030 and 2070 conditions."	Appendix 2A, (page 118)
		iii. Imported Water	**X**			"Climate change could also impact the quantity and timing of imported water delivered to the Kaweah Subbasin from the CVP and the Kings River Basin."	Appendix 2A, (page 119)
		iv. Subsurface Inflow		**X**			
	b. Outflows:	i. Evapotranspiration	**X**			"Crops require more water to sustain growth in a warmer climate, and this increased water requirement is characterized in climate models using the rate of evapotranspiration."	Appendix 2A, (page 116)
		ii. Surface Water Outflows (incl. Exports)		**X**			

	iii. Groundwater Outflows (incl. Exports)		X			
7. Are demands by these sectors (drinking water users) explicitly included in the future/projected water budget?	a. Domestic Well users (<5 connections)	X			"To estimate total demand for this period, two components of demand were considered. These components include extraction from the groundwater reservoir and agriculture and M&I pumping. … This section briefly summarizes future M&I demands as well as other demands not included in M&I. These other demands include dairies, small water systems, rural domestic, golf courses and nursery users. To estimate future M&I demands, GEI reviewed the 2015 Urban Water Management Plans for the Cities of Visalia, Tulare, along with California Department of Finance population projections. Table 38 demonstrates future M&I and other demands in the Kaweah Subbasin. As shown, 76,400 AF/WY in 2015 was met with groundwater pumping. M&I and other demand is projected to increase to 126,421 AF/WY in 2030 and 186,445 AF/WY in 2070." The demands by these sectors are stated to be included in the projected water budget, however, the demand by each of these sectors is not specifically identified, since they are all included in the "Other demand" by the GSP.	Appendix 2A, 2.5.2.2, (page 122) NP-018
	b. State Small Water systems (5-14 connections)		X			
	c. Small community water systems (<3,300 connections)	X			Table 38: Projected Water Demand (AF/WY)	Appendix 2A, 2.5.2.2, (page 123)
	d. Medium and Large community water systems (> 3,300 connections)		X			
	e. Non-community water systems	X			Table 38: Projected Water Demand (AF/WY)	Appendix 2A, 2.5.2.2, (page 123)
8. Are water uses for native vegetation and/or wetlands explicitly included in the current and historical water budgets?		X			"Phreatophyte extraction consists of removing vegetation in riparian areas to prevent consumptive water use. Phreatophyte extractions within the Subbasin constitute a minor outflow component and were estimated in a manner consistent with previous estimates (Fugro West, 2007). The results of phreatophyte extraction analysis are presented in Table 30, which indicates that this component constitutes a minor extraction from the groundwater reservoir (480 AF/WY)." Please clarify what the term "phreatophyte extraction' means. The text	Appendix 2A, 2.5.1.3, (page 104) NP-019

				states 'Phreatophyte extraction consists of removing vegetation in riparian areas to prevent consumptive water use." If phreatophytes were indeed removed from within the Subbasin, please provide further details. If phreatophyte extraction refers to the uptake of groundwater by phreatophytes, then correct this text. It should be clearly stated if the phreatophytes are referring to GDE vegetation (riparian vegetation). Also the reference is from 2007 and the acreage and ET estimation methodology may be outdated.	NP-019 (contd.)
9. Are water uses for native vegetation and/or wetlands explicitly included in the projected/future water budget?		**X**		The GSP includes the projected agricultural demand but does not include a demand associated with native vegetation and/or wetlands.	NP-020

Summary/ Comments

Most water budget information is included in the appendices. The main GSP text could provide reference or direction to the appendices where specific topics are discussed to assist readers navigate the documents. NP-021

Based on the data presented, it is not clear how climate change is expected to affect some specific elements of the water budget (i.e., subsurface flows, surface water and groundwater outflows, including exports). NP-022

The GSP also does not provide specifics on drinking water demands included for large urban water systems, domestic well users, or community water systems in the historical, current or future water budgets. This information should be provided for full transparency of the assumptions, data, and results of the water budgets. NP-023

The GSP should clarify what assumptions and data were used in the water budget to calculate the outflow term from groundwater by phreatophytes. NP-024

5. Management Areas and Monitoring Network

How were key beneficial users considered in the selection and monitoring of Management Areas and was the monitoring network designed appropriately to identify impacts on DACs and GDEs?

Selected relevant requirements and guidance:
GSP Element 3.3, "Management Areas" (§354.20):

(b) A basin that includes one or more management areas shall describe the following in the Plan:

(2) The minimum thresholds and measurable objectives established for each management area, and an explanation of the rationale for selecting those values, if different from the basin at large.

(3) The level of monitoring and analysis appropriate for each management area.

(4) An explanation of how the management area can operate under different minimum thresholds and measurable objectives without causing undesirable results outside the management area, if applicable.

(c) If a Plan includes one or more management areas, the Plan shall include descriptions, maps, and other information required by this Subarticle sufficient to describe conditions in those areas.

CWC Guide to Protecting Drinking Water Quality under the SGMA[12]
TNC's Groundwater Dependent Ecosystems under the SGMA, Guidance for Preparing GSPs[13]

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP define one or more Management Area?	X			"MKGSA has established three management areas (MAs) within the GSAs boundaries. The three MAs consist of the respective jurisdictional areas of MKGSA's three Members, i.e., the City of Visalia, City of Tulare, and the Tulare Irrigation District, and are depicted on Figure 1-1. Below addresses §354.20(b) and (c) of the GSP Regulations for MAs."	2.4, page 59
2. Were the management areas defined specifically to manage GDEs?		X		"MKGSA reviewed the "Natural Community Dataset Viewer" maps for the Kaweah Subbasin to evaluate the possibility of whether groundwater dependent ecosystems could exist in the MKGSA management area. The mapping system identifies stream reaches supporting habitat that may rely on groundwater." But no management areas are specifically defined to manage GDEs. The reasons for the creation of the three aforementioned Management Areas are: • Each Member of the MKGSA is a separate public agency. The two incorporated municipalities are charter cities with the ability to enact laws	5.3.5, page 108 NP-025 2.4, page 59

[12] CWC Guide to Protecting Drinking Water Quality under the SGMA: https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858

[13] TNC's Groundwater Dependent Ecosystems under the SGMA, Guidance for Preparing GSPs: https://www.scienceforconservation.org/assets/downloads/GDEsUnderSGMA.pdf

				distinct from those adopted by the State. The agricultural area is administered by an independent special district. • As distinct public agencies, the GSA Members have differing means of raising funds to comply with SGMA and abilities to implement the projects and management actions described in Section 7 of this GSP. • Water sources vary among Members – Visalia and Tulare rely exclusively on groundwater, whereas TID has local and imported surface water to supplement groundwater uses of its landowners. TID also diverts its surface water supplies to groundwater recharge purposes, particularly in wet years. Furthermore, Visalia's water supply system is owned and operated by the California Water Service Company (CWSC), while Tulare's water supply system is under City ownership and operation. • Financial contributions by each Member towards projects may depend on an evaluation of existing water management agreements among them and on the water accounting framework (Section 6) which will define the water budget components of each Member. These contributions may not be equal and would therefore vary depending on the management area. • Management actions by each Member may differ due to varying water supply sources, participation in projects, and other available resources. • Tulare and Visalia have exclusively urban demands including municipal, industrial, commercial, and residential uses, while TID serves exclusively irrigated agricultural demands and related uses. Small-system and domestic wells also exist within the TID service area, but these types of wells are not prevalent within the confines of the cities. • Each Member has maintained an existing groundwater monitoring program for differing purposes and time periods. While these programs may be incorporated into a common platform for DWR annual reporting purposes, these programs will continue and will be somewhat distinct. • The Corcoran Clay is present beneath both Tulare and TID, and unconfined groundwater is present above the clay while semiconfined/confined groundwater is present beneath the clay. The Corcoran Clay is present beneath the western half of Visalia but not the eastern half, so groundwater occurs under unconfined/confined conditions as well as only unconfined conditions, respectively. In addition, Visalia benefits from percolation from the St. Johns River branch of the Kaweah River flanking its northerly boundary, whereas Tulare and TID do not receive direct percolation from the larger natural water courses in the Subbasin."	
3. Were the management areas defined specifically to manage DACs?		**X**		No management areas are specifically defined to manage DACs.	
a. If yes, are the Measurable Objectives (MOs) and MTs for GDE/DAC management areas more restrictive than for the basin as a whole?			**X**		
b. If yes, are the proposed management actions for GDE/DAC management areas more restrictive/ aggressive than for the basin as a whole?			**X**	.	
4. Does the GSP include maps or descriptions indicating what DACs are		**X**			

located in each Management Area(s)?					
5. Does the GSP include maps or descriptions indicating what GDEs are located in each Management Area(s)?		X			
6. Does the plan identify gaps in the monitoring network for DACs and/or GDEs?		X			
a. If yes, are plans included to address the identified deficiencies?		X		"As stated previously, the interconnection of surface water and groundwater was disrupted many decades ago in the MKGSA. Therefore, a monitoring network and monitoring is not required for this GSA (p. 4-14)." Data has not been presented to substantiate this statement. Per the GSP Regulations (23 CCR §354.34 (a) and (b)), monitoring must address trends in groundwater and related surface conditions (emphasis added). Groundwater level monitoring alone may be insufficient to establish a linkage between groundwater extraction and potentially resulting impacts to environmental resources associated with GDEs and ISWs. The cause-effect relationship between groundwater levels and the biological responses that could result in significant and unreasonable impacts to ISWs and GDEs depends on a number of complicated factors, and this relationship is not characterized or discussed. As such, it is not possible to determine whether the proposed monitoring, minimum thresholds and measurable objectives are sufficiently protective to ensure significant and unreasonable impacts to GDEs and ISWs will be prevented.	4.8, page 83 NP-026

Summary/ Comments

The GSP does not identify that any of the Management Areas are specifically defined to manage GDEs or DACs. NP-027

The GSP should include maps or information of what GDEs and DACs are in each Management Area. NP-028

If any gaps exist in the monitoring networks for GDEs and DACs, they should be clearly identified in the GSP. NP-029

The GSP should provide additional analysis to back-up the conclusion that states "the interconnection of surface water and groundwater was disrupted many decades ago in the MKGSA", and add monitoring of potential GDEs and at any locations where ISWs have been or were previously present. NP-030

6. Measurable Objectives and Undesirable Results

How were DAC and GDE beneficial uses and users considered in the establishment of Sustainable Management Criteria?

Selected relevant requirements and guidance:
GSP Element 3.4 "Undesirable Results" (§ 354.26):

(b) The description of undesirable results shall include the following:

(3) Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results

GSP Element 3.2 "Measurable Objectives" (§ 354.30)

(a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin within 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Are DAC impacts considered in the development of Undesirable Results (URs), MOs, and MTs for groundwater levels and groundwater quality?		X		DACs are not explicitly identified for purposes of developing URs, MOs and MTs, but domestic well users are discussed in terms of URs and MTs. "The potential effects of degraded water quality from migrating plumes or other induced effects of GSA actions include those upon municipal, small community and domestic well sites rendered unfit for potable supplies and associated uses, and/or the costs to treat groundwater supplies at the well head or point of use so that they are compliant with state and federal regulations." "The well impact evaluation summaries for all zones (Appendix 5C) indicate that 18 percent of agricultural wells, 9 percent of public wells, and 21 percent of rural residential wells including domestic wells, would be subject to groundwater levels that would be below their constructed depth. The MKGSA concluded the following based upon recommendations from the GSA Advisory Committee: • Impacts to agricultural wells were not unreasonably beyond what would be considered a standard operation, and therefore the minimum threshold groundwater elevation as projected in 2040 was determined to be acceptable. • Impacts to municipal wells were not unreasonably beyond what would be considered a standard operation, and therefore the minimum thresholds groundwater elevation as projected in 2040 was determined to be acceptable. • Impacts to small-system and domestic wells were greater than the other categories; however, it was determined that with the implementation of assistance measures as outlined in Section 7 of this Plan, the minimum thresholds groundwater elevation as projected in 2040 was determined to be acceptable." "The beneficial uses of groundwater in the Kaweah Subbasin include:	3.2.3.4, page 69 NP-031 5.3.1.3, page 98

				• Municipal and Domestic Supply (MUN) • Agricultural Supply (AGR) • Industrial Service Supply (IND) • Industrial Process Supply (PRO) • Water Contact Recreation (REC-1) • Non-Contact Water Recreation (REC-2) The water quality objectives for each of these beneficial uses, including MCLs and their associated metrics for each constituent, is provided as Appendix 3A. MCLs change as new rules are promulgated by the Federal EPA and SWRCB. MKGSA will provide updates including the addition of any new constituents in its five-year GSP assessments."	5.3.3.2, page 102
2. Does the GSP explicitly discuss how stakeholder input from DAC community members was considered in the development of URs, MOs, and MTs?		X			
3. Does the GSP explicitly consider impacts to GDEs and environmental BUs of surface water in the development of MOs and MTs for groundwater levels and depletions of ISWs?		X		The measurable objective was set equal to the water level at 2030 using the 2006-2016 water level trend for each of the wells selected as representative monitoring sites. The specific measurable objectives for all of the selected wells are listed in Table 5-3. The trend of the 2006-2016 water levels over time was used to set the minimum threshold at 2040 for each of the wells, used as representative monitoring sites, in each of four hydrogeologic zones within the Subbasin (shown on Figure 5.1, p. A5-1). The minimum thresholds and other sustainable criteria for each well are listed in Table 5-3 (p. 5-5). The minimum threshold derived in this manner means that it is based on a pre-SGMA level. For chronic lowering of water level, the GSP Committee considered that one-third of the representative monitoring sites (wells) exceeding minimum thresholds for water levels would constitute an undesirable result. There appears to be no additional guidance to protect potential GDEs or ISWs.	5.4.1, page 109 NP-032
4. Does the GSP explicitly consider impacts GDEs and environmental BUs of surface water and recreational lands in the discussion and development of Undesirable Results?		X		As noted above, an inventory of the vegetation types or habitat types and ranking of the vegetation species as having a high, moderate or low value will provide rational for the statement that "the intermittent nature of this vegetative habitat is such that its temporary loss does not rise to the level of an undesirable result." There appears to be no consideration of undesirable results on land uses that include and consider recreational uses (e.g. fishing/hunting, hiking, boating) and property interests that include and consider privately and publicly protected conservation lands and open spaces, including wildlife refuges, parks and natural preserves. The definition of 'significant and unreasonable' is a qualitative statement that is used to describe when undesirable results would occur in the basin, such that a minimum threshold can be quantified. Potential effects on all beneficial users of groundwater in the basin need to be taken into consideration.	5.3.1.2, page 93 NP-033

				According to the California Constitution Article X, §2, water resources in California must be "put to beneficial use to the fullest extent of which they are capable".	NP-033 (contd.)

Summary/ Comments

Based on the presented information, domestic well uses are considered under URs and for the development of water level MOS and MTs, such as the statistical summary of well impact analysis for domestic wells, but DAC members are not explicitly considered. More detail and specifics regarding DAC members, including those that rely on smaller community drinking water systems, not only domestic wells, is necessary to demonstrate that these beneficial users were adequately considered. NP-034

The draft GSP identifies MTs for both hydrogeologic zones and for individual well points, but does not clearly explain which set of MTs will be applied through the implementation phase of SGMA. NP-035

The approach of setting MOs and MTs based on a continued projected declining water level trend results in MOs and MTs that are significantly lower than current water levels, and those experienced during the drought. The MTs in some areas are nearly 200 feet below current water levels. For example, the MT for well KSB-1071, located near the community of Okieville, is over 170 feet below current groundwater levels and the MT at well KSB-1628, located in north Tulare, is over 190 feet below current groundwater levels. The GSP should provide maps and information clearly identifying the expected water level declines to both the MOs and MTs, and assess the effects it will have on specific areas and communities. NP-036

The trigger for undesirable results (⅓ of wells in all the management zones impacted) creates the potential for disproportionate impacts to disadvantaged communities; those impacts should be assessed. NP-037

The GSP should also discuss whether and how input from DAC members was considered and incorporated into the development of URs, MOs, and MTs. NP-038

The GSP should explain how the measurable objectives will help achieve the sustainability goal as it pertains to the environment. After GDEs and ISWs are identified, please discuss if any impacts to GDEs or ISWs are expected. Data gaps should be noted and addressed in the Monitoring section. NP-039

The GSP should specifically cite "periodic comparisons of surface water elevations and flow rate depletion in applicable stream channels and adjacent groundwater" as a data gap and further address in the monitoring section. NP-040

After the identification and evaluation of potential GDEs is completed, this section should discuss impacts to those GDEs. Specifically, the GSP should: (1) discuss how this undesirable result can be used to avoid impacts to GDEs or ISWs; (2) describe how impacts to these types of properties will be avoided; (3) provide more specifics on what biological responses (e.g., extent of habitat, growth, recruitment rates) would best characterize a significant and unreasonable impact to GDEs; and (4) identify appropriate biological indicators that can be used to monitor potential impacts to environmental beneficial users due to groundwater conditions. NP-041

7. Management Actions and Costs

What does the GSP identify as specific actions to achieve the MOs, particularly those that affect the key BUs, including actions triggered by failure to meet MOs? What funding mechanisms and processes are identified that will ensure that the proposed projects and management actions are achievable and implementable?

Selected relevant requirements and guidance

GSP Element 4.0 Projects and Management Actions to Achieve Sustainability Goal (§ 354.44)

(a) Each Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.

(b) Each Plan shall include a description of the projects and management actions that include the following:

(1) A list of projects and management actions proposed in the Plan with a description of the measurable objective that is expected to benefit from the project or management action.

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP identify benefits or impacts to DACs as a result of identified management actions?	X			"The Okieville Recharge Basin involves the construction of a 20-acre recharge facility, and supporting infrastructure, adjacent and up-gradient of the disadvantaged community of Okieville (a DAC). The project's purpose is two-fold: one, to increase the availability of wet-year recharge capacity and, two, to provide water quality benefits to the residents of Okieville. … Constrained only by the frequency of surplus flow conditions as referenced in Section 7.2 and its intake capacity, the project's accrued benefits (via increased groundwater in storage) through the 50-year Planning and implementation horizon are estimated at 31,500 AF, with average annual benefits at 630 AF/year. Maximum recharge in wet years is estimated to be 1,400 AF. The measurable/optimal objectives to be partially met with this project include groundwater level stabilization and, by proxy, groundwater storage stabilization and reduction in land subsidence rates. Slowing of water quality degradation is anticipated as well, as it is generally accepted that high quality, low-TDS runoff from the Sierra Nevada sources (Kaweah and San Joaquin Rivers) improves groundwater quality and has historically had a dilution effect on both the unconfined and semi-confined aquifer layers. As described in the Coordination Agreement, the KSB computer model has been used to simulate the water-level rise afforded by a generic representation of projects and management actions of the Subbasin GSAs. Future simulations will aid with assessing water-level benefits of this project, both locally and regionally within the GSA. These model simulations may be done in conjunction with other planned projects and management actions to better ascertain benefits in the aggregate."	7.3.2.6, page 127
2. If yes: b. Is a plan to mitigate impacts on DAC drinking water users included in the proposed Projects and Management Actions?	X			**"The implementation of SGMA sets in motion the alleviation of overdraft over time and stakeholder interest in providing assistance**	7.4.8.1, page 165

					to small-system and domestic well owners without the financial wherewithal to service or replace their pump and well facilities, particularly those that provide potable water. To address this situation, several measures are being considered by the GSA's Advisory Committee and governing board for implementation during the early stages of implementation, to wit: **• Annual SGMA progress report to domestic well owners with offer of technical assistance** **• Funds to provide technical assistance and consultation for well repairs and/or replacements** **• Education on RO installation options** **• Periodic and targeted water quality testing for selected domestic wells with owner permission** **• A determination by the GSA to not regulate any de minimis extractor, i.e., any well owner pumping two acre-feet or less annually** **• For rural school district wells and small community water systems, a fund to aid with well rehab/replacement for continued access to groundwater** **None of the aforementioned assistance measures have been approved to be carried out. Further, an economic analysis to evaluate these and any other assistance measures that may be envisioned in the future will be forthcoming prior to any actions being taken by the GSA Board to effectuate any of them."**	
	c. Does the GSP identify costs to fund a mitigation program?		**X**		**"An economic analysis of assistance measures will be undertaken as described in Section 7.4.8.1. It is the purpose of this analysis to estimate costs associated with any such assistance measure. Funding for any assistance measure as described herein would be provided by the GSA members in a contributory fashion yet to be determined."**	7.4.8.5, page 166
	d. Does the GSP include a funding mechanism to support the mitigation program?		**X**			
2.	Does the GSP identify specific management actions and funding mechanisms to meet the identified MOs for groundwater quality and groundwater levels?	**X**			Most of the proposed projects involve recharge to groundwater. "Visalia Eastside Regional Park & Groundwater Recharge project to be built by the City of Visalia consists of a 250-acre park featuring diverse recreational opportunities, native plants, wildlife habitat, and integrated groundwater replacement and storm water retention facilities (p. 7-26)." This is an example of a project with environmental benefits and multiple other benefits. Consistent with existing grant and funding guidelines for SGMA-related work,	7.3.16.1, page 148

				priority should be given to multi-benefit projects that can address water quantity as well as providing environmental benefits or benefits to disadvantaged communities. "Projects and management actions described in this Plan include groundwater recharge projects and programs, surface reservoir projects, leveraged surface water exchange programs, a groundwater extraction measurement implementation program, a conceptual groundwater marketing program, future urban and agricultural conservation, a groundwater allocation mechanism among well owners and operators, and other projects and management actions. Following are each project and management action, along with the measurable objective and associated sustainability indicator that will benefit therefrom." Section 7.1 in the GSP includes a table summarizing the management actions/projects along with the targeting MOs, and most of the projects presented are identified to meet the MOs. The following sections for detailed descriptions of each management actions/projects demonstrate the "Expected Benefits and Targeted Measurable Objectives", for example: "Expected Benefits and Targeted Measurable Objectives Constrained only by the frequency of surplus flow conditions as referenced in Section 7.2 and its intake capacity, the project's accrued benefits (via increased groundwater in storage) through the 50-year Planning and implementation horizon are estimated at 80,500 AF with average annual benefits at 1,610 AF/year. Maximum recharge in wet years is estimated to be 3,600 AF. The measurable objectives/optimal objectives (see Section 5 of this GSP) to be partially met with this project include groundwater level stabilization and, by proxy, groundwater storage stabilization and reduction in land subsidence rates. Slowing of water quality degradation is anticipated as well, as it is generally accepted that high quality, low-TDS runoff from the Sierra Nevada sources (Kaweah and San Joaquin Rivers) provides improvements to groundwater quality and has historically had a dilution effect to both the unconfined and semi-confined aquifer layers. As described in the Coordination Agreement, the Kaweah Subbasin computer model has been used to simulate the water-level rise afforded by a generic representation of projects and management actions of the Subbasin GSAs. Future simulations will aid with assessing water-level benefits of this project, both locally and regionally within the GSA. These model simulations may be done in conjunction with other planned projects and management actions to better ascertain benefits in the aggregate"	7.1, page 123 7.3.1.6, page 126
3. Does the GSP include plans to fill identified data gaps by the first five-year report?	**X**			"The following data gaps were identified for the MKGSA: • Accurate count of wells in MKGSA area, including well type (domestic, irrigation, etc.) and status (active, inactive, abandoned) • Construction details of wells, especially production/screen interval(s). This was a significant data gap that prevented a comprehensive understanding of	2.2, page 57

				groundwater level and groundwater quality conditions above and below the Corcoran Clay • Lithologic composition of aquifer, including geophysical logs at strategic locations • Hydraulic parameters of principal aquifers based on pumping tests • Water quality data for domestic and irrigation wells • Measurements of subsidence within the MKGSA. The historical record of measured subsidence is incomplete and provides no information to inform an understanding of subsidence with depth The data gaps will be addressed as MKGSA implements the management actions designed to close such gaps, as described in Section 7.4." "The MKGSA recognizes that its initial monitoring network as described in Section 4 of this Plan includes existing monitoring sites lacking sufficient information such as well depth, screen intervals, and reliable well-log records, thereby reflecting significant data gaps. Assessing these data gaps is a priority and will be conducted in accordance with §352.2 and §354.38 of the Regulations. Specific elements of such an assessment are to include: Targeting GSA areas where an insufficient number of monitoring sites exist or where sites are considered unreliable or do not meet monitoring network standards • Identifying data gap locations and reasons for their occurrence and surrounding issues that restrict monitoring and data collection • Actions to be undertaken to close identified data gaps, including the addition and/or installation of new monitoring wells or surface-water measuring facilities, closure of inadequate well density areas, and needed adjustments to monitoring and measurement frequencies • Improvement to the monitoring program and network to provide sufficient information to gauge the effectiveness of projects and management actions, including an assessment of the network's ability to determine exceedance of minimum thresholds, capture spatial or temporal variation in groundwater conditions, and adverse impacts upon beneficial uses and users of the groundwater resource • The periodic assessment will also include a general determination of whether the monitoring network has been or is capable of evaluating groundwater conditions and impacts of GSA projects and management actions on the ability of adjacent subbasins to meet their sustainability goals or to implement their respective GSPs"	8.2.1, page 182
4. Do proposed management actions include any changes to local ordinances or land use planning?		**X**		**"The City of Visalia has a well permit application for the construction or destruction of wells within its jurisdiction. The county is revising their well permit application based on GSA input"** "Authority for groundwater measurement collection and processing resides within SGMA as previously cited. It is not anticipated that additional	1.4.4, page 28 7.4.1.3, page 154

					permitting or regulatory reliance will be necessary to implement a pilot-level program or to scale up to full coverage within the GSA by 2025." "As referenced in Section 2.5.1.4 of the subbasin Basin Setting document, urban water usage in the future is expected to comply with the conservation mandates contained in SB 606 and AB 1668, both bills signed into law in May 2018. Based on that legislation, indoor residential use is to be capped at 55 gallons per capita per day (gpcd) in 2019 and ramped down to 50 gpcd by 2030, and outdoor residential use is to be capped in the future based on local climate and size of landscaped areas. Standards for outdoor usage are to be defined in a SWRCB rule-making process to be completed by June 2022. … Urban water conservation compliance currently derives from SB7X-7 passed in 2009 (Water Conservation Act of 2009), and the UWMPs of both Tulare and Visalia, along with associated ordinances, reflect that Act's mandates of a 20 percent reduction in urban per capita water usage by 2020. Future achievements in urban conservation will be as derived from the passage of AB 1668 and SB 606 in 2018. Future amendments to UWMPs and modified ordinances of both cities will eventually embody these recent laws."	7.4.6, page 164
5.	Does the GSP identify additional/contingent actions and funding mechanisms in the event that MOs are not met by the identified actions?		**X**			
6.	Does the GSP provide a plan to study the interconnectedness of surface water bodies?		**X**		"Because there are no interconnected surface waters in the MKGSA jurisdictional area, and such interconnection is not likely to occur in the future, MKGSA did not develop minimum thresholds for interconnected surface waters." "As noted in Section 5.3.5, the MKGSA jurisdictional area does not exhibit interconnected surface waters nor will it include such interconnected waters in the future. For this reason, the GSP does include measurable objectives for interconnected surface waters."	5.3.5, page 108 5.4.5, page 114
7.	If yes: a. Does the GSP identify costs to study the interconnectedness of surface water bodies?			**X**		
	b. Does the GSP include a funding mechanism to support the study of interconnectedness surface water bodies?			**X**		
8.	Does the GSP explicitly evaluate potential impacts of projects and management actions on groundwater levels near surface water bodies?		**X**		Recharge ponds, reservoirs and facilities for managed stormwater recharge can be designed to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. In some cases, such facilities have been incorporated into local HCPs, more fully recognizing the value of the habitat that they provide and the species they support. For projects that will be constructing recharge ponds.	
Summary/ Comments						

A brief description of a project benefit to one DAC is provided in the GSP, but not discussed in detail. A discussion should be added for each project or management action to clearly identify the benefits to DAC drinking water users and potential impacts to the water supply. For all potential impacts, the project/management action should include a clear plan to monitor for, prevent, and/or mitigate against such impacts. The GSP should identify additional actions and funding mechanisms for potential failures of achieving the MOs by the identified actions.

NP-042

An assistance program for small water systems and domestic wells is described, but does not include an assessment of costs or a funding mechanism or clear plan of implementation. This program is described because the acknowledged impacts the proposed water level MTs will have on these beneficial users. Such a program needs to be robust and proactive, rather than reactive, so that clean and safe drinking water is available to these users without interruption as water levels decline. It is critical that a funding mechanism be identified and implemented to ensure that this program is successful.

NP-043

The GSP should state how ISWs and GDEs will benefit or be protected, or what other environmental benefits will accrue.

NP-044

The GSP should also identify if there will be habitat value incorporated into the design of projects and how the recharge ponds will be managed to benefit environmental users.

NP-045

Focused Technical Review:
July 31, 2019 Mid-Kaweah GSA Public Review Draft Groundwater Sustainability Plan

Water Levels

The draft Groundwater Sustainability Plan (GSP) developed by the Mid-Kaweah Groundwater Sustainability Agency (MKGSA) sets the minimum thresholds (MTs) for groundwater levels as the groundwater levels projected through 2040 based on the average groundwater level decline observed over the 2006-2016 time period. Similarly, the MKGSA sets the measurable objectives (MOs) for groundwater levels as the groundwater levels projected through 2030 using the same declining water level trend. This approach is intended to represent continued long-term drought conditions. The draft GSP defines the undesirable result (UR) for chronic lowering of water levels as being when one-third of the representative monitoring sites in the Kaweah Subbasin (subbasin), across all three GSAs, exceed their respective MTs. This approach is consistent with the approach used in the East and Greater Kaweah GSPs and leaves key beneficial users in the subbasin, specifically domestic well users and members of disadvantaged communities (DACs), potentially vulnerable to impacts. While an assistance program is identified in the draft GSP, that program currently lacks key details that would make it a robust mitigation measure for these beneficial users.

SL-001

- The draft GSP presents water level MTs by: (1) hydrogeologic zones that reportedly share similar groundwater conditions and hydrogeologic behavior (Table 5-2); and (2) by Representative Monitoring Wells (RMWs) (Table 5-3). According to the draft GSP, the hydrogeologic zone MTs are based on the average of the RMW MTs for a particular area. As stated in Section 5.3.1.3, "Consistent with this requirement, the minimum elevation thresholds in this Plan are set at specific levels based on four different hydrogeologic zones as defined herein." However, well impact analyses are performed based on the MTs developed for each individual RMW, and the MOs are only established at the RMWs (i.e., not by hydrogeologic zones). **Based on the conflicting information presented in the draft GSP, it is not clear which set of MT values will be used for compliance purposes through the GSP implementation phase. Sustainable Management Criteria (SMC), including MTs and MOs, should be clearly identified and applied consistently in the GSP.**
- As shown on **Figure 1**, the MKGSA area includes over 750 domestic wells, three DWR-designated DACs[1] (i.e., Tulare, Matheny Tract, Okieville, and Waukena) with a collective population of over 63,000 people, and two additional small communities adjacent to Tulare that are dependent on groundwater for drinking water purposes (i.e., Soults Tract, and Lone Oak Tract). The MKGSA also includes 13 community water systems, 11 of which have less than 300 service connections but collectively serve over 5,300 people. Despite this broad and diverse dependence on groundwater for drinking water use, the approach to setting water level MTs/MOs and URs does not explicitly take these drinking water beneficial users into account. As described above, the MTs for each threshold region are set based on an assumed trajectory of decreasing water levels over the next 20 years, without regard to well depths or other potential impacts. The draft GSP acknowledges

[1] Designated at the Census Place and Tract levels.

that impacts to small water systems and domestic wells will be greater than impacts to other well users, but according to the draft GSP, the MTs were determined to be acceptable with the implementation of potential assistance measures (Section 5.3.1.3). **However, according to Section 7.4.8.1 of the draft GSP, none of the identified potential assistance measures for small water systems and domestic wells have been approved by the MKGSA Board and it is not clear how the assistance measures will be implemented or funded. The GSP should describe how this approach is protective of the diverse drinking water users in the MKGSA without a clear implementation plan for the identified assistance measures.**

- **Table 1** below identifies the current groundwater elevation and the MO and MTs for RMWs near DACs and other groundwater-dependent communities in the MKGSA. The groundwater level MT in the vicinity of these communities is an average of 118 feet lower than current conditions. In the area of Okieville[2] (Chart 1 below), the MT is 171 feet lower than current conditions, and in north Tulare, the MT is 192 feet lower than current conditions. Even if groundwater levels are maintained at the proposed MOs, groundwater levels will drop by an average of 87 feet from current water levels in these areas. The draft GSP states that, based on stakeholder input, "the largest impact on declining groundwater levels historically was the dewatering of some wells, forcing homeowners, businesses, farmers, and other groundwater well owners to drill new replacement wells" (Section 5.3.1.2). **Given that the subbasin is in critical overdraft and negative impacts have already been experienced by beneficial users in the MKGSA due to declining water levels, the GSP should explain how a projected additional water level decline of nearly 200 feet in some areas will result in sustainable conditions for beneficial users. The GSP should consider and quantify both the potential dewatering of wells and the increased pumping costs associated with the increased lift at the projected lower water levels.**

SL-001 (contd.)

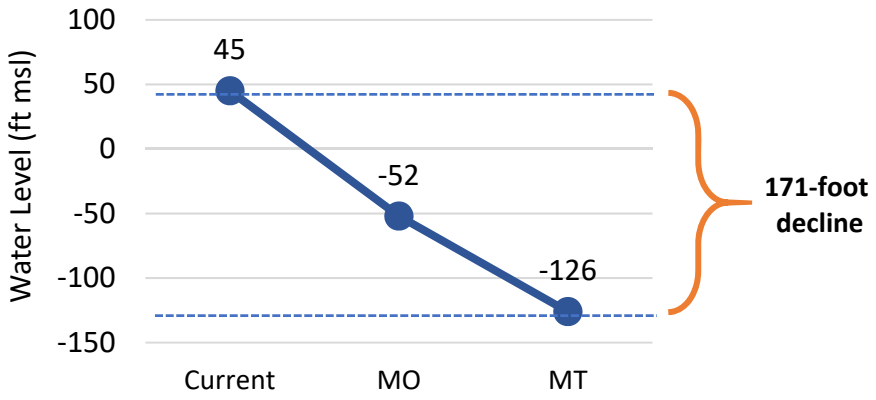
Table 1
Groundwater Elevation Sustainable Management Criteria
Near Selected Communities

Community	Nearby RMW	Current Groundwater Elevation (ft msl)*	MO (ft msl)	MT (ft msl)
Okieville	KSB-1071	45	-52	-126
Waukena	KSB-0922	70	19	-22
Soults Tract/ Lone Oak Tract/ Matheny Tract	KSB-1538	130	83	62
Tulare (mid)	KSB-1695	140	13	72
Tulare (north)	KSB-1628	100	-21	-92
Average Change from Current Elevation (ft)			**-87**	**-118**

* ft msl = feet mean sea level; typically 2017-2018 water levels.

[2] Many members of the Okieville community now receive drinking water from the newly-established Okieville/ Highland Acres Mutual Water Co., which operates a nearly 1,000-foot deep well. However, approximately 20 households in this community and more in the surrounding areas still depend on private wells and thus are at greater risk of impacts from declining water levels.

Chart 1
Groundwater Level Decline Associated with MOs and MTs Near Okieville (RMW KSB 1071)



- The draft GSP includes a limited evaluation of well impacts (Section 5.3.1.3 and Appendix 5c) that compares the known screened intervals of agricultural, public, and domestic wells with the projected 2040 groundwater elevation at each well to estimate the number of wells that would be dewatered. The results of the well impact analyses are categorized by zone and well type. However, this analysis does not appear to actually evaluate the potential well impacts based on either the hydrogeologic zones MTs (Table 5-2) or the RMWs MTs/MOs (Table 5-3). In addition, which wells are within the MKGSA and the locations of these wells that are expected be impacted are not clearly stated or mapped in the draft GSP. **Therefore, the well impact analyses performed in the draft GSP does not appear to actually evaluate the potential impacts to subbasin wells associated with the MTs/MOs developed by the MKGSA. Since the MOs are also based on projected declining water level trends, a well impact analyses should also be performed on the MOs. Furthermore, locations of potentially impacted wells should be provided in order to assess the well impacts specific to DACs, small water systems, and other sensitive users within the MKGSA.**

SL-001 (contd.)

- Based on the well impact evaluation in Section 5.3.1.3 and Appendix 5C, "18 percent of agricultural wells, 9 percent of public wells, and 21 percent of rural residential wells including domestic wells, would be subject to groundwater levels that would be below their constructed depth" if water levels reach the MTs, as identified at the hydrogeologic zone level. This assessment appears to have been done relative to the bottom of the total well construction depth. However, water supply wells become unusable or subject to decreased performance and longevity as water levels fall within the screened interval, which will occur before water levels reach the bottom of the well. **Therefore, the actual number of domestic wells that would be significantly impacted at the proposed water level MTs would be expected to be higher than represented in the draft GSP.**
- **Figure 2** shows the approximate locations of domestic wells and water level RMWs (including the proposed new wells) within the MKGSA area. For purposes of this evaluation, a one-mile radius is shown around each RMW for which ground surface elevations (GSEs) were provided in the draft GSP. Based on available well construction information, the well screens of the domestic wells located within this one-mile radius are compared to the proposed MOs and MTs for the RMWs with

provided GSE data. For purposes of this assessment, a well is identified as *fully dewatered* if the MT is below or at the bottom of the well screen interval and a well is identified as *partially dewatered* at if the MT is below or at the midpoint of the well screen interval. Approximately 30% of domestic wells in the MKGSA are located within the one-mile buffer of RMWs with both MT/MO and GSE data. When water levels reach MTs, approximately 71% of these domestic wells would be expected to be fully dewatered and an additional 15% of these wells would be expected to be partially dewatered. Even at the MO water levels, approximately 64% of these domestic wells would be expected to be fully dewatered and 9% of these wells would be expected to be partially dewatered. These estimates are much higher than the 21% of rural residential/domestic wells identified as being impacted in Section 5.3.1.3 of the draft GSP. We acknowledge that this is a "quick and dirty" assessment of domestic well impacts; however, these results do not appear to be consistent with the analysis presented in the draft GSP. Further, as identified in a previous comment, the draft GSP is not clear on whether MTs are intended to be applied at the RWM-level or the hydrogeologic zone level. Given that the hydrogeologic zone MTs are the average of the RMW MTs, the way the criteria are applied may have a significant difference in the level of impacts experienced at localized areas. **The GSP should present a thorough and robust analysis, supported by maps, that identifies: (1) what domestic wells are likely to be impacted (including partially dewatered) at the MTs and at the MOs, and (2) the location of the likely impacted wells with respect to DACs and other communities and systems dependent on groundwater. Also, pursuant to 23 CCR § 352.4, the GSP should include GSEs for all RMWs.**

SL-001 (contd.)

- Given that water levels in one-third of all RMWs across all three subbasin GSAs must drop below MTs in order for an UR to be triggered, **significant and unreasonable impacts could occur within significant portions of the subbasin without triggering a subbasin UR. The draft GSP should include a local UR definition that makes it clear that the MKGSA will locally define and address an UR within its service area and protect beneficial users of groundwater.**

Water Quality

The draft GSP sets the MTs for water quality at Maximum Contaminant Levels (MCLs) or the Agricultural Water Quality Objectives (WQOs) at each RMW based on the dominant beneficial use for that monitoring well. The MOs for water quality were set at 75% of the MCLs or WQOs. The draft GSP further defines the UR for degraded water quality as being when one-third of the RMWs in the subbasin exceed an MT. Section 2.2 of the draft GSP identifies arsenic, nitrate, certain volatile organics, and 1,2,3-trichloropropane (TCP) as Constituents of Concern (COCs) for the MKGSA due to concentrations near MCLs or due to increasing trends. The draft GSP further identifies the following constituents to be measured where applicable (Section 3.2.2.4): arsenic, nitrate, chromium-6, dibromochloropropane (DBCP), TCP, tetrachloroethylene (PCE), sodium, chloride, perchlorate, total dissolved solids (TDS). For the reasons identified below, the water quality monitoring network and analysis presented in the draft GSP does not clearly illustrate how the MOs/MTs will be sufficient to ensure that the stated water quality UR of impacting the long-term viability of the groundwater resource, particularly for domestic water users and DACs, will be avoided.

SL-002

- The draft GSP identifies a methodology used to distinguish between the applicability of either MCLs or agricultural WQOs as the MTs for a given RMW. As stated in Section 5.3.3.3, "If the majority of the beneficial use (greater than 50% of the pumping within a determined area) was agriculture and there were no public water systems (including schools) the minimum threshold would be a host of agricultural water quality constituents" and "If a monitoring well is located within an urban area, or near a public water system (e.g., within a mile), which includes schools, then the minimum threshold would be set at the MCL for drinking water." However, the draft GSP does not clearly identify on a map or otherwise which RMWs will use MCLs and which will use agricultural WQOs. The document also does not identify which monitoring wells are located within an urban area or near a public water system. **For transparency and completeness, the GSP should clearly identify on maps and in tables which set of MTs/MOs will be applied to which RMWs. These maps should clearly identify the location of DACs, small water systems, and other sensitive users so that the public is able to review and evaluate the proposed sustainability approach. Per 23 CCR §354.28, the draft GSP should provide a detailed explanation as to how the proposed water quality MTs may affect the interests of beneficial uses and users of groundwater or land uses and property interests.**

SL-002 (contd.)

- **Figure 3** shows the water quality monitoring network identified in Figures 4-6 and 4-7 of the draft GSP, including the new proposed multi-level monitoring wells. The water quality RMWs are focused in the northern and eastern portions of the MKGSA area and the monitoring well density varies by two orders of magnitude across the MKGSA. Specifically, the density of water quality RMWs in the northern portion of the MKGSA area (Visalia area) is approximately two RMWs per square mile, the eastern portion (Tulare and surrounding area) has density of about 0.6 RMWs per square mile, and even with the new proposed wells, the western portion will have a density of about 0.06 RMWs per square mile. Although the western portion of the MKGSA, including the communities of Okieville and Waukena are more sparsely populated than the eastern portion, there are at least 200 domestic wells and several public water systems (including the Okieville/Highland Acres Mutual Water Company, Waukena Elementary School, and Buena Vista School systems) located in this area. **The GSP should clearly demonstrate how the proposed water quality monitoring network in the western portion of the MKGSA area is sufficient to monitor for impacts to beneficial users in this area, given the significant density discrepancy compared to the other portions of the MKGSA area.**

- The draft GSP stated that "An exceedance of any of the MCL or agricultural metrics as defined herein at any representative monitoring sites will trigger a management action within the applicable Management Area or GSA, subject to determination that the exceedance was caused by actions of the GSA" (Section 5.3.3.3). **However, the draft GSP does not identify which management action(s) will be implemented. Additional information is necessary in order to evaluated whether the proposed plan is protective of beneficial users in the subbasin.**

- The draft GSP states that "MKGSA will evaluate groundwater quality degradation by either directly performing groundwater sampling at representative monitoring sites and *[sic]* coordinating with other agencies responsible for the collection and reporting of groundwater quality through other regulatory programs" (Section 5.3.3.3). Appendix 2A of the draft GSP includes a discussion of groundwater quality conditions for the subbasin; however, it is not specific to the MKGSA area and it is difficult to readily understand what parts of this assessment are specifically applicable to the MKGSA. **It is therefore recommended that the GSP include specific discussions of the water quality**

conditions and trends for applicable constituents and uses within the MKGSA area. It is further recommended that this analysis clearly include an evaluation of the change in water quality constituent concentrations relative to change in water levels, particularly over drought periods, to evaluate the potential relationship between water quality and groundwater management activities.[3]

SL-002 (contd.)

- The draft GSP identifies RMWs for water quality on Figure 4-6 and Figure 4-7, but does not include well construction information for these wells. Table 4-5 in the draft GSP shows well construction information for a subset of water level RMWs. **Without well construction information for monitoring wells included in the GSP, the public and DWR cannot evaluate if the monitoring wells are: (1) adequate for evaluating water levels relative to the MOs and MTs over the long term, and/or (2) how representative the water quality sampling depths are of the zones used for drinking water purposes by domestic well users and community water systems. Pursuant to 23 CCR § 352.4, this information is required to be provided in the GSP for all monitoring wells.**

Management Actions

- The draft GSP describes a plan to develop a groundwater extraction allocation program between 2020 and 2025 (Section 7.4.2) and states that "this initial phase of an allocation program shall exclude those well owners who extract less than two AF per year (i.e., de minimis extractors)." Under Section 7.4.8.1, it is acknowledged that the early stages of planning for the assistance program will include "A determination by the GSA to not regulate any de minimis extractor, i.e., any well owner pumping two acre-feet or less annually." This provision is critical to ensure that drinking water users, including DACs and other domestic well users, will continue to have access to drinking water and **therefore, the GSP should provide stronger clarification that this provision will be included in any allocation program through and beyond the 2025 timeframe.**

SL-003

- As described above, the draft GSP indicates that it will not impose pumping restrictions on well owners that extract less than two AF per year, but does not address small water systems that may extract over two AF per year, but serve critical drinking water needs, such as the Soults Mutual Water Company, Okieville/ Highland Acres Mutual Water Company, and the Waukena Elementary School system. **The GSP should therefore clearly identify how a groundwater allocation program would be designed to protect small water systems and the beneficial users that depend on them.**

- As discussed above, the draft GSP identifies an impact to 21% of rural/domestic wells, and based on our "quick and dirty" evaluation herein, the actual impacts could be much higher. Given these impacts to well owners, the draft GSP identifies assistance measures that are being considered for small water systems and domestic wells (Section 7.4.8.1). **If assistance measures are planned to mitigate impacts to drinking water wells, then the draft GSP should provide clear funding mechanisms and implementation plans for these assistance measures. The GSP should also consider the following in its implementation plan:**

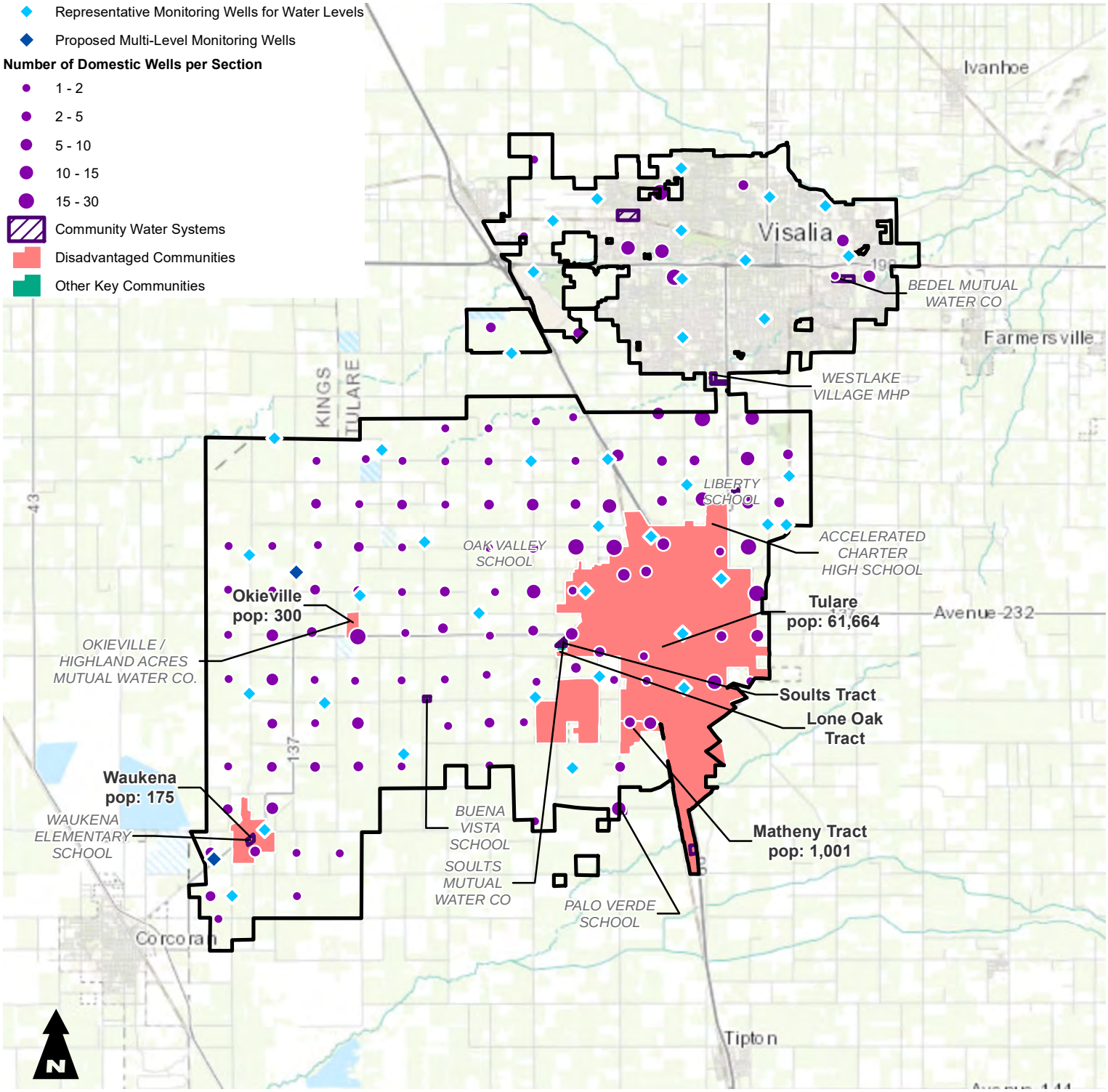
[3] Stanford, 2019. *A Guide to Water Quality Requirements Under the Sustainable Groundwater Management Act,* Spring 2019.

- A secure and reliable funding source and mechanism for implementation of any assistance measures needs to be identified. While grant or emergency funding could potentially be available for such a program when needed, the availability of these funds is not certain. A more secure funding mechanism could be the establishment of a reserve fund that is paid into on an annual basis and accrues funds that would then available as water levels drop in the future.
- The implementation of an assistance measure program should be triggered before wells begin to become unusable, so that funding will be available, and the necessary planning and contracting will be completed such that the necessary construction will be implemented without unnecessarily leaving community members without access to drinking water. Thus, the measure should be designed to be proactive, rather than reactive.
- An assistance measure should not be established only in case of emergency, such as the emergency measures implemented in portions of the state during the last drought. Droughts are said to be becoming more and more frequent and severe, and as such should be included as part of the long-term sustainability planning for the subbasin.

SL-003 (contd.)

Figure 1 - Representative Monitoring Network for GW Levels Relative to Domestic Wells, DACs, and Community Water Systems

Mid-Kaweah GSA



Notes

1. All locations are approximate.

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Disadvantaged community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/.
3. Community Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer.
4. Groundwater level monitoring well information are from Figure 4-4 and Figure 4-7 in Mid-Kaweah GSA GSP - Public Review Draft dated July 2019.

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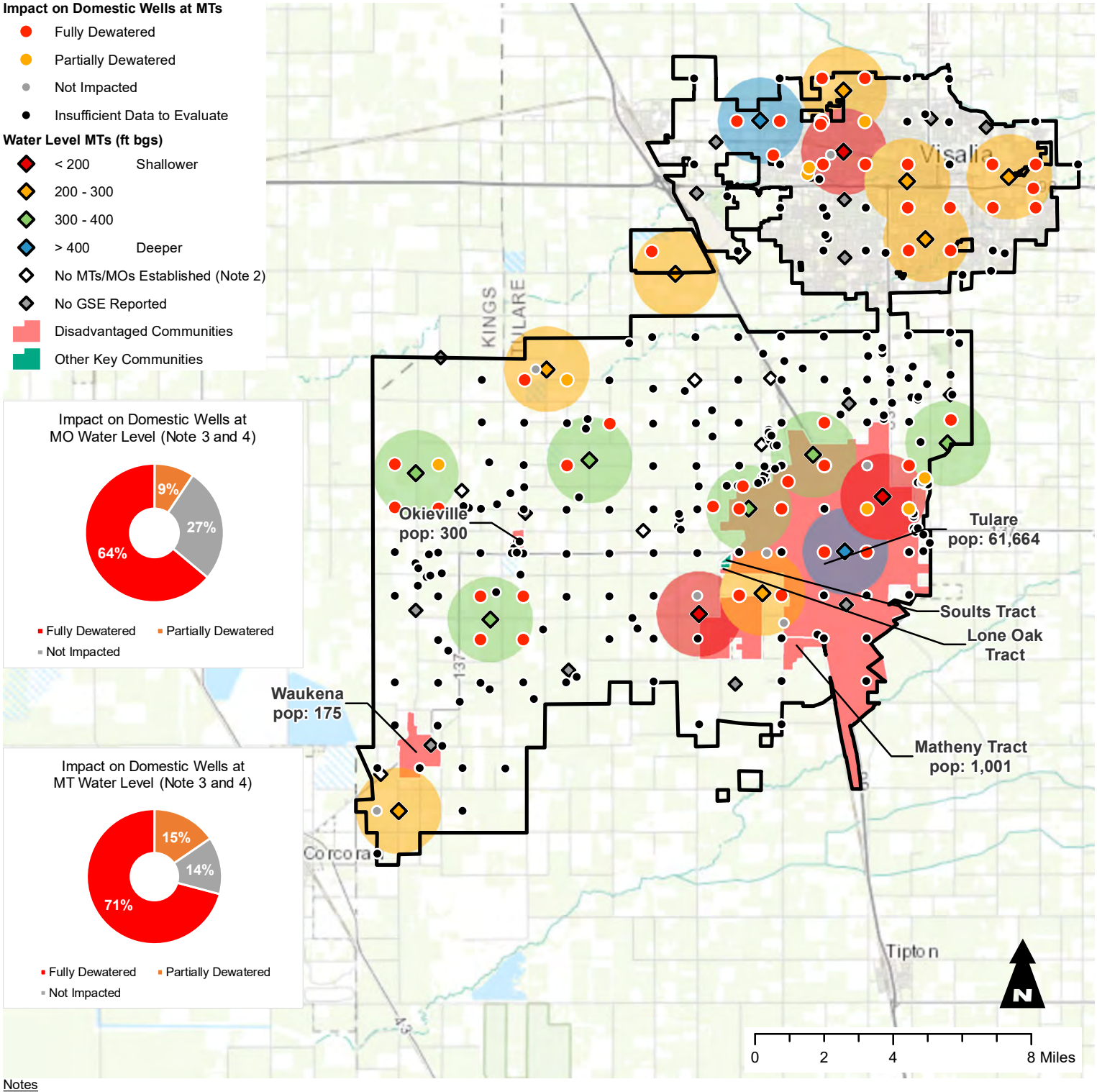
Figure 2 - Water Level Minimum Thresholds and Domestic Wells
Mid-Kaweah GSA



Notes

1. All locations are approximate.
2. There are four recently constructed wells for which MTs and MOs have not been established because "the wells are new and empirical groundwater level data was not available for the period 2006 to 2016", per the draft GSP.
3. For this assessment, the proposed MTs and MOs in ft above sea level presented in Table 5-3 were converted to depth below ground surface values, based on the ground surface elevation (GSE) from Appendix 2A. Approximately half of the monitoring wells do not have GSE reported in the GSP and therefore nearby domestic wells were not evaluated herein.
4. Where available, bottom of screen interval of a domestic well was used for this assessment, and bottom of well depth was used for the remaining domestic wells. A well is identified as fully dewatered if the MT (or MO) is below the bottom of the well screen interval; a well is identified as partially dewatered if the MT (or MO) is below the midpoint of well screen interval.

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Disadvantaged community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/. Last updated in 2016.
3. Groundwater level monitoring well information are from Figure 4-4 in Mid-Kaweah GSA GSP - Public Review Draft dated July 2019. MT and MO values are from Table 5-3 of the draft GSP. GSE values are from Appendix B Table of the draft GSP Appendix 2A.

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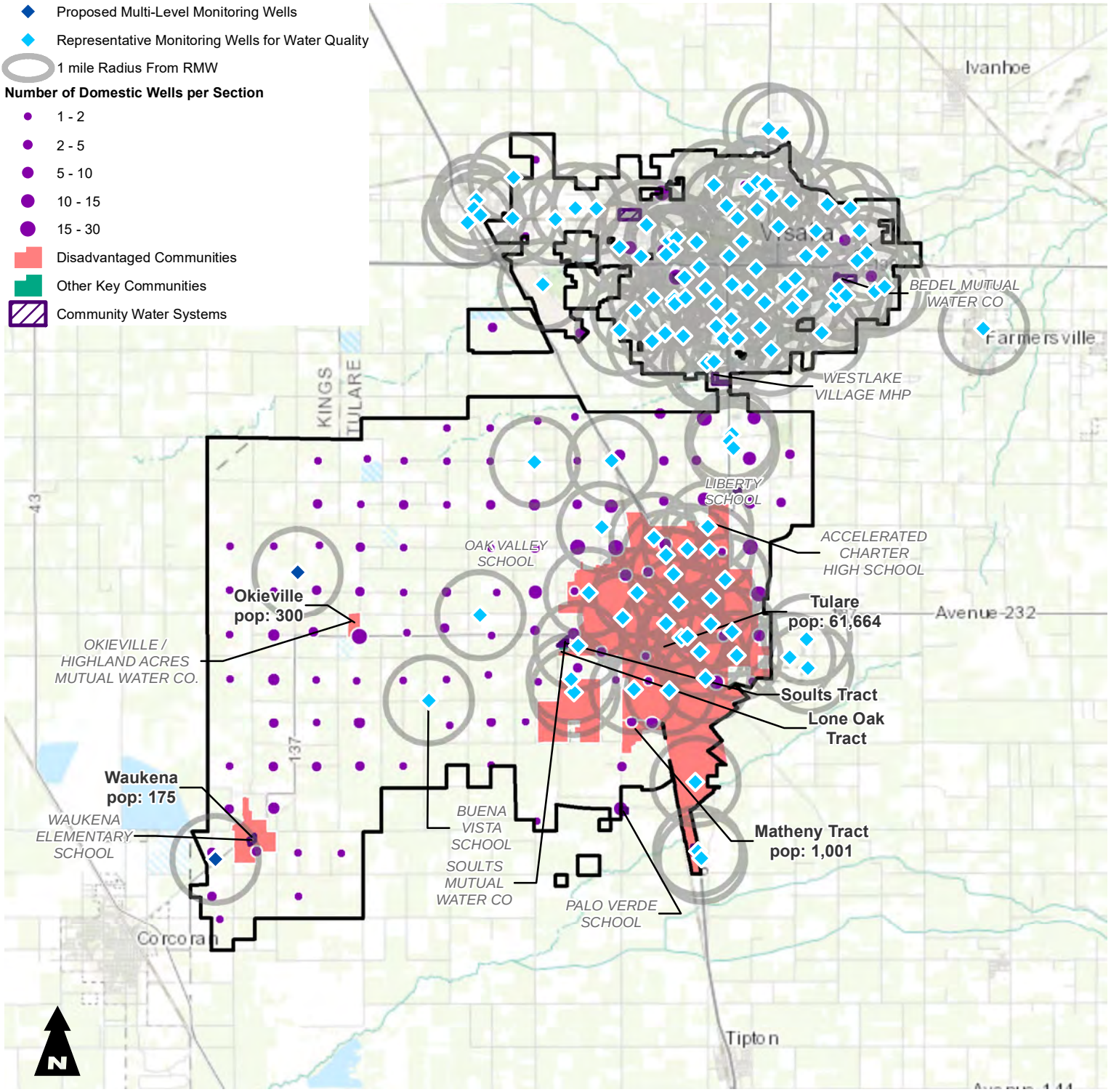
Figure 3 - Representative Monitoring Network for GW Quality Relative to Domestic Wells, DACs, and Community Water Systems

Mid-Kaweah GSA



Notes

1. All locations are approximate.

References

1. Domestic Well Densities: Research to develop the CWC Vulnerability Tool draft as of August 6, 2019.
2. Disadvantaged community data (place, tract, and block group): downloaded on August 6, 2019 from the DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/.
3. Community Water System data: downloaded on August 6, 2019 from Tracking California: https://trackingcalifornia.org/water/map-viewer.
4. Groundwater quality monitoring well information are from Figure 4-6 and Figure 4-7 in Mid-Kaweah GSA GSP - Public Review Draft dated July 2019.

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GSP Section: Introduction & Plan Area

Description of Plan 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 these communities are explicitly addressed early on in the GSP. In order to improve this section, we recommend the following:

- **Include a map indicating the location of public water systems serving SDACs and/or DACs as well as domestic well communities.** In order to contextualize the subsequent sections of the GSP, it is critical that the geographic locations of these communities be included. Maps overlaying the location of these communities should also be included in subsequent sections of the GSP, including but not limited to when describing management areas, threshold regions, or potential recharge locations.
- **Include a description of the amount of groundwater that each public water system serving SDACs and DACs is dependent on.** In addition to better quantify groundwater usage by each community, include a description of the amount of domestic wells located within the MKGSA and the estimated amount of total groundwater used by domestic well users.

Notice and Communication

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[1]. It invites citizens to get involved in deliberation, dialogue, and action on public issues that are important to them. More importantly, it helps leaders and decision-makers have a better understanding of the perspectives, opinions, and concerns of citizens and stakeholders, especially the underrepresented ones. This section of the GSP is generally in accordance with SGMA regulations and adequately captures beneficial uses and users of groundwater. Please consider the following recommendations to ensure more effective public engagement:

- **Within the GSP include a high level summary of strategies included in the plan.** The draft GSP currently only mentioned plan goals and requirements and would benefit from a more expanded description.
- **Revise Section 1.5.2 to include water supply for Soults Tract, Lone Oak Tract, and the water systems of Waukena Elementary, Buena Vista, Oak Valley and Liberty School**
- **Provide more information about stakeholder input and responses from the GSA to address the stakeholder input.**
- **Account for S/DAC outreach, engagement and translation services when applying for state funding, establishing and approving operating budgets and enacting groundwater fees:** In order to ensure proper engagement of underrepresented groundwater users or the next 20 years of GSP implementation, (disadvantaged communities, residents relying on domestic wells and other Spanish speaking users), MKGSA should account for S/DAC outreach, engagement and translation services when applying for state funding, establishing and approving operating budgets and enacting groundwater fees. The GSA should hire qualified consultants who have a record of proven demonstrated success and clear qualifications for working with these

[1] DWR. (2018) Stakeholder Communication and Engagement.

stakeholders. Effective community outreach and engagement includes, but is not limited to, conducting direct community outreach, hosting local community meetings, providing bilingual information, and making interpreting services available at meetings and workshops.

- The current draft GSP provides limited information regarding how communication and updates related Plan implementation will take place and how this will be accomplished. Please consider the following suggestions:
    - **Utilize existing community venues for community meetings, workshops and events to provide information.** For example, consider conducting short presentations during water board and school district board meetings. Venues should be carefully selected in order to meet the needs of the targeted audience.
    - **Identify community social media (Facebook, Instagram, etc.) groups, pages and websites and post information.** Continue to develop media advisories, press releases and work with local media outlets, such as local radio stations, television stations, and local newspapers to captivate a broader audience that are not being reached via the electronic-based outreach currently used.
    - **Identify, and work with key community leaders /trusted messengers to distribute information and encourage community participation.**
    - **Provide bilingual (English and Spanish) information and materials on the website, via email and consider inserting short notices (notices can include key messages, visuals and information that is relevant to the average water user) in water bills and/or community newsletters.** At a minimum, this information should be provided during plan updates, and prior to critical decisions. In particular, the draft GSP released during the formal comment period should include materials highlighting key summaries of the GSP. Critical decision points can also include the adoption of groundwater fees, development and adoption of the potential Assistance Program as well as the Groundwater Allocation Framework, and the Pumping Restriction Program.
    - **Partner with other educational programs to leverage resources and explore opportunities to educate different generational groups.**

GSP Section: Basin Setting

The GSP basin setting requirements are intended to describe the hydrological and groundwater historical changes that have affected the six sustainability indicators. Ultimately, this information is intended to document conditions and quantify the water budget in sufficient detail in order to build local understanding of how it will be used to predict how these same variables may affect or guide future management actions[2].

The current GSP draft does not include information about local groundwater conditions for MKGSA, yet it encourages the reader to review Appendix 2A to understand the hydrogeologic and groundwater conditions within the context of the entire Subbasin. However, Appendix 2A is not specific to the MKGSA area and it is difficult to readily understand what parts of this assessment are specifically applicable to

[2] DWR, 2016. Best Management Practices for the Sustainable Management of Groundwater, Modeling (BMP #5), December 2016.

the MKGSA. Moreover, the lack of a summary highlighting the main conditions affecting groundwater use and users within MKGSA boundaries creates a challenge in understanding how the data will be further utilized in other sections of the GSP. It is therefore recommended to:

- **Include specific information of the Basin Setting and trends within the MKGSA area, in particular as it pertains to the groundwater conditions in section 2 of the GSP.** Providing context of local challenges in a single section within the Mid-Kaweah GSP draft GSP would improve the ability of the public to evaluate the basin setting assumptions for reasonableness and completeness to prevent and mitigate for undesirable results.

Hydrogeologic Conceptual Model

In order to better depict the hydrogeologic considerations for vulnerable groundwater users, we recommend the following changes:

- **Summarize and highlight important information for the MKGSA from Appendix 2A.**
- **Include a description of how groundwater quality considerations also impact the potential of recharge suitability under the description of Potential Recharge Areas.**
- **Include the location of SDACs and DACs and domestic wells in Figure 16 and 18 of Appendix 2A.** By adding the spatial distribution of communities, stakeholders will be better able to assess which of these communities could benefit from future recharge projects.

Groundwater Conditions

SHE strongly encourages that the Groundwater Conditions section be improved in order to better achieve the objectives described in the GSP regulations and be more aligned with the guidance provided in DWR's GSP Emergency Regulations Guide. In particular, it is of utmost importance that information specific to the MKGSA area from Appendix 2A is discussed in this section, and that data regarding the water issues affecting groundwater sources of S/DACs and households relying on domestic wells is improved.

As part of GSP Regulations Section §355.4, DWR is required to evaluate whether the interests of the beneficial uses and users of groundwater in the basin, as well as the land uses and property interests potentially affected by the use of groundwater in the basin, have been considered[3]. S/DACs and rural families relying on shallow domestic wells are extremely vulnerable to changes in groundwater conditions. As such, impacts to their drinking water sources caused by changes in groundwater levels, plume migration, increased degradation of groundwater quality, and subsidence should not be overlooked and these impacts deserve a more in-depth evaluation. A description of the current issues affecting these vulnerable users is key to demonstrating that the MKGSA is taking proactive actions to protect their human right to water. Without adequate characterization of current and historic challenges that communities dependent on groundwater face, MKGSA will not be able to effectively plan to quantify or avoid potential impacts related to groundwater management. Specific recommendations on how this section can be improved are provided in the forthcoming sections.

[3] DWR. January 2018. Guidance Document for Groundwater Sustainability Plan Stakeholder Communication and Engagement.

Current and Historical Groundwater Elevation Trends

Changes in groundwater elevation can result in significant impacts to vulnerable communities, including: increased energy costs associated with additional lift pump costs; costs associated with cleaning of the well screen; cost of lowering well pumps; costs of drilling deeper wells; complete dewatering of wells; movement of contaminant plumes; and the financial, emotional, and physical costs associated with having to rely on bottled water. This section can be improved by including a description of the groundwater level conditions in and around S/DACs and by showing whether changing groundwater levels in these communities have led to dry wells or a decrease in water production. SHE recommends the following changes:

- **Include information of the groundwater conditions and trends that are specific to the MKGSA area from Appendix 2A.**
- **Identify communities burdened by or susceptible to changes in groundwater levels.** S/DACs and domestic well owners are extremely vulnerable to changes in groundwater levels. Therefore, it is imperative that the GSP properly identify vulnerable communities that have a higher risk of being affected by changes in groundwater levels to understand: (1) where drinking water wells that are more vulnerable to groundwater level changes are located, and (2) whether changes in groundwater levels may be exacerbated in specific areas by pumping volume or location, conjunctive management or other forms of active management as part of GSP implementation. Based on the Focused Technical Analysis and extensive work with S/DACs, we believe that the following communities are susceptible to changes in groundwater levels with the risk of having their water access impaired:
    - Okieville-Highland Acres: The community of Okieville-Highland Acres consists of approximately 100 homes located in Tulare County, five miles west of the City of Tulare. An unknown number of private wells which serve the remaining 20 homes not connected to the recently constructed water system (based on 3.76 people per household[4], the population is assumed to be 76) are susceptible to changes in groundwater levels and at risk of having their water access impacted. The depth of these wells are unknown, but typical domestic wells in the area are drilled to a depth of 130 to 225 feet. More recent domestic wells have been drilled to a depth of 360 feet in a preventive effort to declining groundwater levels.
    - Waukena: A severely disadvantaged private well community with a population of 175 residents. Private well communities face unique challenges and are more susceptible than most community water systems to changes in groundwater conditions, drought impacts, and water quality concerns. This is primarily due to the shallow nature of most private wells.
    - High density of domestic wells northwest of the City of Tulare: Similar to other private well communities, families relying on domestic wells face unique challenges and are more susceptible than most community water systems to changes in groundwater

[4] As indicated by Census data from Tulare County Census Tract 21, Block Group 1 as average household size

conditions, drought impacts, and water quality concerns. This is primarily due to the shallow nature of most private wells.
    - Water systems serving Waukena Elementary School, Buena Vista School, Palo Verde School, Liberty School, Sycamore Valley Academy, and Oak Valley School.
- **Include a description of the impacts experienced during the 2012-2016 drought**. Include a description of the successes and challenges experienced by local agencies and stakeholders when addressing impacts of the last drought, including: number of wells that were dewatered; number of households utilizing the interim household water tank program; local cost of emergency drinking water services; amount of grants/loan programs developed and utilized for replacement wells; and an estimated number of homes currently without a sustainable water source. A good understanding of what happened, including what programs and strategies worked well in effectively addressing impacts to drinking water and what strategies could be improved, can aid the MKGSA with the development of management actions that adequately prepares the GSA to prevent and mitigate potential impacts of future droughts. This planning is important for wells that supply drinking water to vulnerable populations that have limited capacity and resources to respond to extreme weather conditions. Based on SHE extensive work with S/DACs in providing water supply emergency assistance, we recommend adding the following information:
    - Drought conditions between Spring 2012 and Spring 2016 lowered the groundwater table, significantly impacting water access for domestic well users. Households reported water supply shortages northwest of the City of Tulare and in Okieville/ Highland Acres, a severely disadvantaged community located 5 miles west of the City of Tulare[5]. During the drought, water levels in Okieville declined from 102 feet below ground surface to 171 feet, a drop of almost 70 feet. A survey of dry wells indicated that 17 wells serving 27 homes went dry. Interim water tanks were installed on 13 properties as a short-term solution while a permanent solution was pursued. Households that met income requirements received bottled water deliveries paired with the water tank program. In 2016, through a cooperative multi-agency effort involving the California State Water Resources Control Board, California Department of Water Resources, and the United States Department of Agriculture, emergency drought relief funding was identified for the construction of a new water system, which included drilling a well, constructing the distribution system including meters. The community secured $2,081,000 for the construction of the water system. Phase One of the project was completed in the summer of 2019; Phase Two includes construction of a second production well.
- **Include a groundwater surface water elevation map that includes location of vulnerable communities.** It is critical that MKGSA provide maps overlaid with location of DACs, SDACs, domestic wells, public water systems, and any other beneficial users to allow the reader to evaluate how groundwater issues correlate with drinking water supply areas.

[5] Household Water Supply Shortage Reporting System: https://mydrywatersupply.water.ca.gov/report/publicpage

- **Specify well depth information by use type[6].** We recommend including the minimum, maximum, and average well depth by well type (agricultural, domestic, municipal, etc).

Groundwater Quality

The current characterization of groundwater quality conditions in Appendix 2A fails to recognize that several public water systems within the GSA have experienced challenges remaining in compliance for safe drinking water standards. Further, because of these data gaps in measuring groundwater quality, the extent of groundwater quality contamination for domestic wells or state small water systems is not fully quantified or accounted for in the draft GSP. This section can be improved by including a better description of groundwater quality conditions near or within S/DAC communities as well as an improvement in understanding how potential groundwater management actions could potentially impact the extent of groundwater contamination. We recommend the following changes:

- **Summarize and highlight important information for the MKGSA from Appendix 2A and include local knowledge of the groundwater conditions affecting groundwater use and users in MKGSA area.** This is particularly important considering that Appendix 2A, page 125, states that a "groundwater quality discussion" in the Basin Setting for the context of the entire Subbasin "is largely generalized, although constituents of concern are identified geographically." As such, the current characterization of groundwater quality conditions fails to adequately provide a narrative of issues affecting the supply and beneficial uses of groundwater as required by GSP Regulations Section §354.16.
- **Include a description of historical groundwater quality conditions for each public water system.** Cities, communities and schools within the MKGSA have historically had challenges meeting safe drinking water requirements. In order to prevent further degradation of groundwater quality conditions, it is important to adequately capture current challenges. At a minimum, consider including in the Mid-Kaweah GSP, section 2, information regarding cities and communities that have fluctuated in and out of compliance. According to the Human Right to Water portal, the water system of Buena Vista School has fluctuated in and out of compliance for Nitrates. The water system of Waukena Elementary School has been in and out of compliance for Uranium and Nitrates. The water system for Oak Valley School has also been in and out of compliance for Arsenic. Moreover, the water well recently drilled for Okieville only found water that meets primary water quality standards at the depth range between 894 ft to 1005 ft. Water depth less than 894 ft exceeds MCLs for Arsenic and Aluminium. Furthermore, SHE recommends providing a summary of the information regarding water quality for the City of Visalia and Tulare, including the city-wide PCE plume in Visalia.
- **Include an assessment of current 10-year average concentrations of contaminants of concern.** The maps depicting current groundwater quality conditions in Appendix 2-E only include individual contaminant concentrations over several different time periods. In order to develop the proposed minimum thresholds and measurable objectives, it is important that the current baseline conditions are established.
- **Include a map of current 10-year average groundwater quality conditions that includes locations of vulnerable communities.** Once current baseline conditions are established, it would

[6] § 354.16. Current and Historic Groundwater Conditions.

be helpful to include the 10-year average conditions overlaid with location of S/DACs, domestic wells, public water systems, and any other sensitive beneficial users. This is important in order to adequately evaluate how groundwater quality issues correlate with drinking water supply areas.

- **Include an analysis of how groundwater quality concentrations have fluctuated relative to changes in groundwater levels, particularly during drought periods.** The level of concentration of a few contaminants of concern included in the GSP are directly influenced by changes in groundwater levels, both by pumping and recharge.[7] Appendix 2-E does not include a statistical analysis of the change in contaminant concentrations relative to groundwater levels and groundwater storage. It is important to evaluate the relationship between changes in contaminant concentrations and groundwater management activities, in particular for arsenic[8].
- **Revise the description of arsenic to include the causes of arsenic mobilization due to over-pumping and compression of clay layers.**[9] The GSP's description of the chemical properties of arsenic currently attributes the mobility of arsenic to absorption/desorption. The GSP should be revised to include the following ways in which groundwater management can cause arsenic to be mobilized into the aquifer: pumping in areas of the aquifer with low-oxygen conditions and/or with a pH of over 8.5 as well as over-pumping (compression of clay layers). Accurately describing the conditions that result in the mobilization of arsenic is important in order to properly evaluate how potential groundwater management actions could further facilitate its release.
- **Revise the description of the sources and spatial distribution of nitrate to include dairies and other concentrated animal feeding operations as a source of contamination and revise the description of septic systems as a source of contamination.** Dairies are a major contributor to nitrate contamination of groundwater, and thus must be included in the description of the sources of nitrates and how nitrate contamination in the basin will be addressed. Further, the mere existence of septic systems does not necessarily mean they are a source of nitrogen contamination. While poorly maintained, leaky septic systems are a very serious source of localized nitrate contamination, well-maintained septics do not pose a similar risk. We appreciate the fact septics are called out, and hope that as implementation is carried out, more research and monitoring is conducted to determine what the impact, if any, septics are playing in the nitrate contamination within the GSA boundaries.
- **Include a discussion on the impact irrigated agriculture has upon nitrate contamination of groundwater.** Better integration with nitrate regulatory programs must also be included. While

[7] See Community Water Center "Guide to Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act" for more information. https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858

[8] See Stanford, 2019. A Guide to Water Quality Requirements Under the Sustainable Groundwater Management Act, Spring 2019.

[9] See Community Water Center and Stanford University 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

the ILRP and other waste discharge programs are supposed to work on reducing nitrate loading to water sources, many of these dischargers are in still discharging above the MCL. Under SGMA, GSAs are required to address undesirable results, including addressing water quality impacts, that occurred after January 1, 2015. It is likely that in many areas nitrate concentrations have increased since the effective date of SGMA, and thus must be addressed within the GSP.

- **Provide all maps/figures overlaid with location of S/DACs, community water systems, and any other sensitive beneficial users to allow the reader to evaluate how groundwater issues correlate with drinking water supply areas.**

Land Subsidence

The GSP's current evaluation of land subsidence states general impacts, such as impacts to infrastructure, in particular to the Friant Kern Canal, but fails to describe previous and potential impacts to vulnerable communities. Land subsidence could result in many direct and indirect impacts to vulnerable communities. Direct impacts can include damages to community infrastructure including bridges, pipe crossings, roads; collapsing of of well casings, that result in well rehabilitation or replacement; and the mobilization and release of arsenic from clay layers into the groundwater aquifer. Indirect impacts can include flooding and long-term environmental effects[10]. Since S/DACs, public water systems, and domestic well communities often lack the resources to address these damages, it is important to document and describe previous and potential impacts in order to prevent them from occurring or mitigate impacts if they occur. Please consider the following recommendations:

- **Summarize and highlight important information for the MKGSA from Appendix 2A and include local knowledge of the groundwater conditions affecting groundwater use and users in MKGSA area.**
- **Include a description of possible impacts of land subsidence for S/DACs, public water systems, and domestic well communities.**
- **Include documentation of any historical impacts of land subsidence for S/DACs, public water systems, and domestic well communities in Past Land Subsidence.**

Water Budget

The GSP water budget requirements are intended to quantify the water budget in sufficient detail in order to build local understanding of how historical changes have affected the six sustainability indicators in the basin. Ultimately, this information is intended to be used to predict how these same variables may affect or guide future management actions[11]. Another important reason for providing adequate water budget information is to demonstrate that the GSP adheres to all SGMA and GSP regulation requirements and can demonstrate the ability to achieve the sustainability goal within 20 years, and maintain sustainability over the 50 year planning and implementation horizon.

[10] Galloway, D., Jones, D, and Ingebritsen, S.E. Land Subsidence in the United States. U.S. Geological Survey Circular 1182.

[11] DWR, 2016. Best Management Practices for the Sustainable Management of Groundwater, Modeling (BMP #5), December 2016.

The water budget made available to the public is incomplete, and a full evaluation of the model and assumptions cannot be made at this time. Without a complete GSP draft that thoroughly explains the assumptions and methods used for the development of the water budget, the public is unable to provide meaningful comments and recommendations. The GSP is missing key information that includes all information on data and assumptions used in the development of the water budget. We recommend the following changes:

- **Summarize and highlight important information for the MKGSA from Appendix 2A.**
- **Include a single tabulation of all the sources used.** The sources of data used for the water budget components are identified throughout the text of the Appendix 2-A. However, the discussion and tabulation of all data sources in a single section would improve the ability of the public to assess the data sources and evaluate the water budget assumptions for reasonableness and completeness.
- **Provide additional information detailing how the water budget presented in Table 2-1 was estimated.** Little information is provided in the draft GSP on the methods and assumptions used to estimate groundwater inflow and outflow data presented in Table 2-1. Without a complete GSP draft that thoroughly explains the assumptions and methods used for the development of the water budget, the public is unable to provide meaningful comments and recommendations. Please clarify how data was compiled, including the methods and assumptions used to estimate the small water system and rural domestic water demand.
- **Provide additional information detailing how small water system demand was estimated in Appendix 2A.** No information was provided regarding Small water system demand was reported to be estimated from data in previously published reports. Very little specific information is provided in the draft GSP on the methods and assumptions used to estimate the small water system demand. The annual demand from small water systems is shown to increase throughout the water budget period but it is not possible to determine if the values are reasonable from the information and assumptions provided in the draft GSP.
- **Provide additional information detailing how rural domestic water demand was estimated in Appendix 2A.** Appendix 2A states that rural domestic water demand and consumptive use was estimated using an assumed demand rate of 2 AFY per dwelling and the density of rural domestic dwellings. The draft GSP reports that the density of these dwellings has not changed significantly over time and, therefore, rural domestic pumping has not changed over time. The method and data used to determine the density of these dwellings is not reported and cannot be evaluated and no maps are provided in the Appendix 2A showing the locations of these rural domestic users.
- **Revise percentage of return flow from rural domestic water to address inconsistencies:** Page 99 of Appendix 2-1 states that "Similar to the rural small water system analysis above, a 70 percent portion of the pumped rural domestic water is assumed to return to groundwater via septic system percolation and irrigation return flows (Dziegielewski and Kiefer, 2010). Throughout the Subbasin, an annual total pumpage for rural users was 2,272 AF/WY on average, 30 percent of which returned to groundwater." The assumed fraction of total rural domestic pumping that returns to groundwater and the calculation of net rural domestic pumping

reported in Appendix 2-A is inconsistent. It is unclear if the assumed fraction of pumping that returns to groundwater is 30% or 70%.

- **Provide additional information regarding the assumptions used to define changes in land use and how that was incorporated into the projected water demand presented in Table 2-1 and Appendix 2A.** Based on the draft GSP, current land use was determined using the 2014 DWR land use survey data. Historical changes in land use area are not reported and, at this time, it cannot be determined if land use changes, including changes in urban areas, were incorporated into the water budget as is required by GSP Regulation Section §354.18.
- **Provide water budget annual component results broken down for each subarea in order to allow for the assessment of the spatial variability of the water budget components.** Section 2.3 presents annual water budget components for water years 1997-2017 for the MKGSA area and Appendix 2-A presents the same information for the subbasin. Components related to urban and rural domestic water use are lumped into two components (wastewater inflow and M&I pumping). The relative contribution of rural domestic and small water system users to these components cannot be evaluated at this scale, thus it would be helpful to provide information to better support the evaluation of the impacts on DACs and community water systems.
- **Include an uncertainty analysis to identify the plausible range in water budget results and an indication of the magnitude of the effects these inherent uncertainties may have on the water budget results.**The draft GSP does not include any discussion of the uncertainty in the data used for the model and its effect on the water budget results, a key requirement as prescribed by GSP Regulations Section §354.12.
- **Include an in depth discussion regarding the forthcoming sustainable yield evaluation and describe the potential implications the sustainable yield, the safe yield, and the water accounting framework could have on drinking water use in the MKGSA.** The draft GSP includes minimal discussion of the sustainable yield of the subbasin or the MKGSA area, but does note that the subbasin is in overdraft and that a groundwater modeling will be used to estimate the sustainable yield through the use of initial thresholds and objectives. A Water Accounting Framework is included, which provides each GSA with a groundwater supply that is the beginning of a potential groundwater allocation, but there is no discussion of how the allocation will impact each GSA or the rural domestic and small water system users. In addition, the discussion of the sustainable yield does not address how to account for undesirable results that occurred between January 2015 and when GSPs are submitted.
- **Include a discussion and analysis in the GSP that evaluates the projected water budget conditions, specifically focusing on climate change impacts for domestic well users, S/DACs, and community water systems.** The adjustments made to the climate change assessment and data sets were made based on guidance and climate change data provided by DWR. However, the draft GSP does not include a discussion of the effects of these changes on the MKGSA water budget and there is no discussion of the impacts to specific areas, such as areas of rural domestic water users or small community water systems. No information is provided on how projected demand will be met or reduced to meet sustainability goals.

Management Areas

The proposed three management areas consist of the respective jurisdictional areas of MKGSA's three Members, i.e., the City of Visalia, City of Tulare, and the Tulare Irrigation District. Our main concern is that the current proposal for management areas and threshold regions has limited consideration for vulnerable communities dependent on groundwater and does not adequately describe how the area will operate under different minimum thresholds. We recommend the following changes:

- **Revise the description of the management areas to describe the S/DACs and number of domestic well users within each boundary.** As described in the draft GSP, management areas are responsible for implementing projects and management actions within their area. Without a clear understanding of the S/DACs and domestic well users within the management area boundaries, the current draft GSP does not adequately describe conditions in these areas as required by Reg 354.20.
- **Consider developing management areas or threshold regions around vulnerable communities.** Vulnerable communities within the MKGSA do not have access to surface water and are dependent on groundwater. In order to develop more protective thresholds for vulnerable communities, it would be important to consider developing a protective buffer, management area, or threshold region around them. This recommendation can also be considered under projects and management actions. Key communities that could benefit of such protection include Okieville and Waukena and the water systems serving Waukena Elementary, Buena Vista, Oak Valley and Liberty School.
- **Revise the description of the Monitoring and Analysis to better describe how the management areas will operate to avoid undesirable results.** As currently drafted, the description of management areas could be improved by better clarifying how the different management areas can operate under different minimum thresholds and measurable objectives without causing undesirable results. The chart indicates which threshold regions are within each management area, but there is no description of how each management area will address the different water surface elevation conditions. Since S/DACs and domestic well users are the most vulnerable beneficial users within the MKGSA, it is important to clearly indicate how undesirable results will be avoided.

GSP Section: Sustainable Management Criteria

Sustainability Goal

The Kaweah Subbasin sustainability goal draft included in the draft GSP focuses on protecting groundwater for industry uses, which does not satisfy SGMA's intention, and does not reflect the collaborative stakeholder-driven process that took place over the course of several MKGSA Advisory Committee and Kaweah Subbasin Management Team meetings. Beginning in November 2018 and continuing over the course of several meetings, the MK Advisory Committee spent a great deal of time discussing what should and should not be included in the Sustainability Goal statement. While perspectives were varied, there was general support among committee members to set a Sustainability Goal that includes a protective stance toward groundwater quality. SHE would like to see more

proactive steps taken to improve groundwater quality and tools necessary. This needs to be clearly stated in the language in the MKGSA final draft. Including human consumption in the language will make the statement stronger and demonstrate to residents they their water needs are a priority. Water quality is another important component to strengthening the Sustainability Goal. This will help the GSP meet SGMA standards. SGMA further requires a transparent and inclusive process; therefore it is critical that all GSAs within the subbasin respect guidance and recommendations previously provided by various stakeholders. Revising the sustainability goal without proper explanation or discussion with the public is not appropriate nor is it in accordance with SGMA.

Additionally, upon reviewing the draft GSP, community participants at a SHE workshop in Okieville brought attention to the lack of mentioning the need for drinking water in the proposed GSP's Sustainability Goal. At the workshop, participants were provided information about SGMA, their local GSA and presented general information about the draft GSP. Participants were asked to share their vision for sustainability and provide recommendations for what should be included in the Subbasin's sustainability goal. Participants primary question if agricultural enterprises should be prioritized over human consumption. Other feedback provided at the workshop included the importance of ensuring preserving drinking water supplies and addressing groundwater quality.

Based on participants' feedback and SHE involvement at several MKGSA Advisory Committee meetings and Kaweah Subbasin Management Team meetings where sustainability goal for Kaweah were discussed, SHE recommends considering the revision of the current Sustainability Goal in order to fully integrate stakeholders' vision for groundwater management. We recommend the following:

- **Adopt the sustainability goal that was previously and extensively discussed during public meetings. The sustainability goal should include language that demonstrates MKGSA's intent to support the protection of the human right to water by "preserv[ing] the viability of cities and existing agricultural enterprises as well as the viability of school districts, smaller communities, and households relying on shallow domestic wells[12]".** As stated by our organizations during several meetings and in written comments, Kaweah Subbasin GSAs should strive for the viability of unincorporated communities and schools, both now as well into the future.
- **Add a clear statement of the efforts the Agency plans to take to address groundwater quality.** From our understanding and based on SGMA's inclusion of UR No. 4, it is clear that water quality degradation must be addressed in a GSP. As DWR will consider the "human right to water" policy when implementing these regulations, we recommend for a clearer statement of how the GSA plans to include and address groundwater quality issues in the area.

[12] Quote from draft Kaweah Subbasin sustainability goal previously developed.

Undesirable Results, Minimum Thresholds, and Measurable Objectives

Chronic Lowering of Groundwater Levels

The Focused Technical Review of the July 2019 Draft MKGSA GSP identified several data gaps and potential significant impacts to public water systems and domestic wells. As expressed by our organizations during MKGSA meetings, the current GSP does not adequately consider the groundwater impacts that may affect the supply and beneficial uses of groundwater as required by GSP Regulations Section 354.16.

Additionally, during the previously mentioned community GSP review workshops, participants were asked to share their opinions and provide recommendations for what should be included in the Subbasin's sustainable management criteria. Participants were concerned with the proposed MT/MOs and what it could mean to their access to water. , Feedback provided at the workshop included ensuring preserving drinking water supplies and addressing groundwater quality.

Though we are pleased that MKGSA is considering providing assistance to small-system and domestic well owners without the financial wherewithal to service or replace their pump and well facilities, particularly those that provide potable water, we would like to highlight the following concerns and recommendations:

- **Conflicting information:**

The draft GSP presents water level MTs by: (1) hydrogeologic zones that reportedly share similar groundwater conditions and hydrogeologic behavior (Table 5-2); and (2) by Representative Monitoring Wells (RMWs) (Table 5-3). According to the draft GSP, the hydrogeologic zone MTs are based on the average of the RMW MTs for a particular area. As stated in Section 5.3.1.3, "Consistent with this requirement, the minimum elevation thresholds in this Plan are set at specific levels based on four different hydrogeologic zones as defined herein." However, well impact analyses are performed based on the MTs developed for each individual RMW, and the MOs are only established at the RMWs (i.e., not by hydrogeologic zones). Based on the conflicting information presented in the draft GSP, it is not clear which set of MT values will be used for compliance purposes through the GSP implementation phase. **Please ensure that the Sustainable Management Criteria, including MTs and MOs, be clearly identified and applied consistently in the GSP.**

- **Minimum thresholds are established without regard to well depths or other potential impacts:**

With a collective population of over 63,000 people, communities within the MKGSA area are entirely dependent on groundwater for drinking water purposes. The MKGSA includes 13 community water systems, 11 of which have less than 300 service connections but collectively serve over 5,300 people. Despite the broad and diverse dependence on groundwater for drinking water use, the approach to setting water level MTs/MOs and URs does not explicitly take these drinking water beneficial users into account. The MTs for each threshold region are set based on an assumed trajectory of decreasing water levels over the next 20 years, without regard to well depths or other potential impacts.

The draft GSP includes a limited evaluation of well impacts (Section 5.3.1.3 and Appendix 5c) that compares the known screened intervals of agricultural, public, and domestic wells with the projected 2040 groundwater elevation at each well to estimate the number of wells that would be dewatered. The

results of the well impact analyses are categorized by zone and well type. However, this analysis does not appear to actually evaluate the potential well impacts based on either the hydrogeologic zones MTs (Table 5-2) or the RMWs MTs/MOs (Table 5-3). In addition, which wells are within the MKGSA and the locations of these wells that are expected to be impacted are not clearly stated or mapped in the draft GSP. Therefore, the well impact analyses performed in the draft GSP does not appear to actually evaluate the potential impacts to subbasin wells associated with the MTs/MOs developed by the MKGSA.

Moreover, based on the well impact evaluation in Section 5.3.1.3 and Appendix 5C, "18 percent of agricultural wells, 9 percent of public wells, and 21 percent of rural residential wells including domestic wells, would be subject to groundwater levels that would be below their constructed depth" if water levels reach the MTs, as identified at the hydrogeologic zone level. This assessment appears to have been done relative to the bottom of the total well construction depth. However, water supply wells become unusable or subject to decreased performance and longevity as water levels fall within the screened interval, which will occur before water levels reach the bottom of the well. Therefore, the actual number of domestic wells that would be significantly impacted at the proposed water level MTs would be expected to be higher than represented in the draft GSP.

Lastly, our assessment of the water levels (Focused Technical Review, Figure 2) compared the well screens of the domestic wells located within a one-mile radius of RMWs to the proposed MOs and MTs. Approximately 30% of domestic wells in the MKGSA are located within the one-mile buffer of RMWs with both MT/MO and GSE data. Based on our assessment of the water levels, approximately 71% of these domestic wells would be expected to be fully dewatered and an additional 15% of these wells would be expected to be partially dewatered. Even at the MO water levels, approximately 64% of these domestic wells would be expected to be fully dewatered and 9% of these wells would be expected to be partially dewatered. These estimates are much higher than the 21% of rural residential/domestic wells identified as being impacted in Section 5.3.1.3 of the draft GSP. We acknowledge that this is a quick assessment of domestic well impacts; however, these results do not appear to be consistent with the analysis presented in the draft GSP. Furthermore, as identified in a previous comment, the draft GSP is not clear on whether MTs are intended to be applied at the RWM-level or the hydrogeologic zone level. Given that the hydrogeologic zone MTs are the average of the RMW MTs, the way the criteria are applied may have a significant difference in the level of impacts experienced at localized areas.

It is therefore recommended that the assessment be revised regarding the potential impacts on drinking water users of the minimum thresholds, measurable objectives, and proposed undesirable results. Based on a revised assessment, MKGSA should develop more protective thresholds near vulnerable communities, schools, and high density areas of domestic wells to ensure the protection of these important water sources.

- **Undesirable Results (UR):**

Given that water levels in one-third of all RMWs across all three subbasin GSAs must drop below MTs in order for an UR to be triggered, significant and unreasonable impacts could occur within significant portions of the subbasin without triggering a subbasin UR. The draft GSP acknowledges that 'what was evident, from stakeholder input, as the largest impact on declining groundwater levels historically was the dewatering of some wells, forcing homeowners, businesses, farmers, and other groundwater well owners to drill new replacement wells" (Section 5.3.1.2). The draft GSP, however, does not provide

information on how many wells in fact would be considered an undesirable result and does not clearly indicate how the proposed water level URs will preserve the quality of life or support population growth, in particular for domestic well users and S/DACs reliant on groundwater.

We recommend including a definition of a local undesirable result. The definition should clearly indicate how the MKGSA will locally define and address an undesirable result within its service area and protect beneficial users of groundwater.

- **Lack of consideration for drinking water beneficial users:**

The draft GSP acknowledges that impacts to small water systems and domestic wells will be greater than impacts to other well users, but according to the draft GSP, the MTs were determined to be acceptable with the implementation of potential assistance measures (Section 5.3.1.3). However, according to Section 7.4.8.1 of the draft GSP, none of the identified potential assistance measures for small water systems and domestic wells have been approved by the MKGSA Board and it is not clear how the assistance measures will be implemented or funded.

The GSP should describe how this approach is protective of the diverse drinking water users in the MKGSA without a clear implementation plan for the identified assistance measures.

- **Ensure that the coordination agreement with the other neighboring GSAs does not negatively impact the MKGSA's local undesirable results and MTs/MOs.**

Degraded Water Quality

We are pleased that the draft GSP establishes MTs/MOs based on maximum contaminant levels (MCLs) for contaminants of concern for municipal use. However, the water quality monitoring network and analysis presented does not clearly illustrate how the MOs/MTs will adequately ensure that the water quality UR of impacting the long-term viability of the groundwater resource will be avoided, particularly for domestic water users and S/DACs. The proposed MT to allow contaminants to further degrade appears to be inconsistent with state water quality laws and policies. We recommend the following changes:

- **Include an assessment of the concentrations of COCs at all monitoring wells to establish MT baseline conditions.** The draft GSP indicates COC concentrations will be evaluated for compliance with water quality MTs in the future and where MCLs are already exceeded prior to GSP implementation, this will be considered a baseline condition that MKGSA is not responsible for remediating. It is critical that the GSP draft includes an assessment of the current concentrations in order to present the baseline conditions relative to the proposed MOs/MTs.
- **For transparency and completeness, clearly identify on maps and in tables which set of MTs/MOs will be applied to which RMWs. These maps should clearly identify the location of DACs, small water systems, and other sensitive users so that the public is able to review and evaluate the proposed sustainability approach.** The draft GSP identifies a methodology used to distinguish between the applicability of either MCLs or agricultural WQOs as the MTs for a given RMW. As stated in Section 5.3.3.3, "If the majority of the beneficial use (greater than 50% of the pumping within a determined area) was agriculture and there were no public water systems (including schools) the minimum threshold would be a host of agricultural water quality constituents" and "If a monitoring well is located within an urban area, or near a public water

system (e.g., within a mile), which includes schools, then the minimum threshold would be set at the MCL for drinking water." However, the draft GSP does not clearly identify on a map or otherwise which RMWs will use MCLs and which will use agricultural WQOs. The document also does not identify which monitoring wells are located within an urban area or near a public water system. Per 23 CCR §354.28, the draft GSP should provide a detailed explanation as to how the proposed water quality MTs may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

- **Expand groundwater quality monitoring network near Okieville.** Figure 3 from the Focused Technical Review shows that there are no Representative Monitoring Wells (RMWs) with established water quality minimum thresholds set at the MCL for drinking water near the community of Okieville. We recommend expanding current RMW network to include additional representative monitoring wells both in the confined and unconfined aquifers when applicable, particularity near vulnerable communities and groundwater stakeholders.
- **Provide a detailed explanation of how the proposed water quality MT approach and monitoring network will result in protection of groundwater for DACs and other drinking water beneficial users in the subbasin.** Specifically, the draft GSP indicates that "an exceedance of any of the MCL or agricultural metrics as defined herein at any representative monitoring sites will trigger a management action within the applicable Management Area or GSA, subject to determination that the exceedance was caused by the actions of the GSA" (Section 5.3.3.3). SHE greatly appreciates MKGSA and stakeholder intention to address an exceedance of any of the MCLs or agricultural metrics if the exceedance was caused by the actions of the GSA. However, the draft GSP does not identify which management action(s) will be implemented and provide very limited description on how MKGSA will evaluate and determine if the exceedance was caused by the actions of the GSA or not. Additional information is necessary in order to evaluate whether the proposed plan is protective of beneficial users in the subbasin.
- **Revise MT to prevent further degradation of contaminants.** The draft GSP indicates that where MCLs are already exceeded prior to GSP implementation, this will be considered a baseline condition that MKGSA is not responsible for remediating. SGMA requires the prevention of undesirable impacts to water quality, including degradation of water quality. An undesirable impact is one that is "significant and unreasonable". Public water systems are required by state law to be in compliance with water quality objectives. Increased contamination levels necessitate water systems to utilize more expensive treatment methods and/or the need to purchase additional alternative supplies as blending may become more difficult or impossible. Further, communities reliant on domestic wells, who are aware of contamination in their water (while also acknowledging that many reliant upon private wells are unaware of the water quality), and use a POU/POE may no longer be able to use their devices if contaminant levels rise beyond levels where water cannot be treated. Increased contamination levels result in unreasonable impacts to safe and affordable water access and is thus inconsistent with SGMA. Therefore, the MT must be revised to prevent impacts to domestic water uses (which is listed as the highest priority use in Water Code Section 106) due to further groundwater degradation. Furthermore, there should be plans as to how to mitigate impacts in the short-term.
- **Develop a warning system that informs MKGSA stakeholders when contaminants of concern have reached 80% of the MCL.** This system is especially important for wells with COC

concentrations less than 80% the MCL that experience impacts due to groundwater management activities. For wells with contaminant levels approaching the MCL, MKGSA could consider taking the following actions: notify nearby domestic well owners and community water systems; undertake an analysis to pinpoint the cause; provide information to groundwater users regarding impacts of groundwater management actions;reassess pumping allocation; and/or if the contaminant is clearly under the purview of another agency, confer with that agency to confirm a plan to address the groundwater quality problem.

- **Clarify how the GSA plans to align the sustainable management criteria with any emerging contaminants of concern and new MCLs.** Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOAs) have been identified as emerging contaminants in the basin. Due to their emergence, it is important that MKGSA includes these contaminants as COCs to be monitored and evaluated. In addition to these two contaminants, the draft GSP would benefit from an explanation of how the plan will be updated to align groundwater monitoring efforts and the sustainable management criteria with any emerging contaminants in the basin and any future new MCLs.
- For contaminant levels that are near, or exceed, existing MCLs and for groundwater quality problems that arose or were exacerbated after January 1, 2015, consider the following approaches[13]:
    - **Consider aligning monitoring and management actions to allow MKGSA to meet a minimum threshold at 80% the MCL over the 50-year planning and implementation horizon.** This could be accomplished by monitoring groundwater quality trends to ensure that naturally occurring contaminants, like arsenic and uranium, are not exacerbated through groundwater management practices and by working with appropriate agencies to remediate quality issues, where feasible.
    - **Where there is a significant groundwater quality problem that is clearly under the purview of another agency, confer with that agency and to confirm a plan to address the groundwater quality problem.** If such a plan exists, the water quality problem and the plan should be referenced in the GSP reviews.
    - **Where a significant groundwater quality problem is not clearly under the purview of another agency, or the responsible agency is unable to confirm a reasonable plan to address the problem, confer with Regional or State Water Board staff and affected parties, to identify a reasonable plan to address the problem.** If no reasonable plan is identified and remediating the problem is impractical or infeasible, the GSA should include in the Plan an explanation of the problem and the reasons why remediation is impractical or infeasible.
- **Include consideration for the state's anti-degradation policy into the GSP.** California's anti-degradation policy ("Policy") is modeled off the Federal policy. It protects our state's high quality waters, both surface and groundwater, from degradation. The Policy prohibits the degradation of waters unless there is a finding that it is "...consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of

[13] Moran, T. and Belin A. (2019) A guide to Water Quality Requirements Under the sustainable Groundwater Management Act. Stanford Digital Repository. Available at: hhtps://purl.stanford.edu/dw122nb4780.

such water."[14] The Policy has been interpreted to mean that best practicable treatment or control is required to protect high quality water (water meeting water quality objectives) and best efforts for already degraded waters. Inclusion of this Policy into the GSP will aid the GSA in achieving the goals of SGMA by creating a baseline for how water quality is considered within the basin.

Land Subsidence

As mentioned previously, land subsidence could have significant impacts on vulnerable community infrastructure. In communities that do not have the financial capacity to address costly infrastructure damages, impacts of land subsidence should be evaluated more closely. We recommend the following changes:

- **Expand the description of potential impacts for S/DAC communities and rural domestic well users under the description of the Potential Impacts on Beneficial Uses and Users .**
- **Clarify the relationship between groundwater quality and land subsidence.** Researchers have found that there is a relationship between land subsidence caused by overpumping and increases in contaminants like arsenic[15]. The section on the Relationship for each Sustainability Indicator needs to be revised to clarify that this is not applicable to the MKGSA.

GSP Section: Monitoring Network

Groundwater Levels

Robust monitoring networks are critical to ensuring that the GSP is on track to meet sustainability goals. As currently developed, the monitoring network can be improved to adequately monitor how groundwater management actions related to groundwater levels could impact vulnerable communities. We recommend the following changes:

- **Include drinking water sources susceptible to groundwater level changes as a criteria in selecting wells for the representative groundwater level monitoring program.**
- **Identify which monitoring wells will be used to assess impacts to drinking water wells caused by changes on groundwater levels and describe how that assessment will be conducted.** As required by 23 CCR § 354.28, DWR will evaluate the ability of the proposed monitoring program to properly assess impacts to beneficial users of groundwater and to protect beneficial users within the subbasin. In particular, it is important to clarify how MKGSA plans to monitor and assess drinking water wells at risk of dewatering.
- **Include the location of S/DACs, areas with high density of domestic wells, and GDEs in Figure 4-3 and 4-4.** Maps overlaying the location of these communities will allow stakeholders to evaluate the adequacy of the network to monitor conditions near these beneficial users.

[14] Resolution 68-16.
[15] Smith, R., Knight, R., & Fendorf, S. (2018). Overpumping leads to California groundwater arsenic threat. Nature communications, 9(1), 2089. doi:10.1038/s41467-018-04475-3

Water Quality

For the reasons identified below, the water quality representative monitoring wells (RMW) are inadequate for determining if the actions of the MKGSA degrade the beneficial use of water and for ensuring that the stated water quality UR of impacting the long-term viability of the groundwater resource will be avoided —particularly for domestic water users and S/DACs.

GSAs undertaking recharge, significant changes in pumping volume or location, conjunctive management or other forms of active management as part of GSP implementation, must consider the interests of beneficial users, including domestic well owners and S/DACs. For these vulnerable groups, GSAs should avoid disproportionate impacts. The draft GSP lacks representative monitoring wells in areas where drinking water users may be particularly vulnerable to groundwater supply and quality issues, leaving MKGSA with no ability to adequately measure and avoid significant and unreasonable impacts to those users. It is critical that MKGSA develop sufficient monitoring networks, capable of detecting changes in groundwater quality conditions related to groundwater management. We recommend the following changes:

- **Identify which monitoring wells will be used to assess impacts to drinking water wells caused by groundwater quality degradation and describe how that assessment will be conducted.** As required by 23 CCR § 354.28, DWR will evaluate the ability of the proposed monitoring program to properly assess impacts to beneficial users of groundwater and to protect beneficial users within the subbasin. In particular, it is important to clarify how MKGSA plans to monitor and assess drinking water wells at risk of further contamination. In specific:
    - **For transparency and completeness, the GSP should clearly identify on maps and in tables which set of MTs/MOs will be applied to which RMWs.** These maps should clearly identify the location of DACs, small water systems, and other sensitive users so that the public is able to review and evaluate the proposed sustainability approach.
    - **Provide a focused and detailed explanation of how the proposed water quality MT approach and monitoring network will result in the protection of groundwater for S/DACs and other drinking water beneficial users in the subbasin, as required by 23 CCR § 354.28.**
- **Expand groundwater quality monitoring network near Okieville.** Based on the spatial distribution of the wells dedicated to monitoring water quality presented in Figure 4-6 and 4-7 of the draft GSP, the network is not spaced evenly across the area. The water quality RMWs are located in the northern and eastern portions of the MKGSA area and the monitoring well density varies by two orders of magnitude across the MKGSA. Although the western portion of the MKGSA, including the communities of Okieville and Waukena, are more sparsely populated than the eastern portion, there are at least 200 domestic wells and several public water systems, including the Okieville/Highland Acres Mutual Water Company, Waukena Elementary School, and Buena Vista School water systems, located in this area. Figure 3 from the Focused Technical Review shows that there are no RMWs with established water quality minimum thresholds set at the MCL for drinking water near the community of Okieville. SHE recommends expanding the current RMW network to include additional representative monitoring wells, particularity near vulnerable communities and groundwater stakeholders. **Specifically, consider incorporating the**

new well serving Okieville/Highland Acres Mutual Water Company as a RMW with established water quality minimum thresholds and quantifiable measurements of sustainability.

- **Clarify how the GSA plans to align groundwater monitoring efforts with any emerging contaminants of concern and new MCLs.** Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid(PFOAs) have been identified as emerging contaminants in the basin. Due to their emergence, it is important that MKGSA include these contaminants as COCs to be monitored and evaluated. In addition to these two contaminants, the draft GSP would benefit from an explanation of how the plan will be updated to align groundwater monitoring efforts with any emerging contaminants in the basin and any future new MCLs.
- **Include well construction information for all RMWs included in the GSP.** The draft GSP identifies 43 RMWs for water levels, but does not include well construction information for these wells as is required for all monitoring wells by 23 CCR § 352.4. This type of information is critical to allow the public and DWR evaluate if the RMWs are adequate in evaluating water levels relative to the MOs and MTs over the long term.

GSP Section: Projects and Management Actions

Projects

Recharge, Injection Wells, and On-farm Recharge Project Types

We are pleased with the inclusion of Okieville Recharge Basin Project. A partnership has been established between Okieville and TID in order to construct the recharge basin upstream from the community that can bring mutual benefits. Indeed, groundwater recharge projects can have multiple benefits such as increasing groundwater storage and levels, as well as diluting contaminant plumes and improving groundwater quality. Carefully designed and implemented recharge projects, dry wells, on-farm recharge and storage projects type can simultaneously provide benefits to communities, farmers, and ecosystems. Moreover, these types of partnerships can enhance community engagement in projects, increase community awareness of the issues being addressed and establish a framework to support communities in their efforts to secure safe and reliable water.

However, if not properly designed, recharge projects may mobilize nitrates, pesticides, and fertilizers, as well as naturally occurring contaminants, and can lead to the further degradation of groundwater quality, impacting drinking water wells. Currently, it is unclear if recharge, injection wells, and on-farm recharge proposed projects include precautions of groundwater quality degradation or if groundwater quality is included in the monitoring plan of these projects. In order to develop recharge projects that move the subbasin towards sustainability, avoid the further degradation of groundwater, and improve drinking water conditions, we recommend the following considerations and changes:

- **Strengthen partnerships between Okieville and other DACs such as Waukena.** MKGSA and TID should continue to partner with communities for the development of projects with multiple benefits that addresses overdraft while ensuring the protection and viability of important drinking water sources. When feasible, MKGSA should continue to prioritize and provide additional recognition for recharge projects near or up gradient to drinking water systems that have shared benefits: increase groundwater baseflow while at the same time addressing drinking supply needs, including improving GW quantity and quality.

- **Include a map that overlays all of the potential recharge projects onto one map and include the location of S/DAC, domestic wells, and public water systems**. As currently described, stakeholders are unable to effectively evaluate the collective potential benefits or impacts of recharge projects for drinking water users in the MKGSA.
- **Develop criteria for recharge projects that prevent unintended impacts to drinking water.** We recommend providing security considerations to ensure that all recharge and storage projects do not cause nor increase groundwater contamination. Attention should be placed on monitoring water quality, avoiding the use of contaminated soils through which water will percolate or use of surface water that is contaminated, and proposing strategies that can avoid/prevent/mitigate for any potential short and/or long term impact to drinking water wells, including domestic wells. For more information please refer to back to the guide Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act [16].

Management Actions

Groundwater Extraction Allocation Framework

SHE appreciates MKGSA's intent to conduct a full stakeholder outreach program during the development of the Mid-Kaweah Groundwater Extraction Allocation Framework such that well owners will be afforded the opportunity to provide input on the proposed implementation of the program. We are also pleased that MKGSA also plans to exclude those well owners who extract less than two AF per year (i.e., de minimis extractors) at least for this initial phase of an allocation program. Nonetheless, we recommend the GSP provide stronger clarification regarding provisions that the GSA plans to implement and consider to ensure that drinking water users will continue to have access to drinking water. When developing a groundwater allocation framework, consider the following measurements to ensure that the framework is protective of the Human Right to Water (AB 685):

- **Sustainable yield allocation:** In order to best protect drinking water needs we recommend that GSAs establish an allocation amount of groundwater as part of the calculation for the sustainable yield to adequately meet drinking water needs for public health and safety, both now as well into the future. Small water systems serving disadvantaged communities, domestic well owners, and water systems serving schools should be excluded from an allocation program. In order to determine this baseline for drinking water, GSAs will need to work with small community water systems, cities, and/or the county to determine current and future daily drinking water needs.
- **Fees:** The draft GSP indicates that it will not impose pumping restrictions on well owners that extract less than two AF per year. However, it does not address small water systems that may extract over two AF per year and serve critical drinking water needs, such as the Okieville/Highland Acres Mutual Water Company, and the Waukena Elementary School system. When developing a groundwater user fee structure, please consider that small communities

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

have fewer economic resources. Additional fees increase families' water bills that are frequently already above the California water affordability threshold of 1.5% of MHI. Moreover, it is important to recognize and value other ways DACs and low-income residents contribute to the implementation of SGMA. For example, the Kaweah Subbasin, like many others around the State, was granted a DAC waiver and qualified for $1.5 million in grant funds to offset the costs of developing the GSP. The DAC waiver was granted by demonstrating the number of DACs that are located within the subbasin. Additional grants were obtained to construct monitoring wells and a recharge basin. For these reasons, we recommend exempting small drinking water systems managed by DACs and De Minimis Extractors from any GSAs fees (use permits and penalty fees) to support their efforts to provide affordable safe water.

- **Financial penalties:** Penalties for DAC water providers with limited technical, managerial, and financial capacity have often been found by the SWRCB to be counter-productive. If MKGSA consider implementing a sort of penalty for over-use, at a minimum consider 1) creating a more flexible warning and appeal process with these users, 2) proactively assisting SDWS that may be at risk of over-extraction, and 3) conditional forgiveness and reduction of penalties should be considered. This would encourage transparency and working collaboratively with MKGSA to take corrective actions addressing the underlying causes of overuse. Ideally, we recommend that MKGSA consider exempting SDWS serving DACs be from financial penalties for over-use.
- **Allocation decisions time-frame:** In the context of extreme weather events and given the unique set of factors that play a role in the recharge of the aquifers within the GSAs area, we recommend that allocations decisions are not tied to a time frame but to an adaptive management methodology that can respond timely to undesirable results and adjust allocations accordingly. The adaptive management methodology could guide allocation decisions and be used as a corrective tool to avoid localized drawdown impacts on communities and ecosystems, such as dewatering of shallower wells and streams. Particular attention should be placed on protecting groundwater levels for drinking water beneficial uses in the vicinity of community water systems of all kinds (municipal and unincorporated) and domestic well communities.
- **Banking allocation of groundwater:** Susceptibility to experiencing undesirable results from a given amount of pumping depends on hydrogeologic, climatic, biological, and other factors that can vary significantly within short and long periods. We recommend a short period for banking allocation to avoid significant negative externalities. We also recommend that any allocation period be strictly tied to an adaptive management methodology that can respond timely to undesirable results and adjust allocations accordingly. This is particularly important in the context of changing climate and data uncertainties.
- **Transitional allocations and period:** The following protective measures can be considered if excessive pumping is allowed during the transition period or if transitional buffer allocations are made available to eligible groundwater users:
    - Develop an adaptive management methodology based on SGMA monitoring requirements to guide any allocation decisions and to be used as a corrective tool to avoid impacts of localized drawdown on vulnerable communities and ecosystems.

    - Restrict transitional pumping in excess of the sustainable yield near drinking water systems and households relying on private wells if negative impacts are observed through monitoring or if protective thresholds are exceeded.
    - Develop mitigation measures that support communities, schools, and drinking water well owners in case negative impacts are observed/experienced.
- **Prolonged droughts:** When developing the MKGSA Groundwater Allocation Framework, clarify how the program will respond or be updated during a long-term drought. Particularly, with respect to the potential significant impacts that domestic well users, S/DACs face during these extreme weather events. We recommend the following:
    - Recognize and appropriately account for negative externalities especially during prolonged droughts by designing allocation rules that support progress toward sustainability and sufficiently address negative impacts.
    - Provide security considerations to support access to safe drinking water for DACs, SDACs, and underrepresented communities within GSA boundaries during prolonged drought periods.
    - Provide security considerations to ensure that allocations during prolonged drought periods do not individually or cumulatively hinder communities and domestic well owners access to water.
    - Develop an adaptive management methodology to be used as a corrective tool to avoid any localized drawdown impacts on communities and ecosystems, such as dewatering of shallower wells and streams.
    - Develop a drought drinking water prevention/mitigation plan that is capable to timely respond to families at risk or impacted by prolonged droughts.

Groundwater Market / Trading Management Actions

There are a number of important foundational steps agencies need to take before considering a groundwater market as a possible tool for groundwater management. Changing where and when groundwater is pumped or the place, method, timing, or purpose of its use, can significantly change the impacts experienced by people and ecosystems. Whether a groundwater market leads to harmful or beneficial impacts all depends on how the market is designed, governed, implemented, and what feedback mechanisms are included and utilized throughout the life of the market. Groundwater markets are not a viable option where the potential impacts of trading are not well understood— which is the case in areas that have significant data gaps and data uncertainties— where trading rules cannot sufficiently address negative externalities, or where the expected benefits of a market do not outweigh the burdens and uncertainties associated with designing and implementing a market[17].

The foundation of a well-designed trading program requires a fair and adequate allocation of groundwater for drinking water uses, an additional margin for future growth prior to allocating water for trading purposes, and trading rules that avoid undesirable results as well as avoid or mitigate potential

[17] Green Nylen, Nell, Michael Kiparsky, Kelly Archer, Kurt Schnier, and Holly Doremus. 2017. Trading Sustainably: Critical Considerations for Local Groundwater Markets Under the Sustainable Groundwater Management Act. Center for Law, Energy & the Environment, UC Berkeley School of Law, Berkeley, CA. 90 pp1

impacts to communities dependent on groundwater supplies. If these components are missing, the market can have significant negative impacts upon a community's drinking water supply. Some impacts include, but are not limited to: localized drying of community and domestic wells, increased contamination levels, or unaffordable water rates. Before considering a groundwater market framework, consider the following:

- **Establish a non-tradeable allocation for drinking water:** A non-tradable allocation amount of groundwater should be included as part of the calculation for the sustainable yield to adequately meet current and future drinking water needs for public health and safety.
- **Ensure that monitoring networks are in place to detect the status and trends of groundwater conditions,** and to ensure that the market is running well and is not resulting in adverse impacts to groundwater quality and/or groundwater levels.
- **Implement an early warning system** utilizing data collected through the monitoring network that helps identify at-risk groundwater users and anticipate potential negative impacts, such as groundwater level declines or worsening groundwater quality. Provide security considerations to ensure that transfers do not individually or cumulatively cause or contribute to violations of water quality standards.
- **Implement interim and long-term solutions to mitigate for negative impacts to drinking water users caused by the groundwater trading.**
- **Outreach and engagement:** Devise ways to help engage, communicate and translate technical information to stakeholders, particularly to rural communities, private well owners, and small farmers.

Assistance to Small Water Systems, Domestic Wells

SHE appreciates MKGSA and stakeholder interest in providing assistance to small water systems and domestic well owners without the financial impacts to service or replace their pump and well facilities.

As the assistance measures described in the draft GSP have not yet been approved to be carried out, we would like to further express the importance in providing such an assistance program to prevent and mitigate for impacts to drinking water users. The draft GSP identifies an impact to 21% of rural/domestic wells and, based on our Focused Technical Review, the actual impacts could be much higher. Moreover, rural domestic and small water system demand does not contribute substantially to the overdraft conditions, yet the risks imposed on these drinking water users are overlooked, creating a disproportionate impact on already vulnerable communities. With the decision of postponing the implementation of a groundwater allocation program or addressing reductions in groundwater pumping, drinking water users could face significant impacts, particularly if the region faces another drought. If MKGSA defines its sustainability criteria in a way that allows for the dewatering of drinking water wells, it is critical that MKGSA develops a robust drinking water assistance program to prevent impacts to drinking water users and mitigate the drinking water impacts that occur.

The draft GSP presents a couple of mitigation measures that are being considered by the GSA's Advisory Committee and Governing Board. We would like to provide a set of additional considerations for establishing such an Assistance Program. Mainly, we recommend that mitigation measurements are tied

back to a monitoring network and an adaptive management framework (trigger system) to evaluate groundwater conditions and predict potential groundwater impacts to drinking water wells. The framework should forecast how groundwater levels and quality could change based on potential project impacts, identify at-risk domestic wells, identify areas for additional monitoring, and determine if monitoring triggers have been met. Please consider the following for the development of an Assistance Program:

i. Drinking Water Wells Monitoring Network: Expand and improve the monitoring network described by the GSP draft to assess impacts to drinking water wells caused by changes on groundwater levels and quality, in particular for groundwater conditions near the Okieville and Waukena communities, areas with high density of private domestic wells, and water systems serving schools. This will allow MKGSA to better comply with GSP regulations section 354.34, which requires GSAs to describe how potential impacts to groundwater users and uses will be monitored, ensure the success of the Assistance Program, and take a proactive approach to protect S/DACs and domestic well owners access to safe and affordable drinking water.

ii. Adaptive Management/Trigger System: Develop a protective warning system, also referred to as an adaptive management approach, which can alert groundwater managers when groundwater levels are dropping to a level that negatively affects drinking water users. Such triggers are essential for groundwater management but can be adjusted to fit the needs of different management actions as well as the basin as a whole. The table below provides an example of what a warning system might look like, using green, yellow, and red light indicators or "triggers", and some potential corrective actions groundwater managers can take to remedy the problem. Ultimately, this approach allows for evaluating what is happening and responding accordingly to prevent or mitigate negative impacts.

Triggers	Groundwater Status	Potential Corrective Actions
"Green-light"	Groundwater levels are stable.	No action required
"Yellow-light"	Groundwater levels are approaching concerning levels and impacts may occur or are occurring at a low rate. Some corrective actions are needed.	- Undertake an analysis to pinpoint the cause - Undertake targeted water quality testing for selected domestic wells as mentioned in the draft GSP as one of the measures being considered by the GSA's Advisory Committee and Governing Board - Provide support to groundwater users experiencing impacts - Reassess pumping allocation and pumping patterns and consider restricting or limiting groundwater extraction near the triggered area.
"Red-light"	Time to stop and mitigate as significant impacts are imminent or are occurring.	- Reassess pumping allocation and pumping patterns and consider further restricting or limiting groundwater extraction near the triggered area. - Provide interim emergency solution while pursuing a permanent solution to impacted groundwater users.

iii. Drinking Water Well Impact Tool/Model: Develop a tool/model tied to the monitoring network and the adaptive management framework (trigger system) to evaluate groundwater levels and predict potential groundwater impacts to drinking water wells. Update model regularly and develop a prediction of the potential groundwater impacts to drinking water wells. The tool/model could be used to: monitor and forecast changes in groundwater levels, monitor and forecast any localized areas for special attention and/or monitoring, attempt to identify domestic wells at risk of impacts, and determine if triggers have been met based on the adaptive management framework. Results of this assessment could be incorporated into the annual SGMA progress report to domestic well owners mentioned in the draft GSP as one of the measures being considered by the GSA's Advisory Committee and governing board.

Iv. Mitigation Measurements: Groundwater should be managed to avoid reaching a 'red light' trigger and the implementation of a mitigation program should be implemented before wells begin to become unusable. This will allow communities working with the GSA to access funding, and the planning and contracting will be completed such that the necessary construction will be implemented without unnecessarily leaving community members without access to drinking water. The program should be designed to be proactive, rather than reactive. When mechanical failure or other operational problems are likely to occur, or have occurred, due to declining water levels, mitigation should be provided as described below:

- Define mitigation based on a field inspection to determine static depth to groundwater levels within the well and verify well construction information and pump setting information, if possible;
- Provide short-term water supply while a permanent solution is pursued. Short-term interim solutions serve to address the immediate impacts and ensure access to safe drinking water and water for domestic uses, including health and sanitation. Short-term emergency supplies shall be provided as soon as reasonably possible and can include bottled water, bottled water paired with water tank, or another combination. Since short-term solutions are expensive over a prolonged period of time, it would be important to quickly identify potential long-term solutions. As an example, GEI's feasibility study for East Porterville in 2016 estimated tank and bottled water programs cost $633,500 per month just for East Porterville at the height of the drought.[18]
- Long-term water supply can include: financial and technical support to complete a connection to a nearby public water system/provider; providing funding to lower a well pump; providing an equivalent water supply from an alternate source; providing funding to replace affected well with a deeper well that meets county well ordinance standards; reducing or adjusting pumping near the impacted drinking water well as necessary to avoid the impact, and/or; providing other acceptable mitigation through a collaboration with the affected drinking water well responsible.

[18] California Department of Water Resources. East Porterville Water Supply Project Feasibility Study. 2016. Page 3523.
https://water.ca.gov/LegacyFiles/waterconditions/docs/East%20Porterville%20Feasibility%20Study_Public%20Draft_Rev_060316-1.pdf

- For long-term water supply option, a strong preference for connecting current domestic well users to a public water system should be given whenever possible. Public water systems have an obligation to test water quality for water served, and although some public water systems typically have limited resources, they do have a greater ability to install treatment systems to address water quality impacts, recoup funds for litigated contamination such as 1,2,3-TCP, and apply for and receive grant funding for beneficial projects. Because of this, public water systems, including small community water systems, provide a more reliable drinking water source than privately-owned domestic wells.
- For example, in Okieville-Highland Acres an unknown number of private wells which serve the remaining 20 homes not connected to the recently constructed water system (based on 3.76 people per household[19], the population is assumed to be 76) are more susceptible to changes in groundwater levels and at risk of having their water access impacted. The depth of these wells are unknown, but typical domestic wells in the area are drilled to a depth of 130 to 225 feet. More recent domestic wells have been drilled to a depth of 360 feet in an effort to avoid being impacted by declining groundwater levels. Groundwater levels and the domestic well conditions in Okieville should be closely monitored. If impacts cannot be avoided and a domestic well is at risk of dewatering, MKGSA should implement mitigation measurements before wells become unusable. Mitigation measures should include funding connection fees and work on private property in order to help impacted families connect to the Okieville-Highland Acres water system.

v. Funding: A secure and reliable funding source and mechanism for the implementation of this type of mitigation program needs to be identified. While grant or emergency funding could potentially be available for such a program when needed, the availability of these funds is not certain. A more secure funding mechanism could be the establishment of a reserve fund that is paid into on an annual basis and accrues funds that would then be available as water levels decline in the future. The following are potential sources of funding to also consider:

- Implementing service or land-based fee assessments using Proposition 26 or Proposition 218;
- Utilizing SWRCB programs such as Proposition 1 Groundwater Grant Program and Prop 68 Groundwater Treatment and Remediation Grant Program;
- Utilizing DWR funding programs for groundwater projects and technical assistance programs to aid SGMA implementation;
- Utilizing CV-SALTS project funding: Implementation of a new proposed Central Valley basin plan amendment on salts and nitrates may result in additional funding sources for nitrate contaminated aquifers. If appropriate, MKGSA should consider coordinating with nitrate dischargers forming a Management Zone under CV-SALTS in order to streamline administrative costs and leverage resources.

[19] As indicated by Census data from Tulare County Census Tract 21, Block Group 1 as average household size

Lastly, please consider the **Kern County Well Mitigation Strategy** developed and implemented by Rosedale Rio-Bravo Water Storage District, Kern County Water Agency, Pioneer Project Recovery Participants, and Kern Water Bank Authority. The Kern County Well Mitigation Strategy is designed to prevent, eliminate or mitigate significant adverse impacts caused by the Agencies groundwater banking operations and is an example to consider when developing a drinking water well prevention/ mitigation program. It includes tools for both identifying potential harmful impacts caused by management actions and how to mitigate or rectify those impacts. If a well failure was caused by the District's actions, the District is committed to implementing a combination of the following:

- Providing short term emergency water supply to domestic well owners;
- Providing funds to lower well pump or drill a deeper well;
- Providing funds to connect to a water provider;
- Providing an alternative water supply;
- Reduce recovery pumping as necessary to avoid the impact.

The MKGSA could consider implementing a similar type of mitigation strategy for wells that go dry due to groundwater management activities.

Collaboration with Other Agencies

SHE appreciates MKGSA and stakeholder proposal to further collaborate and partner with other regulatory agencies during GSP implementation to ensure that its minimum thresholds and measurable objectives are maintained and that the water quality objectives of these other entities are achieved. As expressed previously, SHE believes that the strategic governance structure of GSAs can uniquely leverage resources, provide local empowerment, centralize information, and help define a regional approach to groundwater quality management unlike any other regional organization. When implemented effectively, GSAs have the potential to be instrumental in reducing levels of contaminants in their regions, thus reducing the cost of providing safe drinking water to residents. GSAs are the regional agency that can best comprehensively monitor and minimize negative impacts of declining groundwater levels and degraded groundwater quality that would directly impact rural domestic well users and S/DAC within their jurisdictions. When potential projects are proposed, MKGSA should consider taking leadership in coordinating regional solutions.

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TULARE COUNTY RMA

[Page 1-1]: “It is one of the prime agricultural regions in the Central Valley and home to numerous small towns and communities, as well as the larger cities of Tulare and Visalia.” Should reference a specific map or diagram.

[Page 1-6]: “Urban land use is located within the limits of the cities of Tulare and Visalia and the surrounding unincorporated areas within the sphere of influence for the cities.” General Plan Land Use Diagrams should be referenced or included in the GSP. Tulare County General Plan Land Use Diagram Figure 4-1 (page 4-5) at a minimum should be referenced or included here.

[Page 1-12]: “Each of the two incorporated cities in MKGSA’s area have adopted General Plans. For the areas not within the limits of the incorporated cities, the Tulare County General Plan applies. The General Plans for the cities and the General Plan for the county each have land use elements which address water usage. These elements were considered in this GSP.” General Plan Land Use Diagrams should be referenced or included in the GSP. Tulare County General Plan Land Use Diagram Figure 4-1 (Page 4-5) at a minimum should be referenced here. This statement should describe the specific general plan elements that were reviewed.

[Page 1-12]: “However, the Tulare County 2012 General Plan has a Water Resources Element…” Note that the County’s GP also has other elements that address water. These should be referenced. The Tulare County General Plan includes both policies and implementation measures that address water supply, wastewater treatment, adequate infrastructure, plans, programs, and funding in the following elements:

Planning Framework (Chapter 2)
Agriculture (Chapter 3)
Land Use (Chapter 4)
Economic Development (Chapter 5)
Housing (Chapter 6)
Environmental Resources Management (Chapter 8)
Health and Safety (Chapter 10)
Water Resources Chapter 11)
Public Facilities and Services Chapter 14)

Gen Plan Water Resources Element policies Include:
Water Supply
WR-1.1 Groundwater Withdrawal
WR-1.3 Water Export Outside County
WR-1.4 Conversion of Agricultural Water Resources
WR-1.5 Expand Use of Reclaimed Wastewater
WR-1.6 Expand Use of Reclaimed Water
WR 1.7 Collection of Additional Groundwater Information
WR-1.8 Groundwater Basin Management
WR-1.9 Collection of additional Surface Water Information
WR-1.10 Channel Modification
WR-3.1 Develop Additional Water Sources
WR-3.2 Develop an Integrated Regional Water Master Plan

WR-3.3 Adequate Water Availability
WR-3.4 Water Resource Planning
WR-3.5 Use of Native and Drought Tolerant Landscaping
WR-3.6 Agricultural Irrigation Efficiency
WR 3.7 Emergency Water Conservation Plan
WR-3.8 Educational Programs
WR-3.9 Establish Critical Water Supply Areas
WR-3.10 Diversion of Surface Water
WR-3.11 Policy Impacts to Water Resources
WR-3.12 Joint Water Projects with Neighboring Counties
WR-3.13 Coordination of Watershed Management on Public Land
PFS-2.1 Water Supply
PFS-2.2 Adequate Systems
PFS-2.3 Well Testing
PFS-2.5 New Systems or Individual Wells
Water Quality
WR-1.2 Groundwater Monitoring
WR 1.7 Collection of Additional Groundwater Information
WR-1.8 Groundwater Basin Management
WR-2.1 Protect Water Quality
WR-2.2 NPDES Enforcement
WR-2.3 Best Management Practices
WR-2.4 Construction site Sediment
WR-2.5 Major Drainage Management
WR-2.6 Degraded Water Resources
WR-2.7 Industrial and Agricultural Sources
WR-2.8 Point Source Control
WR-2.9 Private Wells
PFS-2.1 Water Supply
PFS-2.5 New Systems or Individual Wells
Implementation Measures should also be included.

[Page 1-13]: "…the MKGSA will address these issues with the adoption…" Might want to reference the GSA's authority to address these issues here and specifically detail how adoption of the GSP will address these issues.

[Page 1-14]: "…"work with the county and other organizations to protect prime farmland and farmland of statewide importance outside the city's Urban Development Boundary…" Should policies from the County General Plan be specifically referenced here? This discussion could reference County Adopted City General Plans (Visalia Area Community Plan) as the appropriate mechanism to coordinate land use and policy decisions within the UAB and UDB. See Tulare County General Plan Planning Framework Chapter 2 Section PF-4 and 4-A. In addition, groundwater recharge is not solely determined by FMMP designations (See Tulare County General Plan Health and Safety Element Figure 10-7 areas for groundwater recharge.

In addition the following County General Plan policies including but not limited to primarily address farmland protection:
AG-1.1 Primary Land Use
AG-1.2 Coordination
AG-1.3 Williamson Act
AG-1.5 Substandard Williamson Act Parcels
AG-1.6 Conservation Easements
AG-1.7 Preservation of Agricultural Lands
AG-1.8 Agriculture Within Urban Boundaries
AG-1.9 Agricultural Preserves Outside Urban Boundaries
AG-1.10 Extension of Infrastructure Into Agricultural Areas
AG-1.11 Agricultural Buffers
AG-1.12 Ranchettes
AG-1.13 Agricultural Related Uses
AG-1.14 Right-to-Farm Noticing
AG-1.15 Soil Productivity
AG-1.16 Agricultural Water Resources
AG-1.18 Farmland Trust and Funding Sources
AG-2.8 Agricultural Education Programs
LU- 1.5 Paper Subdivision Consolidation
LU-2.1 Agricultural Lands
LU 2.2 Agricultural Parcel Splits
LU-2.5 Residential Agriculture Uses
LU- 2.7 Industrial Development
RVLP- 1.1 Development Intensity
RVLP- 1.2 Existing Parcels and Approvals
RVLP- 1.3 Tulare County Agricultural Zones
RVLP- 1.4 Determination of Agricultural Land
RVLP- 1.5 Non Conforming Uses
RVLP- 1.6 Checklist

[Page 1-17]: “The county is revising their well permit application based on GSA input. The proposed revised application is provided on the following pages.” For clarification purposes, this section could clearly delineate what revisions to the well permitting application are being proposed.

[Page 1-19, Contractor Disclaimers]: This section notes the role for the GSA’s in the process that you may want noted above.

[Page 1-25]: “As shown in Figure 1-2, the MKGSA region includes three areas identified as a Census Designated Place by the 2016 U.S. Census Bureau as disadvantaged or severely disadvantaged. The City of Tulare has been identified as a Disadvantaged Community, while the community of Matheny Tract and Waukena have both been determined as a Severely Disadvantaged Community. The community of Okieville/Highland Acres is located within a 2016 U.S. Census Bureau Disadvantaged Community Tract. Stakeholders in these communities have the opportunity to consult on the plan during the agency’s

Board of Directors and Advisory Committee meetings and during review of this Plan." Seems to be a repeat of Section 1.5.2.3

[Page 3-3]: "Placement of recharge projects and management of pumping regimes in each GSA/Management Area such that acceleration of contaminant plume migration that impairs domestic and municipal supply well production as induced by GSP projects and management actions is avoided." this is important for any new community, as well as for existing communities that fall under the County's purview. Acquisition of property for public purposes may require a General Plan Referral.

[Page 3-5]: "…one-third of the representative monitoring sites in all three GSA jurisdictions combined exceed their respective minimum threshold water level elevations." Over what time period?

[Page 3-5]: "…a determination has been made that the percentage of wells completely dewatered by 2040 should the minimum thresholds not be exceeded would not constitute an undesirable result." For clarification should that actual percentage be stated here?

[Page 5-3]: "During this 20-year period, pumping costs will rise due to higher lifts and higher energy pricing, but this condition is considered by the MKGSA as a manageable impact that has been occurring for many years and is comparable to inflationary costs experienced by agricultural businesses, municipalities, and small-system and domestic households." Can you further detail the costs comparisons?

[Page 6-3]: "Comparing these resulting groundwater inflow assignments to MKGSA to annual groundwater pumping for the same current period (1997-2017), as identified in Table 6-3, results in an imputed water balance surplus for MKGSA of about 38,000 AF on an average basis. Yet, as acknowledged in Section 2 of this Plan, MKGSA, like the balance of the Subbasin, experiences a historical decline in groundwater levels and attendant depletion of groundwater in storage within its jurisdictional region." This might be a good place to describe the imputed water balance in greater detail to describe the difference from the previous budget.

[Page 6-4]: "Whereas the average water accounting framework water balance is positive, the comparable hydrogeologic water budget is negative by about 13,000 AF. This reduction in storage is to be expected, as water levels decline in the range of 3 feet per year over much of the GSA region. The relative contributions of multiple causes of these declines is the subject of further study and hydrogeologic analyses." Please provide greater of the detail in regards to the cooperative agreement to help understand why groundwater levels are trending down in the overall Kaweah, even if there is 'surplus' according to the budget in the Mid-Kaweah.

[Page 6-4]: "It is the intent of the Subbasin GSAs, as stipulated in the Coordination Agreement, to continue to discuss water balances and groundwater conditions during GSP implementation and, in so doing, manage the location, extent, and financial contributions to projects and management actions of

each." This would be a good place to discuss the Coordination Agreement? Specific language or chapter/section citations in the coordination agreement should be referenced here.

[Page 7-4]: "As an irrigation district under Division 11 of the California Water Code, TID has authority to manage, regulate, and engage in groundwater recharge operations for the benefit of its landowners." Can you state here that the water rights under the existing contracts?

[Page 7-33]: "…a GSA has the authority to regulate groundwater extractions
and impose an allocation mechanism." "…and an arrangement to apportion responsibilities…" Could we say this is achieved through the Coordination Agreement?

[Page 7-41]: "…capped at 55 gallons per capita per day (gpcd) in 2019 and ramped down to 50 gpcd by 2030…" It might be better to say, "May be adjusted back up from 50, based on science."

[Page 8-3]: "Table 8-1: Sample Groundwater Extraction Summary" May want to add 'small community water systems' as a separate line from M&I and Domestic?

WESTCHESTER
from nuveen

Westchester Group
Investment Management, Inc.
6715 N. Palm Avenue
Suite 101
Fresno, CA 93704
WGIMglobal.com

September 13, 2019

MKGSA Groundwater Sustainability Plan Public Comments
c/o Tulare Irrigation District
P.O. Box 1920
Tulare, CA 93275

Re: Mid-Kaweah Public Review Draft Groundwater Sustainability Plan

Thank you for the opportunity to comment on the Mid-Kaweah GSP. I appreciate the efforts that have gone into this plan and generally feel like the Plan is heading in a good direction.

I do have some clarifying comments regarding the Project and Management Actions in Section 7 of the Plan. Specifically, the concept of on-farm recharge covered in Section 7.3.4. My comments are as follows:

1. It would be helpful to understand how on-farm recharge water quantities will be credited and accounted for. Will there be any losses applied, or "leave-behind?"
2. Will individual water user accounts be created to manage the credits?
3. In addition to on-farm recharge, I would like to see some further discussion on private water user/landowner recharge projects such as recharge basins and subsurface recharge system projects. With these projects, the same questions outlined above regarding how recharge will be credited and accounted for would be applicable.

It would be beneficial to see these items further defined in the Plan, but if specifics on such Projects and Management Actions cannot be quantified at this time, I would at least like to see the Plan outline a process of how such projects and actions could be developed post Plan, and prior to implementation.

Sincerely,

Brian L. Hauss
Vice President

J. Paul Hendrix
Executive Director
Mid Kaweah Groundwater Sustainability Agency
jph@midkaweah.org

[sent via email]

September 16th, 2019

Re: Comments on Mid Kaweah GSA Draft Groundwater Sustainability Plan

Dear Mid Kaweah GSA Advisory Committee Members and Board Members:

Leadership Counsel for Justice and Accountability works alongside low income communities of color in the San Joaquin Valley and the Eastern Coachella Valley. As is most relevant here, we work in partnership with community leaders in the communities of Matheny Tract, Soults Tract and Lone Oak Tract to advocate for local, regional and state government entities to address their community's needs for the basic elements that make up a safe and healthy community, including: safe and affordable drinking water, affordable housing, effective and safe transportation, efficient and affordable energy, green spaces, and clean air.

We have been engaged in the Sustainable Groundwater Management Act (SGMA) implementation process because most of the communities with which we work are wholly dependent on groundwater for their drinking water supplies, and many have already experienced groundwater quality and supply issues. Communities we work with have not been included in decision-making about their precious water resources, and their needs are not at the forefront of such decisions. In 2012, California recognized the Human Right to Water for domestic purposes, and required that state agencies consider this human right in their activities. State law also requires that GSAs avoid disparate impacts on protected classes. SGMA's requirements for a transparent and inclusive process, presents an opportunity in the context of groundwater management to meaningfully include disadvantaged communities in decision-making, and to create groundwater management plans that understand their unique vulnerabilities, are sensitive to their drinking water needs, and avoid causing disparate negative impacts on low-income communities of color.

We submit these comments to elevate our concerns that the Mid Kaweah Groundwater Sustainability Agency's (GSAs) Draft of its Groundwater Sustainability Plan (Draft GSP) does not adequately analyze or incorporate input from disadvantaged communities and domestic wells, and will create a disparate impact on protected classes unless modified to effectively protect drinking water resources for disadvantaged communities.

We include herein our comments with respect to deficiencies in the Draft GSP as well as recommendations for improvements. We have also attached a Focused Technical Review of the drinking water impacts of the current Draft GSP. We conducted the Focused Technical Review in collaboration with Self-Help Enterprises, with whom we work closely in the region.

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The Draft GSP is Incomplete, and Must Include Additional Information In Order to be Reviewed by the Public

The Draft GSP omits critical data, and does not give DWR or the public sufficient information to evaluate compliance with state law or the impact of the plan on beneficial users. Specifically, the Draft GSP has not clearly evaluated the impact of the plan on domestic well users and disadvantaged communities, which are likely to cause a disparate impact on protected groups pursuant to state civil rights law. Further, the GSP has not committed to a clear program to address those impacts. The GSP also does not contain sufficient information on groundwater contamination in the GSA area, and does not clearly show how the actions of the other GSAs in the subbasin will achieve sustainability throughout the subbasin. The GSA also does not provide adequate information about the plan for continued public engagement during GSP implementation. More information about each of these gaps in data and information is included below.

The GSP cannot be adopted until this key information is made available to the public. The GSA must incorporate this information into the Draft GSP before the Draft GSP can be effectively reviewed by the public or by DWR.

The Draft GSP Will Have Disparate Impacts on Residents in the MKGSA Subbasin Unless Modified to Protect Domestic Well Users and Disadvantaged Communities

Mid Kaweah GSA must prioritize drinking water as an essential pillar of the proposed groundwater sustainability plan. The Draft GSP will cause significant, unreasonable and disparate impacts on protected groups as a result of the sustainability goals that it has set, and has not committed to a concrete plan to prevent or mitigate those impacts.

Under SGMA, the GSA is tasked with managing groundwater in a way that does not cause "significant and unreasonable impacts" to the beneficial uses and users of groundwater in the subbasin. The GSA's activities cannot avoid impacts only on certain types of beneficial users; under SGMA it must "consider the interests of" an enumerated list of all types of beneficial users, including domestic well users and disadvantaged communities on domestic wells and community water systems.[1] Furthermore, state law provides that no person shall, on the basis of race, national origin, ethnic group identification, and other protected classes, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination

[1] Water Code § 10723.2.

under, any program or activity that is conducted, operated, or administered by the state.[2] In addition, the state's Fair Employment and Housing Act guarantees all Californians the right to hold and enjoy housing without discrimination based on race, color, or national origin.[3] Lastly, the Department of Water Resources is required to consider the Human Right to Water in its evaluation of the GSA's proposed Groundwater Sustainability Plan, so the drinking water impacts of the GSP are of utmost importance in its approval.[4]

Small disadvantaged communities of color within the San Joaquin Valley are disproportionately impacted by unsustainable groundwater use, falling groundwater tables, dry drinking water wells, subsidence, and water quality degradation.[5] As described in more detail below, and analyzed in the attached Focused Technical Review, domestic well users are de minimis pumpers in the GSA area, but the policies proposed in the Draft GSP for managing groundwater levels and groundwater quality will likely fully or partially dewater approximately 86% of domestic wells,[6] creating a disproportionate impact on domestic well users. Water quality will not be monitored in proximity to private domestic wells, since drinking water contaminants will only be tested for compliance where more than 50% of the pumping around a representative monitoring well is for drinking water purposes. Furthermore, the GSA has proposed a potential program to assist domestic well users and small systems with addressing these impacts, but the program is not concrete or detailed and the GSA board has not committed to implementing the program. The negative impacts discussed in this letter, which will be allowed by the Draft GSP and may not be addressed through an effective drinking water protection program, will likely be disproportionately felt by low income communities of color, and are thus discriminatory on the basis of race, color, ancestry, and national origin.

In order to prevent disparate impacts, the Mid Kaweah GSA must reassess the GSP's potential disparate impacts and include robust and proactive policies, projects, and management actions to protect vulnerable disadvantaged communities and the projected 85% of domestic wells from

[2] Gov. Code § 11135 ["No person in the State of California shall, on the basis of sex, race, color, religion, ancestry, national origin, ethnic group identification, age, mental disability, physical disability, medical condition, genetic information, marital status, or sexual orientation, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state or by any state agency, is funded directly by the state, or receives any financial assistance from the state."]; Gov. Code § 65008 [Any discriminatory action taken "pursuant to this title by any city, county, city and county, or other local governmental agency in this state is null and void if it denies to any individual or group of individuals the enjoyment of residence, land ownership, tenancy, or any other land use in this state…"]; Government Code §§ 12955, subd. (l) [unlawful to discriminate through public or private land use practices, decisions or authorizations].

[3] Gov. Code § 12900 et seq.

[4] Water Code § 106.3.

[5] Feinstein et al., "Drought and Equity in California" (January 2019); Balazs et al., "Social Disparities in Nitrate Contaminated Drinking Water in California's San Joaquin Valley," Environmental Health Perspectives, 19:9 (September 2011); Balazs et al., "Environmental Justice Implications of Arsenic Contamination in California's San Joaquin Valley," Environmental Health Perspectives, 11:84 (November 2012); Flegel et al., "California Unincorporated: Mapping Disadvantaged Communities in the San Joaquin Valley" (2013).

[6] Focused Technical Review, p. 4.

disparate impacts.[7] The sections below provide recommendations on some ways that the GSA could do so.

Basin Setting Lacks Information on Drinking Water Issues and Groundwater Quality

The SGMA regulations require GSPs to include "[g]roundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and map of the location of known groundwater contamination sites and plumes."[8] The Draft GSP does not contain information about groundwater quality issues, or a map of known groundwater contamination sites and plumes. This information is critical to ensuring that beneficial users are not harmed by increased groundwater contamination resulting from the GSA's groundwater management activities. This information is particularly important for domestic well owners and small disadvantaged communities on small community water systems, whose drinking water supply is most vulnerable to groundwater contamination. Without such information, the GSA cannot measure the impact of groundwater contamination, and therefore cannot protect the drinking water needs of these vulnerable groups.

To effectively consider the interests of these types of beneficial users, and avoid a disparate impact on protected groups pursuant to state civil rights law, Mid Kaweah GSA must:

- Include information on groundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and a map of the location of known groundwater contamination sites and plumes.

- Include adequate information regarding past, current and potential drinking water issues affecting small disadvantaged communities and domestic well users in the GSA area, including drinking water contamination, dry wells, and other drinking water supply and quality issues.

Monitoring Network Does Not Monitor Impacts On Domestic Well Users

Pursuant to 23 CCR § 354.34, GSAs must monitor impacts to groundwater for drinking water beneficial users, particularly domestic well users and disadvantaged communities,[9] and must avoid disparate impacts on protected groups pursuant to state law.[10]

The monitoring network as described in the Draft GSP fails to capture drinking water impacts on domestic wells. Representative monitoring wells are the only wells that the GSA will use to measure its compliance with its sustainable management criteria. The Draft GSP establishes two types of representative monitoring wells in the groundwater quality monitoring network: wells that will monitor for only three contaminants of concern that are harmful for agricultural production, and wells that will monitor for ten additional drinking water contaminants. The Draft GSP states that representative monitoring wells will only monitor for agricultural contaminants when over 50% of "pumping" nearby is for agriculture. This means that none of the

[7] Focused Technical Review, p. 2.
[8]
[9] Water Code § 10723.2.
[10] Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).

representative monitoring wells will capture groundwater quality or supply impacts to domestic wells outside of public water systems. It is also unclear whether the water quality monitoring wells will capture impacts to domestic wells across the GSA areas because the GSP does not include well construction information for a majority of the water quality representative monitoring wells, so the public and DWR cannot evaluate whether the wells are sampling at the depths of the zones used for drinking water purposes by domestic well users and community water systems in the GSA area.[11]

The GSA mentions that it may conduct domestic well sampling, which could be added into the groundwater quality monitoring network data. This program, if implemented effectively and if enough wells are tested with adequate frequency, could ensure that domestic wells are also being monitored for compliance with minimum thresholds. In order to avoid drinking water contamination from groundwater management activities, the GSA should include this program in its Management Actions, and provide a clear timeline and strategy for developing and implementing this program.

As the attached Focused Technical Report shows, the water quality monitoring network does not cover a large portion in the west of the GSA area, which includes at least 200 domestic wells and several public water systems for DACs and schools.[12] The GSP must demonstrate how the monitoring network will be able to monitor for impacts to beneficial users in this area.

In developing this monitoring network, the GSA has not considered the interests of this beneficial user group and is likely to cause a disparate impact on the protected groups dependent on domestic wells.

The insufficiency of the monitoring network poses a significant threat to the validity of the Plan at large, and therefore must be addressed immediately. The GSA must do the following:

- Improve groundwater quality monitoring network to include monitoring wells in the western portion of the GSA area, ensuring that impacts to domestic wells and water systems in this area are monitored for compliance with groundwater quality goals.
- Monitor for compliance with drinking water contaminants across all representative monitoring wells.
- All representative monitoring wells for groundwater quality must test for all Title 22 contaminants.
- The GSA must invest in constructing more dedicated monitoring wells and needs to explain how they plan to transition current wells in the monitoring network into dedicated monitoring wells.
- Include a domestic well sampling program in the GSP's Management Actions, and provide a clear timeline and strategy for developing and implementing this program.

[11] Focused Technical Report, p. 6.
[12] Focused Technical Report, p. 5.

Management Areas Put Drinking Water Resources for Disadvantaged Communities and Domestic Well Users at Risk

The SGMA regulations allow GSAs to establish Management Areas "based on differences in water use sector, water source type, geology, aquifer characteristics, or other factors," for the purpose of identifying "different minimum thresholds, measurable objectives, monitoring, or projects and management actions."[13] However, it may not do so in a way that causes disparate impacts on a group protected by state civil rights law, or has not adequately "considered the interests of" all types of beneficial users.

The Management Areas that the GSA proposes to establish will likely have disproportionately negative impacts on domestic well users and disadvantaged communities. The Draft GSP states that the GSA will establish Management Areas along to the borders of local water and irrigation districts within the GSA, so that each district can manage groundwater its own jurisdiction. However, some districts are only accountable to the needs of agricultural pumping, and do not have representation of drinking water users on their boards. For example, Tulare Irrigation District will be managing a wide area that includes small communities and domestic well owners; however, the irrigation district's board and clientele only reflect agricultural pumping needs. Additionally, East Tulare Villa, a disadvantaged community that depends on drinking water from the City of Tulare, is not included in the same management area as the City of Tulare, which does not allow effective protection of the community's water resources. Therefore this division of Management Areas means that all beneficial users' interests will not be considered in the management of areas where drinking water and agricultural pumping interests are present, and will likely lead to disparate impacts on protected groups.

Instead, a tool for protecting drinking water for disadvantaged communities and domestic wells is creating Management Areas around clusters of domestic wells and around disadvantaged communities, with a buffer around the area where the vulnerable drinking water users are located, and setting more protective groundwater quality and groundwater levels minimum thresholds in those areas. This ensures that there are no localized impacts to drinking water resources from groundwater levels dropping or from contaminant plumes being drawn towards large quantities of groundwater pumping.

Therefore, we recommend that the GSA:

- Form Management Areas around clusters of domestic wells and around disadvantaged communities in the GSA area, with a buffer around the area where the vulnerable drinking water users are located, and set groundwater quality and groundwater levels minimum thresholds that will protect drinking water resources in those areas.

[13] 23 CCR § 351

Sustainability Goal Does Not Comply with SGMA

GSAs must establish a sustainability goal that "culminates in the absence of undesirable results within 20 years."[14] Undesirable results are the point at which there are "significant and unreasonable impacts" from the six sustainability indicators set out in SGMA: chronic lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence, depletions of interconnected surface water.[15] Also fundamental to SGMA is the obligation that GSAs must "consider the interests of" an enumerated list of beneficial users, including "holders of overlying groundwater rights, including...domestic well owners" and "disadvantaged communities, including, but not limited to, those served by private domestic wells or small community water systems."[16] Therefore, the sustainability goal must be based on impacts from the six sustainability indicators, particular with respect to the impacts that they will have on beneficial users.

However, instead of basing on impacts from any of the six sustainability indicators on beneficial users, the Kaweah subbasin sustainability goal focuses primarily on "the viability of existing enterprises of the region," the "water needs of existing enterprises," and local plans that create "economic and population growth." This sustainability goal focuses on water for industry, is counter to the intent of SGMA, and frustrates the goals of the law because it does not take into account the needs of or "significant and unreasonable" impacts on all types of beneficial users in the GSA area.

This sustainability goal should not focus on economic growth, but rather must consider the interests of all beneficial user groups in the GSA area. The sustainability goal therefore must have co-equal quals of preserving water resources for many uses, including drinking water, environmental, urban, and agricultural.

Their discussion of the Sustainability Goal also focuses on augmenting supply, and only implementing Management Actions "where necessary." Even if all projects are implemented and sustainable management criteria are complied with in the plan, many vulnerable drinking water users will still be impacted, and the GSA has not committed to implementing its domestic well and small systems management action. Instead, the GSA should focus simultaneously on projects and management actions to ensure sustainability and protect drinking water resources.

Furthermore, the means by which the GSA states it will achieve this sustainability goal, through a "glidepath" approach, is geared towards protecting agricultural interests, and is likely to have severe impacts on the drinking water resources of domestic well users.

The sustainability goal states that it will be reached by the combined efforts of all three GSAs. However, the coordination agreement does not clearly show how the sustainability goal will be achieved, or how actions by other GSAs in the subbasin could impact the Mid Kaweah GSA area. However, given that 86% of domestic wells are already at risk of full or partial dewatering from the GSA's proposed minimum thresholds, we know that groundwater users in the Mid

[14] 23 CCR § 354.24
[15] Water Code § 10721(w).
[16] Water Code § 10723.2.

Kaweah GSA cannot afford to be further impacted by overpumping in neighboring GSAs. Therefore, we recommend that the We further recommend that the Mid Kaweah GSA set a clear sustainability goal for its own local GSA area, and ensure that the coordination agreement with the other Kaweah subbasin GSAs does not negatively impact its sustainability goal.

In order to have a sustainability goal that complies with SGMA and avoids disparate impacts on protected groups under state law, the Mid Kaweah GSA must:

- Agree on a subbasin-wide sustainability goal that protects all types of beneficial users equitably, avoiding disparate impacts on protected groups.
- Work with Kaweah Subbasin GSAs to clearly define how their combined actions will achieve sustainability, and include a thorough explanation of this collective effort in the coordination agreement or each GSP.
- Set a clear sustainability goal for its own local GSA area.
- Ensure that the coordination agreement with the other Kaweah subbasin GSAs does not negatively impact the Mid Kaweah GSA's local sustainability goal.
- Use the numerical groundwater model to evaluate the change in water levels at representative monitoring wells through 2040, both with and absent of the proposed Projects and Management Actions, and relative to the proposed measurable objectives and minimum thresholds.
- Use the above analysis to show how all types of beneficial users in the GSA area will be impacted by the proposed glidepath approach.
- Ensure that projects and management actions are implemented simultaneously, in order to equitably protect all beneficial users' groundwater needs.

The Draft GSP's Sustainable Management Criteria for Groundwater Levels are not Adequate

The sustainable management criteria for groundwater levels must be made after considering the interests of all beneficial user groups, including domestic well users and disadvantaged communities.[17] These policy decisions must also avoid disparate impacts on protected groups pursuant to state and federal law.[18]

The GSA has not shown how they have considered the interests of beneficial users including domestic well owners and disadvantaged communities. The resulting impact from the proposed sustainable management criteria will likely lead to disparate impacts on protected groups pursuant to state and federal law.

[17] Water Code § 10723.2.
[18] Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).

Furthermore, the Draft GSP does not show how the sustainable management criteria for groundwater levels will comply with the sustainability goal to "preserve the quality of life or support population growth."

Undesirable Result

Undesirable results are the point at which "significant and unreasonable" impacts on beneficial users caused by declining groundwater levels. The SGMA regulations require GSAs to justify their undesirable results by including the "[p]otential effects on the beneficial uses and users of groundwater."[19] GSAs must also describe the "processes and criteria relied upon to define undesirable results."[20]

The Draft GSP's undesirable results for groundwater levels are inadequate because significant and unreasonable impacts will occur without triggering an undesirable result. The Draft GSP states that "one-third of the representative monitoring sites in all three GSA jurisdictions combined exceed their respective minimum threshold water level elevations."[21] Violating one-third of the minimum thresholds of the entire subbasin's representative monitoring wells would have unreasonably severe impacts on domestic well users, particularly given that reaching the minimum thresholds in the Mid Kaweah GSA alone would dewater 71% of domestic wells in the Mid Kaweah GSA area and partially dewater an additional 15% of domestic wells.[22] The Draft GSP acknowledges the serious financial impact of having to drill deeper wells, well failures, and the increased energy costs of pumping water from lower depths, but the undesirable result for groundwater levels does not prevent either of these impacts.[23] Furthermore, the vast majority of wells the GSA would allow to go dry before triggering plan failure would be overwhelmingly upon domestic well users and disadvantaged communities, causing a disparate impact in violation of state law. In order to avoid these disparate impacts, the GSA must change the undesirable result or define its own local undesirable result to prevent widespread drinking water impacts to protected groups in the GSA area.

In order to avoid a violation of state civil rights law and avoid causing significant and unreasonable impacts as required by the SGMA, the GSA must:

- Include a local undesirable results definition that makes it clear that the GSA will locally define and address an undesirable result within its service area and protect beneficial users of groundwater.

Minimum Thresholds

The groundwater levels sustainable management criteria set by the GSAs must be the point that, "if exceeded, may cause undesirable results."[24] Therefore it must have the purpose of avoiding

[19] 23 CCR § 354.26.
[20] 23 CCR § 354.26.
[21] Mid Kaweah GSA Draft GSP p. 3-5, dated July 2019.
[22] Focused Technical Report, p. 4. Our analysis shows a much larger impact on domestic wells than the evaluation of well impacts in the Draft GSP.
[23] Mid Kaweah GSA Draft GSP p. 3-8, dated July 2019.
[24] 23 CCR § 354.28.

"significant and unreasonable" impacts on beneficial users caused by declining groundwater levels.[25] For groundwater levels specifically, GSAs must place minimum thresholds for each monitoring site at the level "that may lead to undesirable results."[26] Under the SGMA regulations, the GSA should provide a description of "the information and criteria relied upon to establish minimum thresholds," an explanation of how the proposed minimum thresholds will "avoid undesirable results," and "how minimum thresholds may affect the interests of beneficial uses and users of groundwater."[27] The GSA must also consider that drinking water use has been recognized as the "highest use of water" by the California legislature, and should consult with stakeholders to ensure that the minimum threshold is set is such a way as to guarantee the human right to drinking water to all individuals in the subbasin.[28]

The Mid Kaweah GSA's approach to setting minimum thresholds does not "consider the interests of" drinking water beneficial users. The GSA's proposed minimum thresholds would allow the current rate of pumping (established by the trend from 2006 to 2016) to continue at least until 2040, and possibly after 2040. The GSA contains an evaluation of well impacts that shows that 21% of wells will go dry, but our analysis shows a much larger impact: taking into account well screen intervals on domestic wells in the GSA, the attached Focused Technical Report shows that 71% of the domestic wells in the GSA will be fully dewatered at the minimum threshold, and an additional 15% will be partially dewatered.[29] The GSA has therefore chosen to allow large amounts of pumping to occur at the potential expense of up to 86% of the domestic wells in the GSA area. Since domestic well users are de minimis pumpers and are not part of this aquifer-depleting pumping, this will be a disproportionately negative impact on domestic users, the majority of whom belong to a group protected by state civil rights law. This therefore will cause a disparate impact in violation of state civil rights law.

In order to show that it has considered impacts on domestic well users and disadvantaged communities, and ensure that it is not causing a disparate impact on groups protected from such impact by state civil law, the GSA must conduct an analysis of how many wells will be impacted by reaching this minimum threshold, in particular domestic wells and small community system wells in disadvantaged communities. It should also quantify the increased pumping costs associated with the increased lift at the projected water levels. Then, it must measure whether the impacts to wells and household finances are "significant and unreasonable" by consulting with domestic well owners and disadvantaged communities. If its current choice of minimum threshold will cause a disparate impact or cause significant and unreasonable impacts to these beneficial user groups, it must modify its minimum threshold to comply with its legal obligations.

The Mid Kaweah GSA must set minimum thresholds that consider the interests of drinking water beneficial users and do not create a disparate impact on protected groups by doing the following:

[25] 23 CCR § 354.26.
[26] 23 CCR § 354.28.
[27] 23 CCR § 354.28.
[28] Water Code § 106.
[29] Focus Technical Report, p. 4.

- Accurately evaluate the number of wells that will be impacted should water levels reach the proposed minimum thresholds, taking into account their well screen depth, and the increased pumping costs associated with the increased lift at the projected water levels.

- Consider drinking water impacts in shaping minimum thresholds, and ensuring that protected groups are protected from disparate and disproportionately negative impact.

- The GSA must show how it has considered the needs of all beneficial users, including drinking water users, in setting its minimum thresholds, by publishing the above analysis in the GSP and showing how it consulted with domestic well users and disadvantaged communities to set a minimum threshold that avoids significant and unreasonable impacts to their beneficial user groups.

- In order to protect drinking water users, the GSAs should place the minimum threshold at a level above where the shallowest domestic well is *screened* in each Threshold Area.

- Provide a robust drinking water protection program to prevent impacts to drinking water users and mitigate drinking water impacts that occur.

Measurable Objectives

The SGMA regulations require the GSA to set measurable objectives and interim milestones that "achieve the sustainability goal for the basin within 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon." Measurable objectives must be more ambitious than the minimum thresholds, and must be the point at which the GSA has determined that it will not exceed its sustainable yield, and therefore avoid "significant and unreasonable" impacts on beneficial users.

The GSA has taken the 2006-2016 trend line and set the measurable objective for 2040 at the groundwater elevation reached by the trend line in 2030. The GSA has not evaluated how this groundwater elevation will affect domestic well users and disadvantaged communities, whose critical drinking water resources will be impacted by a decline in groundwater levels. In fact, the attached Focused Technical Report shows that approximately 64% of domestic wells in the GSA area will be dewatered if groundwater levels reach the measurable objectives, and an additional 9% of domestic wells will be partially dewatered. The GSA cannot therefore have considered the interests of this beneficial user group in determining its measurable objectives, and is likely to have a disparate impact on a protected group if it pursues this course of action.

In order to show that it has considered impacts on domestic well users and disadvantaged communities, and ensure that it is not causing a disparate impact on groups protected from such impact by state civil law, the GSA must conduct a complete analysis of how many wells will be impacted by this measurable objective, in particular domestic wells and small community system wells in disadvantaged communities. It should measure whether the impacts to wells are "significant and unreasonable" by consulting with domestic well owners and disadvantaged communities. If its current measurable objective will cause a disparate impact or cause

significant and unreasonable impacts to these beneficial user groups, it must modify its measurable objective to comply with its legal obligations.

It is also unclear how the measurable objectives will achieve the sustainable yield. The GSA must clarify how achieving the measurable objectives at all representative monitoring wells will cumulatively result in attaining the sustainable yield for the GSA area.

The GSA must include the following in its Draft GSP to bring its measurable objectives into compliance with law:

- The GSA must clarify how its measurable objectives will achieve the sustainable yield.
- The GSA must analyze how many wells will be fully or partially dewatered at the groundwater elevation of the proposed measurable objective.
- The GSA must show how it has considered the needs of all beneficial users, including drinking water users, in setting its measurable objectives, by publishing the above analysis in the GSP and showing how it consulted with domestic well users and disadvantaged communities to set a measurable objective that avoids significant and unreasonable impacts to their beneficial user groups.

The Draft GSP Fails to Adequately Address Groundwater Quality

SGMA charged GSAs with the responsibility to protect water quality through groundwater management,[30] and requires that the GSA consider the interests of all beneficial users including domestic well users and disadvantaged communities.[31] This Draft GSP fails to incorporate performance measures and management criteria with respect to contaminants that impact human health including those contaminants with established primary drinking water standards, and in doing so, fails to conform with the requirements of SGMA. The Draft GSP leaves drinking water users in the subbasin vulnerable to increased drinking water contamination from the GSA's groundwater management activities or from the lack of adequate groundwater management in the subbasin. The GSA has not shown how it has considered the interests of beneficial users including domestic well owners and disadvantaged communities in shaping groundwater quality sustainable management criteria.[32] Furthermore, as described in more detail below, the monitoring network for groundwater quality does not monitor or manage groundwater impacts for any domestic wells. The resulting impact from the proposed sustainable management criteria, will likely lead to disparate impacts on protected groups, in conflict with state and federal law.[33]

Minimum Threshold

GSAs must place groundwater quality minimum thresholds for each monitoring site at the level "that may lead to undesirable results."[34] Under the SGMA regulations, the GSA should provide a

[30] Water Code § 10721(w)(4); 23 CCR § 354.28(c)(4).
[31] Water Code §§ 10727.2(d)(2); 10721(x)(4)
[32] Water Code § 10723.2.
[33] Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).
[34] 23 CCR § 354.28.

description of "the information and criteria relied upon to establish minimum thresholds," an explanation of how the proposed minimum thresholds will "avoid undesirable results," and "how minimum thresholds may affect the interests of beneficial uses and users of groundwater."[35] The GSA must also consider that drinking water use has been recognized as the "highest use of water" by the California legislature,[36] and should consult with stakeholders to ensure that the minimum threshold is set is such a way as to guarantee the human right to drinking water to all individuals in the subbasin.

The Draft GSP does not protect domestic wells from drinking water contamination resulting from groundwater management activities. The Draft GSP states that the number of contaminants of concern (COC) monitored at each representative monitoring well will vary by the "dominant use" of groundwater around each representative monitoring well, and that the "dominant use" is measured as "more than 50% of the pumping" around the well. Since agricultural pumping will always dominate domestic well pumping, this means that no representative monitoring wells outside of cities and community water systems will monitor for drinking water contaminants. This leaves the vast majority of domestic wells in the GSA area unmonitored and unprotected from groundwater quality impacts. This policy decision has not considered the interests of this beneficial user type, and will cause a disparate impact on protected groups pursuant to state civil rights law. The GSA should instead monitor for drinking water contaminants at all representative monitoring wells.

Another concern is that there are only 4 representative monitoring wells detecting contamination from groundwater management activities outside of the cities of Tulare and Visalia.[37] This will allow for contamination to occur undetected in these areas, where domestic well users and disadvantaged communities depend on groundwater for their vital drinking water resources. The GSA must immediately increase the number of representative wells in these areas of the GSA in order to avoid a disparate impact on protected groups

Also, the proposes minimum threshold is not sufficient to protect against significant and unreasonable impacts to drinking water, because it does not protect against all primary drinking water contaminants. The GSA only proposes to monitor for compliance with MCLs for six drinking water contaminants of concern "where applicable": arsenic, nitrate, chrome-6, DBCP, 123-TCP, and PCE.[38] The GSA does not present a rationale to justify why these six drinking water contaminants were chosen, and why it chose not to monitor for other drinking water contaminants. This Draft GSP allows the GSA to conduct groundwater management in a way that contaminates domestic wells, and allows the GSA to cause increased contamination from other drinking water contaminants. It also allows the GSP to cause increased contamination in other drinking water contaminants known to increase from groundwater management activities, such as uranium.[39] As written, the groundwater quality minimum threshold puts all drinking

[35] 23 CCR § 354.28.
[36] Water Code § 106.
[37] Draft GSP, p. 4-14.
[38] Draft GSP, p. 3-6
[39] Smith et al., "Overpumping Leads to California Arsenic Threat," Nature Communications (June 2018) [arsenic discharge from clay correlated with overpumping]; Jurgens et al., "Effects of Groundwater Development on

water at risk of contamination from drinking water contaminants that are not included in the six contaminants of concern. The impacts of this contamination will be particularly felt by domestic wells, which are most vulnerable to drinking water contamination, and are not going to be monitored for compliance with any drinking water contamination that may result from the GSA's groundwater management activities.

The GSA must therefore monitor for compliance with drinking water contaminants in all areas where drinking water wells are present, including domestic wells. The GSA must monitor for compliance with MCLs for all primary drinking water contaminants, hexavalent chromium and PFOSs/PFOAs (both of which are known to cause serious health impacts but do not have MCLs currently), as well as for contaminants that are known to increase due to groundwater pumping and groundwater management activities such as uranium.[40]

It is unclear when groundwater quality minimum thresholds will be triggered. We know that another GSA in the subbasin requires ten years of data before a minimum threshold for groundwater quality will be triggered. The Mid Kaweah GSP seems to communicate that a minimum threshold at a representative monitoring well will be triggered when a contaminant violates the MCL, and the GSA finds that its groundwater management activities were the cause of the increased contamination, and that the GSA will "coordinate [its] activities such that they do not result in an exceedance of any MCL."[41] The GSP must clarify how these minimum thresholds will be triggered, and must require an immediate response to an MCL violation. If the GSA waits ten years to find a minimum threshold violation, that policy will likely result in communities experiencing many years of severe drinking water contamination before the GSA corrects groundwater pumping that is pulling a contaminant plume into their drinking water supply, halts recharge or irrigation activities causing uranium discharges or nitrate flushing, or curbs groundwater pumping that is causing an increase in groundwater contamination (e.g., arsenic discharge from clay).[42] The communities most vulnerable to these types of drinking water impacts are domestic well owners and disadvantaged communities, and this policy will likely result in a disparate impact on protected groups under state civil rights law. Therefore the GSA must ensure that a minimum threshold violation will be found when a single test finds an MCL violation, and a correlation is found with the GSA's groundwater management activities.

To bring the groundwater quality minimum thresholds into compliance with SGMA and state civil rights law, the GSA must:

- Monitor for compliance with all established primary drinking water standards, hexavalent chromium, and PFOSs/PFOAs, at *all* representative monitoring wells, as well as

Uranium" (November 2010) [strong correlation between high bicarbonate irrigation and recharge water and leaching of uranium from shallow sediments to groundwater].

[40] Id.

[41] Draft GSP, p. 5-12.

[42] Smith et al., "Overpumping Leads to California Arsenic Threat," Nature Communications (June 2018) [arsenic discharge from clay correlated with overpumping]; Jurgens et al., "Effects of Groundwater Development on Uranium" (November 2010) [strong correlation between high bicarbonate irrigation and recharge water and leaching of uranium from shallow sediments to groundwater].

contaminants that are known to increase with groundwater management activities, such as uranium.

- Ensure that all representative monitoring wells are measuring for concentrations of the contaminants of concern, including all drinking water contaminants, every month.
- Ensure that minimum thresholds will be triggered after one test shows a violation of the MCL, and clarify this trigger process in the GSP.
- Immediately plan for, fund and construct new representative monitoring wells or evaluate existing wells to ensure that representative monitoring wells are monitoring for impacts to domestic well users outside of the cities of Tulare and Visalia.
- Implement a Drinking Water Observation Plan to trigger GSA action when contamination spikes occur. Please see more information about the types of projects that could be implemented when a Drinking Water Observation Plan is triggered in our comments about Projects and Management Actions.

The Proposed Undesirable Result for Groundwater Quality is Inadequate

Undesirable results are the point at which "significant and unreasonable" impacts on beneficial users caused by degraded groundwater quality. The SGMA regulations require GSAs to justify their undesirable results by including the "[p]otential effects on the beneficial uses and users of groundwater."[43] GSAs must also describe the "processes and criteria relied upon to define undesirable results."[44] The undesirable result cannot have a disparate impact on protected groups pursuant to state civil rights law.

The Mid Kaweah GSA has defined a groundwater quality undesirable result as "one-third of all Subbasin designated water quality monitoring sites exhibit a minimum threshold exceedance, and those exceedances are all associated with GSA actions."[45] Like the groundwater levels minimum threshold, this definition of undesirable results is inadequate because significant and unreasonable impacts will occur without triggering an undesirable result. Violating water quality standards in one-third of the minimum thresholds of the entire subbasin's representative monitoring wells would have unreasonably severe impacts on drinking water users. Furthermore, the vast majority of wells the GSA would allow to become contaminated before triggering plan failure would be overwhelmingly upon domestic well users and disadvantaged communities, causing a disparate impact in violation of state law. The GSP states that the GSA discussed these impacts with Advisory Committee members, but it cannot have held an informed discussion because it did not have data on the actual potential impact to beneficial users. In order to avoid these disparate impacts, the GSA must change the undesirable result or define its own local undesirable result to prevent widespread drinking water impacts to protected groups in the GSA area.

[43] 23 CCR § 354.26.
[44] 23 CCR § 354.26.
[45] Draft GSP, p. 3-6.

In order to comply with SGMA and state civil rights law, the GSA must:

- Define its own local interpretation of the subbasin's undesirable result.
- Consider the impact of its undesirable impact on all types of beneficial users in the GSA area by evaluating the potential groundwater quality impact to beneficial users. Publish this analysis in the GSP, and show how it was used to define the undesirable results.
- Ensure that this undesirable result does not cause a disparate impact on protected groups under state civil rights law.

Projects and Management Actions

The GSA must consider the interests of beneficial users including domestic well owners and disadvantaged communities[46] and avoid disparate impacts on protected groups.[47] In light of the impacts on domestic well users and disadvantaged communities from the policy decisions discussed above, the GSP must therefore include Projects and Management Actions that protect domestic well users and disadvantaged communities from the drinking water impacts that will occur from the GSA's policy decisions. As noted above and on the attached Focused Technical Report, the minimum thresholds for groundwater levels put more than 86% of domestic wells in the GSA area at risk of full or partial dewatering, and the groundwater quality sustainability goals leave domestic wells unprotected from increased contamination. Furthermore, the GSP cannot create a disparate impact on protected groups pursuant to state law. Without proactive policies and projects to mitigate forthcoming disparate impacts, communities and homes belonging to protected groups based on race, national origin and ethnicity will experience a disproportionately negative impact in violation of state civil rights law. Because the GSP as written will cause a disparate impact on protected groups, and does not consider the interests of domestic well users or disadvantaged communities, the GSP must include projects to prevent and mitigate those impacts.[48]

The Draft GSP's chapter on Projects and Management Actions contains two projects that may help protect against disparate impacts, but those projects as written are not sufficient to prevent disparate impacts. The recharge basin next to Okieville is a positive step in the right direction towards protecting Okieville's drinking water supply and quantity.

The Small Systems/Domestic Well Owner Assistance program could help prevent disparate impacts and show that the GSA has considered the interests of domestic well owners and small systems, but the GSA's Board of Directors has not committed to doing this program, and does not define how the assistance measures will be implemented or funded. Before adoption, the Mid Kaweah GSA must clearly commit to projects and management actions to prevent disparate impacts on vulnerable water users, and have defined timelines for those projects.

The Draft GSP's potential groundwater extraction allocation program also raises

[46] Water Code § 10723.2.
[47] Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).
[48] Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).

concerns from the perspective of domestic well users and disadvantaged communities. Such a scheme could negatively impact critical drinking water resources if the GSA does not ensure that small systems, in addition to domestic wells, are exempt from pumping restrictions.

In order to prevent disparate impacts on protected groups, and show that it has considered the interests of all beneficial users including domestic well users and disadvantaged communities, the GSA should consider the following projects and management actions:

- ***Clearly Commit to a Drinking Water Protection Program for the Mid Kaweah GSA Service Area:***
    - The GSP contains a potential program to assist domestic well owners and small water systems obtain solutions to drinking water issues in the GSA area. This is a step in the right direction, but needs a more solid commitment and a defined scope and proposed activities. We recommend some parameters for a potential program below, and are glad to work with the GSA on shaping an effective program for preventing drinking water impacts from declining groundwater levels, increased groundwater contamination, and subsidence.
    - We recommend that the GSA consider the following factors in approving such a program:
        - Eligible activities in the program should include: drilling of new wells or deepening wells if homes' wells go dry due to declining groundwater levels, increased energy costs from pumping from deeper depths,[49] assistance in connecting to larger water systems.
        - Any project funded by the program must be guided by the residents or communities that are recipients of program benefits. Community input into a project will ensure project success, by learning from resident experience and knowledge to shape a project that will best suit their drinking water needs.
        - The GSA must ensure that the program is accessible for all residents who may need its assistance. The program should work with local agencies and organizations to spread information about the program, should not require residents to opt in to the program, and the GSA must provide translated materials regarding the program.[50]
        - Such a program must be proactive, rather than reactive. We recommend that Mid Kaweah GSA implement a Drinking Water Observation Plan (DWOP) that will serve as a warning system so that the GSA is aware of when wells are going dry, or when wells are going to become

[49] Recent research has concluded that "in the Tulare Lake area, with an average well depth of 120 feet, pumping would require 175 kWh per acre-foot of water. In the San Joaquin River and Central Coast areas, with average well depths of 200 feet, pumping would require 292 kWh per acre-foot of water."
[50] Gov. Code, §§ 7293, 7295

contaminated from groundwater management activities, so it can take action to prevent drinking water impacts before they occur. This DWOP should trigger proactive measures wherein the GSA should act before wells lose production capacity or before wells become contaminated, to ensure that community members are not left without access to safe and reliable drinking water.

- Wherever possible, and whenever it is the community's preference, the GSA should strive to assist residents on domestic wells and small community water systems with connecting to larger drinking water systems. If consolidation is not possible, the GSAs should support the deepening of wells, installation of treatment facilities or POE/POU treatment in homes and offset the increased energy costs for pumping water from a lower level. In the interim, the GSA should collaborate with local and state agencies to provide emergency bottled water for consumption and sanitary purposes.

- ***Recharge Basins In or Near Disadvantaged Communities and Domestic Well Clusters:*** The Mid Kaweah GSA should replicate projects like the Okieville project throughout the GSA area wherever DACs and clusters of domestic wells exist. The GSA should opt for these kinds of recharge projects with health co-benefits over on-farm recharge, which is likely lead to accelerate groundwater contamination.

- ***Require Basin-Wide Metering, Particularly for Large-Scale Production Wells*****:** The GSP establishes that one of the Management Actions that it will undertake is a study on different options to measuring groundwater extraction. We recommend that the GSA prioritize basin-wide metering of all extractors that are not de minimis extractors. In order to ensure achievement of the GSA's sustainability goal by 2040, and compliance with its sustainable management criteria, GSAs are prescribed the authority to meter all production wells in the subbasin,[51] and metering is the only mechanism by which the GSA can procure accurate groundwater extraction data. Without this precise data, the GSA cannot create an accurate water budget. Therefore, the GSA must utilize the authority vested by the state to meter non-de minimis pumpers, fill data gaps and protect vulnerable domestic water users from groundwater decline.[52]

- ***Establish Pumping Buffer Zones:*** For areas vulnerable to declining water levels and loss of production capacity, Mid Kaweah GSA should adopt management actions that establish geographical protection areas (buffer zones) by establishing bans, pumping limitations or community-specific management areas around disadvantaged communities

[51] California Water Code section 10727.4 states that "a groundwater sustainability plan shall include, where appropriate and in collaboration with the appropriate indices" include "efficient water management practices...for the delivery of water and water conservation methods to improve the efficiency of water use."

[52] Section 10725.8 (a) - A groundwater sustainability agency may require through this groundwater sustainability plan that the use of every groundwater extraction facility within the management area of the groundwater sustainability agency be measured by a water-measuring device satisfactory to the groundwater sustainability agency."

and domestic well clusters. In order to implement this policy, the Mid Kaweah GSA can consider incentivizing or requiring the fallowing of fields around disadvantaged communities , or protective water conservation projects. This practice will protect shallow or vulnerable wells from the impacts of over-pumping and cones of depression. Furthermore, this buffer must be protective enough to ensure that disadvantaged communities and residents reliant on domestic wells do not experience localized impacts from nearby pumping activities. This action should not be used to allow more pumping elsewhere in the subbasin, and needs to be coupled with a strong demand reduction policy across the basin.

- ***Support Water System Consolidations:*** The GSA must help fund a consolidation projects to connect nearby residents on wells to a larger water system that can treat the water, or pay for other water filtration solutions.

Broad Considerations for Projects and Management Actions

The following elements must be incorporated into the Projects and Management Actions section of the GSP in order to avoid a disparate impact on protected groups in the GSA area:

- ***Timelines:*** Projects benefiting disadvantaged communities must contain specific timelines and commitments to ensure achievement of sustainability and protection of drinking water resources for disadvantaged communities. Implement projects to benefit disadvantaged communities in a reasonably timely manner, and concurrently with projects that benefit other beneficial users, so as to avoid disparate impacts on groups protected under state civil rights law.

- ***Information Accessibility:*** Detailed information on projects must be available to the public online, as appendices to the GSP, and in a public workshop during a public comment period. In reading the shortlist projects descriptions, we had several questions about project details, which could be easily answered by providing more information on the projects. In order to better inform stakeholders on these projects and why they are being prioritized over others, more information on these projects needs to be made available, both in the plan and through more opportunities for in-person public comment.

- ***Multi-Benefit Projects:*** Encourage multi-benefit projects such as wetlands restoration or stormwater drainage ponds that would eliminate flooding and increase groundwater recharge in disadvantaged communities.

- ***Funding Projects:*** Although there are multiple short-term funding sources to leverage for SGMA-related projects, the Mid Kaweah GSA operating budget must be a reliable source of funding over the long-term of GSP implementation, and the GSA cannot rely on grant funding for long-term projects and programs that benefit disadvantaged communities. Furthermore, any proposed assessments that will pay for projects may not place a disproportionate financial burden on disadvantaged communities.

Draft GSP Does not Contain Adequate Plans for Community Engagement in Plan Implementation

Public outreach has been a critical part of the SGMA implementation process and will continue to be critical in implementing the GSP. The first chapter of the Draft GSP contains a brief description of community engagement during GSP implementation, stating that the GSA will continue notifying the public through email, postings, and social media about GSA board and committee meetings, and the GSA will do additional presentations as resources allow. does not contain adequate information regarding the plan implementation schedule and public process, annual reporting, or the potential to make amendments to the GSP. In the annual report outline proposed by the GSA, public outreach is not included in any of the key sections. Additionally, in the initial GSP implementation budget, there is no budget set aside for public outreach. This engagement is not enough to ensure that all beneficial user groups are considered, or that a wide diversity of stakeholders are included in GSP implementation decisions.

The GSP must establish processes by which it will seek and incorporate feedback from the public on an ongoing basis through direct outreach to disadvantaged communities and public workshops that are held at convenient locations and times and accessible in multiple languages. Additionally, proposed reconsiderations must be publicly noticed and circulated for public review and comment prior to final adoption.

To ensure that the GSP is implemented properly, the GSA must do the following:

- The GSA must include a plan for public outreach for the GSP implementation process. This plan should include translation services in order to meaningfully consult with and consider the interest of all beneficial users. Workshops and meetings must be at an accessible time and locations for all stakeholders
- The GSA must include public outreach as part of the annual reporting.
- The GSA must budget for public outreach. The budget should include translation services in order to meaningfully consult with and consider the interest of all beneficial users.
- Clarify in the GSP that the plan may be modified as data becomes available, and that the GSA will seek and accept feedback from the public on an ongoing basis throughout plan implementation.
- Clarify that any modification to the GSP must be in writing, noticed and provide sufficient time for public review and feedback.

Other Legal Considerations

The Draft GSP Threatens to Infringe on Water Rights

In enacting SGMA, the legislature found and declared that "[f]ailure to manage groundwater to prevent long-term overdraft infringes on groundwater rights."[53] The test of SGMA further notes

[53] AB 1739 (2014).

that "[n]othing in this part, or in any groundwater management plan adopted pursuant to this part, determines or alters surface water rights or groundwater rights under common law or any provision of law that determines or grants surface water rights."[54] As discussed in detail above, the Draft GSP allows continued overdraft above the safe yield of the basin, such that drinking water wells (especially domestic wells) will continue to go dry, infringing on the rights of overlying users of groundwater. The GSP must be revised to protect the rights of residents of disadvantaged communities and/or low-income households who hold water rights to groundwater.

The Draft GSP Conflicts with the Reasonable And Beneficial Use Doctrine

The "reasonable and beneficial use" doctrine, to which SGMA expressly must comply,[55] is codified in the California Constitution. It requires that "the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use 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." (Cal Const, Art. X § 2; *see also United States v. State Water Resources Control Bd.* (1986) 182 Cal.App.3d 82, 105 ["…superimposed on those basic principles defining water rights is the overriding constitutional limitation that the water be used as reasonably required for the beneficial use to be served."].)

The reasonable and beneficial use doctrine applies here given the negative impacts of the Draft GSP on groundwater supply and quality, which are likely to unreasonably interfere with the use of groundwater for drinking water and other domestic uses. As the Draft GSP authorizes waste and unreasonable use, it conflicts with the reasonable and beneficial use doctrine and the California Constitution.

The Draft GSP Conflicts with the Public Trust Doctrine

The "public trust" doctrine applies to the waters of the State, and establishes that "the state, as trustee, has a duty to preserve this trust property from harmful diversions by water rights holders" and that thus "no one has a vested right to use water in a manner harmful to the state's waters."[56]

The "public trust" doctrine has recently been applied to groundwater where there is a hydrological connection between the groundwater and a navigable surface water body.[57] In *Environmental Law Foundation*, the court held that the public trust doctrine applies to "the extraction of groundwater that adversely impacts a navigable waterway" and that the government has an affirmative duty to take the public trust into account in the planning and allocation of

[54] Water Code § 10720.5(b).
[55] Water Code § 10720.1(a).
[56] *United States v. State Water Resources Control Bd.* (1986) 182 Cal.App.3d 82, 106; *see also Nat'l Audubon Soc'y v. Superior Court* (1983) 33 Cal.3d 419, 426 ["before state courts and agencies approve water diversions they should consider the effect of such diversions upon interests protected by the public trust, and attempt, so far as feasible, to avoid or minimize any harm to those interests."].
[57] *Environmental Law Foundation v. State Water Resources Control Bd.* (2018) 26 Cal.App.5th 844, 844.

water resources.[58] The court also specifically held that SGMA does not supplant the requirements of the common law public trust doctrine.[59] In contrast to these requirements, the Draft GSP does not consider impacts on public trust resources, or attempt to avoid insofar as feasible harm to the public's interest in those resources.

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The GSP must protect the area's most vulnerable drinking water users, and we welcome the opportunity to discuss our recommendations to ensure compliance with state law. We hope to continue to collaborate with GSA staff and consultants to ensure that the Mid Kaweah GSA's final GSP protects drinking water for disadvantaged communities and domestic well owners in the GSA area. We are also in communication with the Department of Water Resources about current GSP development activities in the San Joaquin Valley, and hope to successfully work with GSAs, communities and DWR to ensure that groundwater management is equitable and sufficiently protective of vital drinking water resources.

Sincerely,

/s/

Amanda Monaco
Water Policy Coordinator
Leadership Counsel for Justice and Accountability

CC:

Amanda Peisch-Derby
Senior Engineer, Department of Water Resources

Encl:
Focused Technical Review

[58] *Id.* at 856-62.
[59] *Id.* at 862-870.

ATTACHMENT E
TRAGEGDY OF THE AQUIFER

G. Collins

Tragedy of the Aquifer

Think of the Kaweah Watershed's ground water system as a bank account. Water flows from the Sierra Nevada and replenishes that bank account by percolating into the aquifer - a deposit into the ground water account. When Visalia, Tulare and the farmers in the Kaweah Watershed need water for agriculture and domestic uses they make a withdrawal from this ground water bank account. Since 1987, that account has dropped 120 feet in Visalia. In other words, withdrawals are exceeding deposits.

Withdrawals from the ground water bank account fall into two general categories – urban and agriculture. Urban withdrawals account for 5 to 7 percent of the take while farming interests account for the balance of the withdrawals.

In addition to deposits made into the ground water bank account from the adjacent Sierras, outside deposits from the Friant-Kern Canal are also made. The size of these deposits (measured in acre-feet) range from year to year. Yet, even with this outside deposit, which has been in place since the early 50s, the ground water depth continues to decline.

Visalia has been on the cutting edge of replenishing its underlying aquifer by working with the Tulare Irrigation District to replenish the aquifer by percolating surface water (provided by TID) into basins upstream from Visalia while proving clean, treated water from the wastewater treatment plant to farmers downstream from Visalia. In good water years (2017 and 2019), the volume of water recharged equals the amount of water consumed by Visalians, approximately 35,000 acre-feet per year. In other words, deposits equal withdrawals. In drier years, withdrawals exceed deposits, especially during very dry years (e.g 2012 to 2016). Over time, Visalians need to recharge more water into the aquifer than it consumes on an annual basis just to make up for the dry years.

Failure to understand the trend in our water bank account, failure to understand that we in the San Joaquin Valley live in a desert, and failure to act in a concerted and thoughtful effort to conserve water and replenish our groundwater system, Visalia and the farmers in the Kaweah Basin are destined to suffer a "collapse" in our water bank account - bankruptcy. This collapse has already been experienced by many rural communities, resulting in a loss of domestic water,

and in the agricultural community where land has been fallowed, new wells have been dug and existing wells extended deeper.

To avoid the tragedy of a collapsed aquifer, Visalia needs to be the voice for change - drought tolerant landscapes, increased recharge basins and the search and implementation of new strategies that will replenish our aquifer bank account. But sadly, Visalia represents only a small percentage, about 3 percent, of the water consumption in the Kaweah Watershed.

Here are my suggestions to replenishing our water bank account and striving for a more sustainable state in our management of our ground water system.

1. Require all cities in the basin to reduce their water consumption by 5 percent annually. This should be measured in gallons per capita per day (gpcd).
2. Approve a well tax for the entire Kaweah Watershed. These funds could be used for a myriad of water conservation strategies – better irrigation technology, land retirement, periodic conversion of cropland from irrigated to dryland.
3. Continue to construct ground water recharge basins throughout the Kaweah Basin.
4. Determine if Visalia could use all its storm water basins for recharge during the non-rainy part of the year.
5. Purchase land that is marginal for agriculture and place them under a habitat preserve.
6. Encourage conversion of crop land to solar farms.
7. Work with SRT to expand their footprint by purchasing land adjacent to their preserves and converting them to natural habitat.

ATTACHMENT C
MID-KAWEAH GSA BOARD MEETING PRESENTATION (NOV. 12, 2019)

Mid-Kaweah GSA Board Meeting

City of Tulare Council Chamber

November 12, 2019
3:00 PM

GEI Consultants

Review of Comment Priorities

Priority 1 - Staff Implementation/Editorial

Priority 2 – Manager/Consultant Review and Recommendation

Priority 3 - Advisory Committee/Technical/Policy

GEI Consultants

Public Comments Received

1. Bill Huott, 8/10/19
2. Kevin Layne, 8/13/19
3. Edward Henry, 9/3/19
4. The Nature Conservancy, 9/9/19
5. California Department of Fish and Wildlife, 9/12/19
6. Westchester Group, 9/13/19
7. California Water Service Co., 9/16/19
8. Richard Garcia, 9/16/19
9. Kings County Water District, 9/16/19
10. Leadership Counsel for Justice and Accountability, 9/16/19
11. Self-Help Enterprises, 9/16/19
12. Various Non-Profit Organizations, 9/16/19
13. Tulare County Resource Management Agency, 9/16/19

GEI Consultants

TID Peer Review

- Montgomery & Associates provided comments to TID on September 19, 2019.
- Concluded that the MKGSA is likely to be found complete and adequate by DWR, but they provided a few recommendations for improvement listed below:
  - More comprehensive Executive Summary
  - Expanded Description of Water Budget Components/Assumptions
  - SMC Chapter – Clarify, provide more supporting rationale, verify that all regulatory requirements are addressed

Committee Action: Advisory Committee concurs with staff recommendation

GEI Consultants

Processing Comments

- Stantec designed the comment management process which was initially administered by TID during the public comment period.
- TID reviewed each comment letter, entered each comment into a spreadsheet database (database) which totaled 197 individual comments. For each comment, TID staff assigned a database identification number, author, assigned a discipline area, and identified which sections of the GSP the comment pertains to. Following the close of comment period, TID provided the database and comment letters to Paul Hendrix.
- Paul, working with Chris Petersen (GEI) and Craig Moyle (Stantec), reviewed each comment and categorized them into three priorities as listed below:
  - Priority 1 - Staff Implementation/Editorial
  - Priority 2 – Manager/Consultant Review and Recommendation
  - Priority 3 - Advisory Committee/Technical/Policy
- Paul and Chris formulated initial responses to comments for Committee Consideration

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October / November 2019 Advisory Committee Meetings

- October 4th: Review of requirement regarding public input and consideration of public comments; overview of approach to comment management.
- October 15th: Review and discuss recommendations for addressing Priority 3 comments.
- October 22nd: Review and discuss recommendations for addressing Priority 2 comments.
- November 5th: Committee approval of recommendations to Board for GSP finalization – Unanimous vote for each recommendation.

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Key Priority 2 and 3 Comment Themes

- Comment theme
- Resolution
- Discussion
- Committee vote

GEI Consultants

Stream Flow Depletion / Groundwater Dependent Ecosystem

Comment theme: Incomplete evaluation of surface and groundwater interaction and the related observation that we had an incomplete assessment of groundwater dependent ecosystems.

- Resolution: Add more detail in Section 2 (Basin Setting) showing the depth to groundwater during spring 2017 and describing the disconnected nature of surface water from the shallowest principal aquifer and then stressing that management of groundwater in the shallow principal aquifer will not induce flows to surface water channels (i.e., recreate gaining reaches of these channels) in the MKGSA, nor will it impact the plant communities at the ground surface. We will review the rooting depth of identified natural plant communities at the groundwater surface to first verify that these communities are not tapping groundwater at the depths shown on our depth to groundwater map.
- In Project and Management Actions, Section 7, explain that we value diverse plant and animal communities and that the GSA will advocate for the develop of projects that are multi-benefit by providing both improved supply reliability and benefits to the environment. Consistent with MKGSA's objectives as stated in Section 3.1 of the GSP, recharge projects as described in Section 7 will emphasize the importance of the natural and man-made channel system in the Subbasin and its integral role in sustaining the underlying groundwater resource.

Committee Action: Recommend Approval

GEI Consultants

Water Budget / Water Accounting / Misc.

Comment theme: Incomplete Water Budget and Clarification on the Difference Between Water Budget and Water Accounting Framework

Resolution

- Address this issue in an expanded Executive Summary to inform the reader/reviewer at the beginning of the document
- Expand Section 2 (Basin Setting) to include a brief description of each water budget component as defined in Appendix 2A and the assumptions made when calculating or estimating each component.
- Search document to verify correct usage of terms “water budget” vs. “water accounting” within the context of each reference.

Committee Action: Recommend Approval

GEI Consultants

Small Well Groundwater Level Impacts

Comment theme: Unacceptable Groundwater Level Impacts to Small-System and Domestic Well Owners based on Measurable Objective Levels set in Groundwater Level Representative Monitoring Wells; assistance/mitigation alternatives in Section 7.4 are too vague.

Resolution:

- Work with Self-Help and Community Water Center to better understand the source data in the focused report and approach used for their Well Vulnerability Tool once publicly available.
- MKGSA may update their well impact analysis based on new data. Findings will be reported out in MKGSA's annual reports and, if changes to the plan (including adjustments to the SMC) are warranted based on new data, these will be reflected no less frequently than each five-year GSP assessment.
- Coordinate with GKGSA and EKGSA to verify that minimum thresholds and measurable objectives are acceptable and resolve conflicting target objectives if identified.

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Small Well Groundwater Level Impacts
(Resolution, cont.)

- Improve the domestic/small system assistance program described in Section 7.4 and also reflect assistance strategies in the ES. The following will be added to strengthen mitigation which could be potentially provided to address impacts to such well owners:
  - Complete a well identification and characterization study within the early years of implementation. This study will locate active wells, determine total well depth and depth to groundwater and should be given a high priority for completion.
  - Implement a well registration program and only owners of registered wells would be eligible for assistance. Registration would allow staff to access well to verify well depth and depth to groundwater.
  - Mitigation could include financial assistance in providing short-term water supply.
  - Long-term water supply could include financial and technical support.
  - Preference for connecting current domestic well users to a public water system if feasible (from technical and financial perspective).

Committee Action: Recommend Approval

GEI Consultants

Groundwater Quality Impacts

Comment theme: Unacceptable Groundwater Quality Protections to Disadvantaged Communities (DAC) and Small Community Water Systems.

Resolution

- More clearly identify the locations of DACs and areas of high density domestic wells on figures, and adaptively manage to update network.
- Work with managers of other GSAs in the Subbasin to modify the sustainability goal statement to more closely match the language the Committee had originally agreed before being modified in consultation with other GSA managers and their attorneys.
- GEI to add small public water system wells to network if possible. GEI had only included wells for which information was available at the time the Basin Setting Report was being developed in late 2018. Since that time, the state has been working to upload more small system data, so another look at this time is appropriate.
- GEI to review constituent list recently released by the SWRCB in the SGMA Water Quality Frequently Asked Questions included as Appendix B. If the constituents in the example list at the bottom of Pg. 4 are publicly available for the wells within our network, MKGSA will expand its list to include these.
- Clarify GSA's role in regard to water quality protections in the ES and in Sections 3, 4, 5, and 7.

Committee Action: Recommend Approval

GEI Consultants

Recommendation

- Board Action to approve recommended responses to the comment themes as presented

GEI Consultants

ATTACHMENT D
MID-KAWEAH GROUNDWATER SUSTAINABILITY PLAN COMMENT AND COMMENT RESPONSE MATRIX

Mid-Kaweah GSA Comment and Comment Response Matrix

Version Date: 20191212

Author	Sub-Category	CIN	MCR	Priority	Description	Code/Regulation	Comment	Staff Summary of Comment	Response / Recommended Action	Response Location in GSP
Kevin Layne	GE	KL-001		1	Summary of GSP		I just reviewed your recently released GPS. ***Has anyone put together an abridged version with the highlights*** that I could easily share with my customers and coworkers? I'd love to see something that explained how many acres of recharge basins were going to be added and how many acre feet they would drink, how much pumping is going to have to decrease and how fast, and how many acres are expected to come out of production and the timeline for that.	Request for summary information re the GSP	We are in receipt of your email comment submitted on August 13, 2019. In response to your inquiry we have attached a GSP Takeaway flyer that has been developed for distribution. This flyer has some of the key information located in the Mid-Kaweah GSA. We also would like to invite you to one of our Landowner Roundtable Meetings. These meetings are specifically for growers within the Tulare ID and are small meetings to discuss the GSP and receive questions or concerns. We still have several dates and times available. Please feel free to take a look at the Landowner Roundtable meeting notice at: www.tulareid.org. Please feel free to contact us if you have any further questions or concerns.	
Bill Huott	GE	BH-001		1	Surface Water Supply Management		We need to create a reservoir that was the natural way thus valley was constructed and discovered. A Tulare lake size reservoir, all this water should never flush to the ocean! Never did, it filled Tulare Lake! Come on. We has a good year but now we could have seven years drought! No cushion, no backup, no reservoir!	Comment self-explanatory	New storage is contemplated in several projects described in Sec. 7.3.	N/A
California Water Service Company	GE	CW-001		1	General		As noted in the draft GSP, there are a number of significant management actions to be undertaken by the affected parties in the coming years to implement the plan. In particular, the development of the pumping allocation program, refinement of the Water Accounting Framework, and the cost allocation process for basin-wide management and project implementation activities will require significant coordination among and input from the impacted parties. Cal Water looks forward to being a direct participant in the management of the GSA as we ensure the sustainable management of the Kaweah Subbasin.	Request for involvement and input during GSP implementation	Cal Water will continue to be represented on the Tech. Sub-Committee and the Adv. Committee and thus remain involved during GSP implementation.	N/A
Edward Henry	WQ	EH-021	MCR-6	2	Measurable Objectives- Water Quality		In the second sentence of first paragraph under the heading, 5.4.3 Water Quality Measurable Objectives it states, " ... All future projects and management actions implemented by the MKGSA are designed to avoid causing further groundwater quality degradation ... ". It's my firm understanding that the primary charge of SGMA is to stop the chronic lowering of groundwater which will be accomplished through projects and management actions. Projects and management actions most likely will always benefit groundwater quality but there's also a small risk that somehow it (water quality) may be negatively impacted such as unintentional plume migration. I'm very concerned that stating " ... all future projects and management action ... are designed to avoid causing further groundwater water degradation ... " could be a potential segue into litigation through misinterpretation, and that sentence should be stricken from this GSP in the final document version for submission to DWR. Again, the design of future projects and management actions should be heavily geared towards the sustainability indicators of chronic lowering of groundwater levels, loss of groundwater storage, and land subsidence through preventing or eliminating those undesirable results- hopefully groundwater quality will be a [secondary] beneficiary of those projects and management actions, and not the primary focus as currently stated above. Again, it should be noted that there is a very poor correlation between groundwater levels and water quality (for Arsenic and Nitrates) as shown in the graphical data presented at the meeting of the GKGSA's Combine Meeting of the Rural Communities Committee and Stakeholder Committee on June 14, 2019 (see reference to Page 5-13 above.)	Do not indicate that projects and mgt actions are designed to avoid further groundwater contamination.	SGMA requires some degree of water quality protection, i.e., further degredation.	N/A
Edward Henry	AL	EH-033		1	De Minimus Extractors		The last bullet point at the bottom of the page states, "... A determination by the GSA to not regulate any de minimis extractor, i.e., any well owner pumping two acre-feet or less annually ... ". Again, I'll voice my concern that in fact ***a "... de minimis extractor ... " should have to prove the de minimus extractor designation or classification- metering will be the only way to validate such a claim.***	Comment self-explanatory	Di miimis extractions included in water budget; regulation thereof may be reconsidered at a later time, to exclude measurement per SGMA.	N/A
Edward Henry	MA	EH-019		1	Water Budget/Management Areas		In the third to the last sentence in the last paragraph on Page 5-20, it states, " ... MKGSA anticipates that coordination will focus on the Management Areas where water budgets remain in deficit, depending on degree ... ". Obviously there is a water budget for the MKGSA but are there also individual waters budgets for the 3 Management Areas-City of Tulare, City of Visalia, and TID? ***If there are separate water budgets for each Management Area, when will they be published?*** This is the first I've heard of additional water budgets [within the MKGSA], and I may be totally mis-reading that sentence.	Question re existence of water budgets for Mgt Areas [Page 5-20, 5.4.1 Groundwater Level Measurable Objectives]	Mgt. Area water budgets to be determined and considered by GSA board when establishing fees and charges during GSP implementation.	N/A
Edward Henry	MU	EH-032		1	Urban Water Management Plans		In the third line of that paragraph it states, " ... mandates of a 20 percent reduction in urban per capita water usage by 2020 ... ". ***What is the base year for the reduction?*** During the drought years 2012-2016, cities were mandated by the governor to cut the water usage by 28-32% from the base year of 2013: ***Will 2013 be used again as the base year?***	Comment self-explanatory [Page 7-41, 7.4.6 Urban Water Conservation, 7.4.6.3 Permitting and Regulatory Compliance]	Base year set per 20X2020 legislation.	N/A
Edward Henry	OR	EH-006		1	Public Outreach/GSP Organization		At the bottom of the page, " ... Communication & Engagement (C&E) Plan, developed by Stantec for MKGSA and adopted on August 14, 2018 and included as Appendix 1C." ***The posted document in Appendix IC has a date of August 7, 2018, Draft: Version 4, rather than the August 14t date cited in the above quoted text. There should or must be a later version to reflect the noted date of August 14, 2018, as the database of the August 7, 2018 document is definitely not up-to-date. The last entry in that database of August 7, 2018, is the Waksache Tribe.*** Also it's probably too late for this version of the MKGSA GSP draft, but in the future ***it would be very helpful when a Figure, Table, Appendix, etc. is referenced that one could move the cursor to that item and click on it and it would take you directly to that item. Right now, one has to get out of a document and search in the Table of Contents in order to go to the referenced item(s)*** -- Also the last sentence of the last paragraph. "All outreach efforts and engagement activities were tracked in a Community Engagement and Activities Database (CE & AD) that was continuously monitored and updated, consistent with DWR Emergency Regulations §354.10 (b) and §354.10 (d)." ***As noted above, the Communications and Engagement Activities Database is not up-to-date.***	Include final version of cited appendix.	Final version of App. 1C to be included.	1
Edward Henry	OR	EH-008		1	Internal referencing/GSP Organization		In the first sentence of the second paragraph starting with " ... Section 6 of this GSP ... " - after "Section 6" should insert reference to Table 6.2 so as to read " ... Section 6 in Table 6.2 of this GSP ... ". By adding in Table 6.2 makes for better clarity. Also see (Section 6 Water Supply Accounting) in the last sentence, " ... Yet, as acknowledged in Section 2 of this Plan, ... ", reference to Table 2-1 should be inserted after "Section 2" so as to read " ... Yet, as acknowledged in Section 2 in Table 2-1 of this Plan, ... ". By adding in Table 2-1 makes for better clarity.	Editorial improvements suggested [Page 2-2, 2.3 GSA Water Budget]: […] Page 6-3	Comment noted.	N/A
Edward Henry	OR	EH-022		1	Measurable Objectives- Table Formatting		In Table 5-3 in the Measurable Objective column there are no units, i.e. "inches", nor is that a timeframe. Can those additions be made to the Measurable Objective column? Also it's not clear as to how the Measurable Objective numbers were determined.	Comment self-explanatory [Page 5-23, Table 5-3]	All values in Table 5-3 are in feet relative to mean sea level (fmsl) as noted therein. MOs were determined as explained in Sec. 5.4.	N/A
Edward Henry	PM	EH-028		1	Management Actions		In the first sentence (4th line) of the second paragraph on Page 7 .1 it states, " ... .future urban and agricultural conservation, ... " and yet on Page 7.2, in the Table/Chart under the column heading, Management Actions:, for the bullet point, Agricultural Water Conservation and Management Program, none of the four boxes are checked for the 4 Sustainability Indicators and states, Not Applicable, whereas the bullet point, Urban Water Conservation Program, 2 of the Sustainability Indicators, GW Levels and Reduction in Storage, are checked. ***Why does the Agricultural Water Conservation and Management Program get a pass on conservation?*** I would have thought that all 4 Sustainability Indicator boxes for the Agricultural Water Conservation and Management Program would have been checked-after all agriculture is by far and away the largest extractor of groundwater. This is not to pit ag versus urban but putting an unrealistic burden on urban areas (cities) is counter productive. I'll refer you back to my comments on Pages 2 through 4 regarding the "urban forest" and the actual urban water usage. Also under the heading of Extraction Measurement Program it states Not Applicable. ***Although SGMA doesn't require "metering", the regulatory agencies will never fully have an accounting of groundwater extraction until there is metering. All the "players" who have "straws in the punch bowl" need to be metered at some point-realistically by 2025.*** Meters will be part of the costs of doing business. Those "players" who are designated or self-designated as "de minimis" (less than 2 AF annually) need to prove they are truly de minimis, and the only accurate and reliable way to demonstrate that is by being metered. Yes, one could argue that the de minim is user's groundwater extraction is probably less than 5% of the total groundwater pumped but again if the regulatory agencies want to know ALL extractors and to have equality, then metering is the only answer. Right now the small 3-5 acre "ranchettes" will get a pass on SGMA whereas a city resident (and I'm a definite de minimis user) may have draconian reductions impose on outdoor landscape usage for my "urban forest".	Inquiry as to treatment of Ag water conservation in terms of pgm benefits [Page 7-1, 7. Projects and Management Actions, 7.1 Summary]	As TID ag lands use less water under a conservation effort, the same surface water deliveries will still be made to the District, persumably to other ag parcels or for GW recharge. This is contrary to urban conservation, whereunder less water will be pumped.	N/A
Edward Henry	WB	EH-027	MCR-20	1	GSA Water Budget, GSA Water Budget Table Formatting		In the third sentence of the first paragraph it states, " ... Whereas the average water accounting framework water balance is positive, the comparable hydrogeologic water budget is negative by about 13,000 AF ... ". ***After the word "positive" should insert "at around 38,000 AF", in order to be consistent with the negative "13,000 AF".*** With the insert "at around 38,000 AF" that sentence would now read, " ... Whereas the average water accounting framework water balance is positive at around 38,000 AF, the comparable hydro geologic water budget is negative by about 13,000 AF ... ". This would help the reader to see both the positive and negative number for better clarity. ***With regard to Figure 6.1, several additions would make this figure more understandable.*** First the label on the y-axis needs to be Groundwater Storage, and the "Change in Acre-Feet" needs to be in parenthesis, "(Change in Acre-Feet)". Lastly, to the right of the two horizontal lines, in the upper line, Shared/Owner Ave, put in the 38,000 AF figure to reflect what is in the text above, and for the lower line, Hydrogeologic Ave, put in the negative/minus -13, 000 AF, again to be consistent with the text description above on Page 6.4 and give the reader better clarity of that figure.	Suggested edits to water accounting framework descriptions and related figures [Page 6-4, 6. Water Supply Accounting, 6.3 Water Accounting Framework Allocation]:	Comment noted.	N/A
Edward Henry	WQ	EH-017	MCR-6	1	Mimimum Thresholds- Water Quality		While in the process of doing an extensive word search on "projects' and "management actions", a second identical sentence to the one on Page 5-21, section 5.4.3 Water Quality Measurable Objectives was found (obviously an oversight on my part when I first read this GSP) which states, "...All future projects and management actions implemented by the MKGSA will be designed to avoid causing further groundwater quality degradation...". As stated then in my initial GSP comments (submitted on September 3, 2016), this sentence should be stricken from this GSP in the final document version for submission to DWR. I'll refer the reader of these GSP comments back to my original comments on Page 5-21 which will apply here also.	Reques that commitment to avoidance of water quality degredation by projects be stricken [Page 5-11, 5.3.3 Minimum Threshold– Degraded Water Quality, 5.3.3.1 Overview]	Comment noted; however, referenced stmt is an obligation per SGMA.	N/A
Edward Henry	WQ	EH-018		1	Minimum Thresholds- Water Quality		In the next to the last sentence of the last paragraph of this section on degraded water quality (Page 5-13) it states, " ... The relationship between groundwater levels and degradation trends, if any, is site-specific. ". At the June 14, 2019, meeting of the GKGSA's Combine Meeting of the Rural Communities Committee and Stakeholder Committee, Agenda Item 4 (handout), there were a total of 13 data graphs presented from various HZs in the KSB: 3 for Arsenic and 10 for Nitrates. ***All 13 graphs showed either a very poor correlation and/or no correlation between groundwater levels and water quality for those 2 constituents/substances. It is paramount that all GSAs in the KSB are not in some way or another held "hostage" to [degraded] water quality issues.*** This lack of correlation may perhaps be unique to the KSB (but doubtful), and water quality issues should not be the driver of projects and management actions that would have a positive outcome on preventing the undesirable results of other sustainability indicators, particularly groundwater levels, groundwater storage, and land subsidence.	Comment re lack of correlations between water quality and water levels [Page 5-13, 5.3.3 Minimum Threshold-Degraded Water Quality, 5.3.3.3 Minimum Thresholds]	Commnent noted.	N/A
Kings County Water District	GL	KC-012		2	Undesirable Results- Groundwater Levels		includes this statement, "With respect to water-level declines, undesirable results occur when one-third of the representative monitoring sites in all three GSA jurisdictions combined exceed their respective minimum threshold water level elevations. Should this occur, a determination shall be made of the then-current GSA water budgets and resulting indications of net reduction in storage. Similar determinations shall be made of adjacent GSA water budgets in neighboring subbasins to ascertain the causes for the occurrence of the undesirable result. " This approach, depending on implementation, would appear to be detrimental to areas that rely on groundwater recharge during wet years to justify needed pumping in dry years. For instance, an area that has no available surface water in a drought year would be viewed differently than one that had a little available if only the water budget for the one year was involved in the evaluation. Please consider revising.	Supplement explanation of annual water budget determinations on this and neighboring GSAs	Acknowledge comment and that further application of water budgets will be addressed during adaptive management and intra and inter-basin communications	3.2.1.1

Kings County Water District	GS	KC-007	MCR-15	2	Undesirable Results- Groundwater Storage		Sec. 3.2.1.2 includes this statement "Given assumed hydrogeologic parameters of the Subbasin, direct correlations exist between changes in water levels and estimated changes in groundwater storage. " The District views that this statement is misleading. In order to relate groundwater levels to change in storage, many significant regional assumptions must be made to develop the estimates. The District views that a reliable correlation can only be developed with significantly more information about local aquifer properties than is currently available. Also, this statement ignores the reality that some groundwater amounts may be somewhat bound in formations while other amounts may be more available for extraction. Please consider revising.	Insufficient discussion of local and regional correlations between water levels and changes in groundwater storage.	Our understanding of Basin Conditions including the correlation between changes in groundwater levels and changes in storage will be improved through the collection and analysis of empirical data from our planned representative monitoring networks. Updates the the GSP on 5 -year increments during the implementation period will reflect this improved understanding.	N/A
Kings County Water District	HM	KC-002		2	Groundwater Inflows/Outflows		There did not appear to be a discussion of historic groundwater flow directions and whether recent groundwater flow directions are a departure from historic norms. This would seem critical to any evaluation of groundwater flows across GSA or Subbasin boundaries.	Insufficient discussion of groundwater fluxes and changes thereof over time.	Further GWE modeling simulations, as well as annual reports re GW contours, will provide new information in this regard.	N/A
Kings County Water District	LS	KC-008		2	Undesirable Results- Land Subsidence		[3.2.1.3 - Land Subsidence, page 3-4] The section does not mention the connection between subsidence and dewatering saturated clay formations. This could lead to the misunderstanding that subsidence can occur everywhere that groundwater levels fall below minimum thresholds. Please consider revising.	Provide more detail re the relationship of lowered groundwater levels and land subsidence.	Refer to applicable sections of Basin Setting report (Appendix 2A)	N/A
Kings County Water District	WQ	KC-010		2	Undesirable Results- Degraded Water Quality		includes this statement, " Well production depths too may draw out contaminated groundwater, both from naturally occurring and man-made constituents which, if MCLs are exceeded, may engender Undesirable results. " Many local geologic formations contain aquifers with naturally concurring substances like Arsenic and Uranium. The District views that groundwater quality issues relating to local geologic properties, regardless of State MCLs, cannot be viewed as contamination or indicators of Undesirable Results. Please consider revising.	[3.2.1.4] Naturally-occuring contaminants not the responsibility of a GSA to correct for.	Current language is deemed consistent with SGMA and Regs.	3.2.1.4
Kings County Water District	WR	KC-003		2	CVP Deliveries- Drought		There did not appear to be any discussion or evaluation of the lack of Friant Division CVP surface water deliveries in Water Yeats 2014 or 2015 and how that unique changed condition impacted local groundwater levels, groundwater storage or subsidence.	Comment self-explanatory	Historic water budget and related narrative addresses drought years, including both local and imported surface water supplies.	N/A
Kings County Water District	LS	KC-018		1	Data Gaps- Land Subsidence		The District would view the following as additional data gaps: 1) there is almost no information on what geologic zone is subsiding in this area, 2) the number of well compression failures, 3) the impact of subsidence to local flood zones, and 4) if land subsidence has any correlation to groundwater quality. Please consider revising.	Comment self-explanatory	Part of five-year assessment	N/A
Kings County Water District	GL	KC-001		1	Groundwater Levels		There did not appear to be much information or discussion on declining groundwater levels. As this is one of the primary issues the Sustainable Groundwater Management Act (SGMA) was developed to address, it seems that this historic information should be central and flow to what will be undertaken by the MK GSA to address the declines.	More discussion of declining groundwater levels needed.	GW level declines as noted in Sections 2, 5 and 6 are considered adequate.	N/A
Leadership Counsel for Justice and Accountability	GL	LC-007	MCR-21	2	Sustainable Management Criteria- Groundwater Levels	17 Water Code § 10723.2. 18 Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).	The sustainable management criteria for groundwater levels must be made after considering the interests of all beneficial user groups, including domestic well users and disadvantaged communities.17 These policy decisions must also avoid disparate impacts on protected groups pursuant to state and federal law.18 The GSA has not shown how they have considered the interests of beneficial users including domestic well owners and disadvantaged communities. The resulting impact from the proposed sustainable management criteria will likely lead to disparate impacts on protected groups pursuant to state and federal law. 17 Water Code § 10723.2. 18 Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l). Furthermore, the Draft GSP does not show how the sustainable management criteria for groundwater levels will comply with the sustainability goal to "preserve the quality of life or support population growth."	SMC selections result in disparate impacts on DACs and domestic well users.	The issues raised in this comments will be addressed through our handling of the three key issues raised on the SHE/LCIA technical report: resolving disparent impacts, locally defined URs and enhanced mitigation measures	N/A
Leadership Counsel for Justice and Accountability	MA	LC-005	MCR-12	2	Management Areas- Disadvantaged Communities	13 13 23 CCR § 351	The SGMA regulations allow GSAs to establish Management Areas "based on differences in water use sector, water source type, geology, aquifer characteristics, or other factors," for the purpose of identifying "different minimum thresholds, measurable objectives, monitoring, or projects and management actions."13 13 23 CCR § 351 However, it may not do so in a way that causes disparate impacts on a group protected by state civil rights law, or has not adequately "considered the interests of" all types of beneficial users. The Management Areas that the GSA proposes to establish will likely have disproportionately negative impacts on domestic well users and disadvantaged communities. The Draft GSP states that the GSA will establish Management Areas along to the borders of local water and irrigation districts within the GSA, so that each district can manage groundwater its own jurisdiction. However, some districts are only accountable to the needs of agricultural pumping, and do not have representation of drinking water users on their boards. For example, Tulare Irrigation District will be managing a wide area that includes small communities and domestic well owners; however, the irrigation district's board and clientele only reflect agricultural pumping needs. Additionally, East Tulare Villa, a disadvantaged community that depends on drinking water from the City of Tulare, is not included in the same management area as the City of Tulare, which does not allow effective protection of the community's water resources. Therefore this division of Management Areas means that all beneficial users' interests will not be considered in the management of areas where drinking water and agricultural pumping interests are present, and will likely lead to disparate impacts on protected groups. Instead, a tool for protecting drinking water for disadvantaged communities and domestic wells is creating Management Areas around clusters of domestic wells and around disadvantaged communities, with a buffer around the area where the vulnerable drinking water users are located, and setting more protective groundwater quality and groundwater levels minimum thresholds in those areas. This ensures that there are no localized impacts to drinking water resources from groundwater levels dropping or from contaminant plumes being drawn towards large quantities of groundwater pumping. Therefore, we recommend that the GSA: Form Management Areas around clusters of domestic wells and around disadvantaged communities in the GSA area, with a buffer around the area where the vulnerable drinking water users are located, and set groundwater quality and groundwater levels minimum thresholds that will protect drinking water resources in those areas.	Establishment of Mgt Areas should include those areas encompassing DACs or domestic well clusters.	DACs and domestic well owners to be considered within the Tulare ID Mgt Area	2.4
Leadership Counsel for Justice and Accountability	DC	LC-017		1	Beneficial Uses- Disadvantaged Communities/Domestic	Water Code § 10720.5(b).	The "reasonable and beneficial use" doctrine, to which SGMA expressly must comply,55 is codified in the California Constitution. It requires that "the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use 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." (Cal Const, Art. X § 2; see also United States v. State Water Resources Control Bd. (1986) 182 Cal.App.3d 82, 105 ["…superimposed on those basic principles defining water rights is the overriding constitutional limitation that the water be used as reasonably required for the beneficial use to be served."].) The reasonable and beneficial use doctrine applies here given the negative impacts of the Draft GSP on groundwater supply and quality, which are likely to unreasonably interfere with the use of groundwater for drinking water and other domestic uses. As ***the Draft GSP authorizes waste and unreasonable use, it conflicts with the reasonable and beneficial use doctrine and the California Constitution. 55 Water Code § 10720.1(a).***	GSP conflicts with the state's reasonable and beneficial use doctrine.	GSP and its Mts and MOs are considered to be compliant with SGMA and state law.	N/A
Leadership Counsel for Justice and Accountability	PO	LC-015	MCR-23	1	Public Outreach		Public outreach has been a critical part of the SGMA implementation process and will continue to be critical in implementing the GSP. The first chapter of the Draft GSP contains a brief description of community engagement during GSP implementation, stating that the GSA will continue notifying the public through email, postings, and social media about GSA board and committee meetings, and the GSA will do additional presentations as resources allow. ***does not contain adequate information regarding the plan implementation schedule and public process, annual reporting, or the potential to make amendments to the GSP.*** In the annual report outline proposed by the GSA, public outreach is not included in any of the key sections. Additionally, in the initial GSP implementation budget, there is no budget set aside for public outreach. This engagement is not enough to ensure that all beneficial user groups are considered, or that a wide diversity of stakeholders are included in GSP implementation decisions. The GSP must establish processes by which it will seek and incorporate feedback from the public on an ongoing basis through direct outreach to disadvantaged communities and public workshops that are held at convenient locations and times and accessible in multiple languages. Additionally, proposed reconsiderations must be publicly noticed and circulated for public review and comment prior to final adoption. To ensure that the GSP is implemented properly, the GSA must do the following: The GSA must include a plan for public outreach for the GSP implementation process. This plan should include translation services in order to meaningfully consult with and consider the interest of all beneficial users. Workshops and meetings must be at an accessible time and locations for all stakeholders. The GSA must include public outreach as part of the annual reporting. The GSA must budget for public outreach. The budget should include translation services in order to meaningfully consult with and consider the interest of all beneficial users. Clarify in the GSP that the plan may be modified as data becomes available, and that the GSA will seek and accept feedback from the public on an ongoing basis throughout plan implementation. Clarify that any modification to the GSP must be in writing, noticed and provide sufficient time for public review and feedback.	Provide more supporting information re stakeholder involvement during GSP implementation, prep. of annual reports and any changes to the GSP.	Comment noted. Further outreach will take place during GSP implementation phase, including to small communities and school districts.	N/A
Leadership Counsel for Justice and Accountability	WR	LC-016		1	Water Rights/Groundwater Levels	Water Code § 10720.5(b).	In enacting SGMA, the legislature found and declared that "[f]ailure to manage groundwater to prevent long-term overdraft infringes on groundwater rights."53 The test of SGMA further notes 53 AB 1739 (2014). that "[n]othing in this part, or in any groundwater management plan adopted pursuant to this part, determines or alters surface water rights or groundwater rights under common law or any provision of law that determines or grants surface water rights."54 As discussed in detail above, ***the Draft GSP allows continued overdraft above the safe yield of the basin, such that drinking water wells (especially domestic wells) will continue to go dry, infringing on the rights of overlying users of groundwater.*** The GSP must be revised to protect the rights of residents of disadvantaged communities and/or low-income households who hold water rights to groundwater. 54 Water Code § 10720.5(b).	Further declines in groundwater levels infringe on groundwater rights	Comment noted. The selection of MOs, MTs and domestic/small-system assistance pgm is deemed sufficient to protect all beneficial users.	N/A
Leadership Counsel for Justice and Accountability	WR	LC-018		1	Water Resources/Public Trust		The "public trust" doctrine applies to the waters of the State, and establishes that "the state, as trustee, has a duty to preserve this trust property from harmful diversions by water rights holders" and that thus "no one has a vested right to use water in a manner harmful to the state's waters."56The "public trust" doctrine has recently been applied to groundwater where there is a hydrological connection between the groundwater and a navigable surface water body.57 In Environmental Law Foundation, the court held that the public trust doctrine applies to "the extraction of groundwater that adversely impacts a navigable waterway" and that the government has an affirmative duty to take the public trust into account in the planning and allocation of 56 United States v. State Water Resources Control Bd. (1986) 182 Cal.App.3d 82, 106; see also Nat'l Audubon Soc'y v. Superior Court (1983) 33 Cal.3d 419, 426 ["before state courts and agencies approve water diversions they should consider the effect of such diversions upon interests protected by the public trust, and attempt, so far as feasible, to avoid or minimize any harm to those interests."]. 57 Environmental Law Foundation v. State Water Resources Control Bd. (2018) 26 Cal.App.5th 844, 844. water resources.58 The court also specifically held that SGMA does not supplant the requirements of the common law public trust doctrine.59 In contrast to these requirements, the Draft GSP does not consider impacts on public trust resources, or attempt to avoid insofar as feasible harm to the public's interest in those resources.	GSP does not reflect public trust resource protections nor impacts thereon.	ISWs do not exist within MKGSA	N/A
Richard Garcia	GL	RG-003		1	Groundwater Level Modeling		I would like to see better computerized graphics. Use the well log data from cities, public water agencies and public schools to create the dynamic 3D models that will show the public how bad reality is.	Comment self-explanatory	Enhanced graphical information to be considered in annual reports and five-year assessments.	N/A
Richard Garcia	HM	RG-002		1	Hydrogeologic Modeling/Stakeholder Involvement- KDWCD & USACE		Using new technologies the Agency's consultants have collected an impressive amount of new geological and hydrological data. Water audits and "Water Budget" discussions are interesting exercises, and the airborne geophysical data collection efforts are intriguing. This new data will build upon the existing work of the Kaweah Delta Water Conservation District, an entity that should perhaps play a bigger role in formulating the basin's plans. They have been working on the problem for a long time and they are the connection to the U.S. Army Corps of Engineers. Ideally, the Corps should be part of this discussion. Flood control and recharge efforts are not exclusive.	Colaboration encouraged with KDWCD and USCE	Comment noted, and new data when available will be incorporated as part of Subbasin HCM.	N/A
Self-Help Enterprises	GL	SH-016	MCR-17	2	Groundwater Levels- Monitoring/Drinking Water		Robust monitoring networks are critical to ensuring that the GSP is on track to meet sustainability goals. As currently developed, the monitoring network can be improved to adequately monitor how groundwater management actions related to groundwater levels could impact vulnerable communities. We recommend the following changes: Include drinking water sources susceptible to groundwater level changes as a criteria in selecting wells for the representative groundwater level monitoring program. Identify which monitoring wells will be used to assess impacts to drinking water wells caused by changes on groundwater levels and describe how that assessment will be conducted. As required by 23 CCR § 354.28, DWR will evaluate the ability of the proposed monitoring program to properly assess impacts to beneficial users of groundwater and to protect beneficial users within the subbasin. In particular, it is important to clarify how MKGSA plans to monitor and assess drinking water wells at risk of dewatering. Include the location of S/DACs, areas with high density of domestic wells, and GDEs in Figure 4-3 and 4-4. Maps overlaying the location of these communities will allow stakeholders to evaluate the adequacy of the network to monitor conditions near these beneficial users.	Provide detail on monitoring network as it relates to water quality assessments and impacts on DACs and GDEs.	The groundwater level representative monitoring network and assoicated sustainabile management criteria are designed to protect all beneficial users of groudwater. Data collected from these wells will be reported to DWR in the annual reports. If impacts to small system wells occur, the GSA will work with small system owners to further evaluatie options.	N/A

Self-Help Enterprises	MA	SH-011	MCR-12	2	Management Areas/Disadvantaged Communities		The proposed three management areas consist of the respective jurisdictional areas of MKGSA's three Members, i.e., the City of Visalia, City of Tulare, and the Tulare Irrigation District. Our main concern is that ***the current proposal for management areas and threshold regions has limited consideration for vulnerable communities dependent on groundwater and does not adequately describe how the area will operate under different minimum thresholds.*** We recommend the following changes: Revise the description of the management areas to describe the S/DACs and number of domestic well users within each boundary. As described in the draft GSP, management areas are responsible for implementing projects and management actions within their area. Without a clear understanding of the S/DACs and domestic well users within the management area boundaries, the current draft GSP does not adequately describe conditions in these areas as required by Reg 354.20. Consider developing management areas or threshold regions around vulnerable communities. Vulnerable communities within the MKGSA do not have access to surface water and are dependent on groundwater. In order to develop more protective thresholds for vulnerable communities, it would be important to consider developing a protective buffer, management area, or threshold region around them. This recommendation can also be considered under projects and management actions. Key communities that could benefit of such protection include Okieville and Waukena and the water systems serving Waukena Elementary, Buena Vista, Oak Valley and Liberty School. Revise the description of the Monitoring and Analysis to better describe how the management areas will operate to avoid undesirable results. As currently drafted, the description of management areas could be improved by better clarifying how the different management areas can operate under different minimum thresholds and measurable objectives without causing undesirable results. The chart indicates which threshold regions are within each management area, but there is no description of how each management area will address the different water surface elevation conditions. Since S/DACs and domestic well users are the most vulnerable beneficial users within the MKGSA, it is important to clearly indicate how undesirable results will be avoided.	Comment text in bold sufficiently highlights primary concern.	DACs and domestic well owners to be considered within the Tulare ID Mgt Area	2.4
Self-Help Enterprises	AL	SH-019		1	Groundwater Allocations		SHE appreciates MKGSA's intent to conduct a full stakeholder outreach program during the development of the Mid-Kaweah Groundwater Extraction Allocation Framework such that well owners will be afforded the opportunity to provide input on the proposed implementation of the program. We are also pleased that MKGSA also plans to exclude those well owners who extract less than two AF per year (i.e., de minimis extractors) at least for this initial phase of an allocation program. Nonetheless, ***we recommend the GSP provide stronger clarification regarding provisions that the GSA plans to implement and consider to ensure that drinking water users will continue to have access to drinking water.*** When developing a groundwater allocation framework, consider the following measurements to ensure that the framework is protective of the Human Right to Water (AB 685): Sustainable yield allocation: In order to best protect drinking water needs we recommend that GSAs establish an allocation amount of groundwater as part of the calculation for the sustainable yield to adequately meet drinking water needs for public health and safety, both now as well into the future. Small water systems serving disadvantaged communities, domestic well owners, and water systems serving schools should be excluded from an allocation program. In order to determine this baseline for drinking water, GSAs will need to work with small community water systems, cities, and/or the county to determine current and future daily drinking water needs. Fees: The draft GSP indicates that it will not impose pumping restrictions on well owners that extract less than two AF per year. However, it does not address small water systems that may extract over two AF per year and serve critical drinking water needs, such as the Okieville/Highland Acres Mutual Water Company, and the Waukena Elementary School system. When developing a groundwater user fee structure, please consider that small communities have fewer economic resources. Additional fees increase families' water bills that are frequently already above the California water affordability threshold of 1.5% of MHI. Moreover, it is important to recognize and value other ways DACs and low-income residents contribute to the implementation of SGMA. For example, the Kaweah Subbasin, like many others around the State, was granted a DAC waiver and qualified for $1.5 million in grant funds to offset the costs of developing the GSP. The DAC waiver was granted by demonstrating the number of DACs that are located within the subbasin. Additional grants were obtained to construct monitoring wells and a recharge basin. For these reasons, we recommend exempting small drinking water systems managed by DACs and De Minimis Extractors from any GSAs fees (use permits and penalty fees) to support their efforts to provide affordable safe water. Financial penalties: Penalties for DAC water providers with limited technical, managerial, and financial capacity have often been found by the SWRCB to be counter-productive. If MKGSA consider implementing a sort of penalty for over-use, at a minimum consider 1) creating a more flexible warning and appeal process with these users, 2) proactively assisting SDWS that may be at risk of over-extraction, and 3) conditional forgiveness and reduction of penalties should be considered. This would encourage transparency and working collaboratively with MKGSA to take corrective actions addressing the underlying causes of overuse. Ideally, we recommend that MKGSA consider exempting SDWS serving DACs be from financial penalties for over-use. Allocation decisions time-frame: In the context of extreme weather events and given the unique set of factors that play a role in the recharge of the aquifers within the GSAs area, we recommend that allocations decisions are not tied to a time frame but to an adaptive management methodology that can respond timely to undesirable results and adjust allocations accordingly. The adaptive management methodology could guide allocation decisions and be used as a corrective tool to avoid localized drawdown impacts on communities and ecosystems, such as dewatering of shallower wells and streams. Particular attention should be placed on protecting groundwater levels for drinking water beneficial uses in the vicinity of community water systems of all kinds (municipal and unincorporated) and domestic well communities. Banking allocation of groundwater: Susceptibility to experiencing undesirable results from a given amount of pumping depends on hydrogeologic, climatic, biological, and other factors that can vary significantly within short and long periods. We recommend a short period for banking allocation to avoid significant negative externalities. We also recommend that any allocation period be strictly tied to an adaptive management methodology that can respond timely to undesirable results and adjust allocations accordingly. This is particularly important in the context of changing climate and data uncertainties. Transitional allocations and period: The following protective measures can be considered if excessive pumping is allowed during the transition period or if transitional buffer allocations are made available to eligible groundwater users: -Develop an adaptive management methodology based on SGMA monitoring requirements to guide any allocation decisions and to be used as a corrective tool to avoid impacts of localized drawdown on vulnerable communities and ecosystems. -Restrict transitional pumping in excess of the sustainable yield near drinking water systems and households relying on private wells if negative impacts are observed through monitoring or if protective thresholds are exceeded. -Develop mitigation measures that support communities, schools, and drinking water well owners in case negative impacts are observed/experienced. Prolonged droughts: When developing the MKGSA Groundwater Allocation Framework, clarify how the program will respond or be updated during a long-term drought. Particularly, with respect to the potential significant impacts that domestic well users, S/DACs face during these extreme weather events. We recommend the following: -Recognize and appropriately account for negative externalities especially during prolonged droughts by designing allocation rules that support progress toward sustainability and sufficiently address negative impacts. -Provide security considerations to support access to safe drinking water for DACs, SDACs, and underrepresented communities within GSA boundaries during prolonged drought periods.	GSP needs more substantive discussion as to protections for drinking water users during implementation.	Pumping restrictions/allocations to be developed by GSA during first five years, including any for DACs.	N/A
Self-Help Enterprises	AL	SH-020		1	Water Marketing		There are a number of important foundational steps agencies need to take before considering a groundwater market as a possible tool for groundwater management. Changing where and when groundwater is pumped or the place, method, timing, or purpose of its use, can significantly change the impacts experienced by people and ecosystems. Whether a groundwater market leads to harmful or beneficial impacts all depends on how the market is designed, governed, implemented, and what feedback mechanisms are included and utilized throughout the life of the market. ***Groundwater markets are not a viable option where the potential impacts of trading are not well understood— which is the case in areas that have significant data gaps and data uncertainties— where trading rules cannot sufficiently address negative externalities, or where the expected benefits of a market do not outweigh the burdens and uncertainties associated with designing and implementing a market .*** The foundation of a well-designed trading program requires a fair and adequate allocation of groundwater for drinking water uses, an additional margin for future growth prior to allocating water for trading purposes, and trading rules that avoid undesirable results as well as avoid or mitigate potential impacts to communities dependent on groundwater supplies. If these components are missing, the market can have significant negative impacts upon a community's drinking water supply. Some impacts include, but are not limited to: localized drying of community and domestic wells, increased contamination levels, or unaffordable water rates. Before considering a groundwater market framework, consider the following: Establish a non-tradeable allocation for drinking water: A non-tradable allocation amount of groundwater should be included as part of the calculation for the sustainable yield to adequately meet current and future drinking water needs for public health and safety. Ensure that monitoring networks are in place to detect the status and trends of groundwater conditions, and to ensure that the market is running well and is not resulting in adverse impacts to groundwater quality and/or groundwater levels. Implement an early warning system utilizing data collected through the monitoring network that helps identify at-risk groundwater users and anticipate potential negative impacts, such as groundwater level declines or worsening groundwater quality. Provide security considerations to ensure that transfers do not individually or cumulatively cause or contribute to violations of water quality standards. Implement interim and long-term solutions to mitigate for negative impacts to drinking water users caused by the groundwater trading. Outreach and engagement: Devise ways to help engage, communicate and translate technical information to stakeholders, particularly to rural communities, private well owners, and small farmers. 17 Green Nylen, Nell, Michael Kiparsky, Kelly Archer, Kurt Schnier, and Holly Doremus. 2017. Trading Sustainably: Critical Considerations for Local Groundwater Markets Under the Sustainable Groundwater Management Act. Center for Law, Energy & the Environment, UC Berkeley School of Law, Berkeley, CA. 90 pp1	Any groundwater trading/marketing program should give due consideration to drinking water user needs.	GW marketing/trading pgm to be considered and developed during first five years; small-system and domestic pumpers to be taken into consideration.	N/A
Self-Help Enterprises	DC	SH-021	MCR-14	1	Groundwater Levels-Domestic/Public		SHE appreciates MKGSA and stakeholder interest in providing assistance to small water systems and domestic well owners without the financial impacts to service or replace their pump and well facilities. As the assistance measures described in the draft GSP have not yet been approved to be carried out, we would like to further express the importance in providing such an assistance program to prevent and mitigate for impacts to drinking water users. The draft GSP identifies an impact to 21% of rural/domestic wells and, based on our Focused Technical Review, the actual impacts could be much higher. Moreover, rural domestic and small water system demand does not contribute substantially to the overdraft conditions, yet the risks imposed on these drinking water users are overlooked, creating a disproportionate impact on already vulnerable communities. With the decision of postponing the implementation of a groundwater allocation program or addressing reductions in groundwater pumping, drinking water users could face significant impacts, particularly if the region faces another drought. If MKGSA defines its sustainability criteria in a way that allows for the dewatering of drinking water wells, it is critical that MKGSA develops a robust drinking water assistance program to prevent impacts to drinking water users and mitigate the drinking water impacts that occur. ***The draft GSP presents a couple of mitigation measures that are being considered by the GSA's Advisory Committee and Governing Board. We would like to provide a set of additional considerations for establishing such an Assistance Program.*** Mainly, we recommend that mitigation measurements are tied back to a monitoring network and an adaptive management framework (trigger system) to evaluate groundwater conditions and predict potential groundwater impacts to drinking water wells. The framework should forecast how groundwater levels and quality could change based on potential project impacts, identify at-risk domestic wells, identify areas for additional monitoring, and determine if monitoring triggers have been met. Please consider the following for the development of an Assistance Program: Drinking Water Wells Monitoring Network: Expand and improve the monitoring network described by the GSP draft to assess impacts to drinking water wells caused by changes on groundwater levels and quality, in particular for groundwater conditions near the Okieville and Waukena communities, areas with high density of private domestic wells, and water systems serving schools. This will allow MKGSA to better comply with GSP regulations section 354.34, which requires GSAs to describe how potential impacts to groundwater users and uses will be monitored, ensure the success of the Assistance Program, and take a proactive approach to protect S/DACs and domestic well owners access to safe and affordable drinking water. Adaptive Management/Trigger System: Develop a protective warning system, also referred to as an adaptive management approach, which can alert groundwater managers when groundwater levels are dropping to a level that negatively affects drinking water users. Such triggers are essential for groundwater management but can be adjusted to fit the needs of different management actions as well as the basin as a whole. The table below provides an example of what a warning system might look like, using green, yellow, and red light indicators or "triggers", and some potential corrective actions groundwater managers can take to remedy the problem. Ultimately, this approach allows for evaluating what is happening and responding accordingly to prevent or mitigate negative impacts. "Green-light" Groundwater levels are stable. No action required. "Yellow-light " Groundwater levels are approaching concerning levels and impacts may occur or are occurring at a low rate. Some corrective actions are needed. - Undertake an analysis to pinpoint the cause - Undertake targeted water quality testing for selected domestic wells as mentioned in the draft GSP as one of the measures being considered by the GSA's Advisory Committee and Governing Board -Provide support to groundwater users experiencing impacts -Reassess pumping allocation and pumping patterns and consider restricting or limiting groundwater extraction near the triggered area. "Red-light" Time to stop and mitigate as significant impacts are imminent or are occurring. - Reassess pumping allocation and pumping patterns and consider further restricting or limiting groundwater extraction near the triggered area. -Provide interim emergency solution while pursuing a permanent solution to impacted groundwater users. Drinking Water Well Impact Tool/Model: Develop a tool/model tied to the monitoring network and the adaptive management framework (trigger system) to evaluate groundwater levels and predict potential groundwater impacts to drinking water wells. Update model regularly and develop a prediction of the potential groundwater impacts to drinking water wells. The tool/model could be used to: monitor and forecast changes in groundwater levels, monitor and forecast any localized areas for special attention and/or monitoring, attempt to identify domestic wells at risk of impacts, and determine if triggers have been met based on the adaptive management framework. Results of this assessment could be incorporated into the annual SGMA progress report to domestic well owners mentioned in the draft GSP as one of the measures being considered by the GSA's Advisory Committee and governing board. Mitigation Measurements: Groundwater should be managed to avoid reaching a 'red light' trigger and the implementation of a mitigation program should be implemented before wells begin to become unusable. This will allow communities working with the GSA to access funding, and the planning and contracting will be completed such that the necessary construction will be implemented without unnecessarily leaving community members without access to drinking water. The program should be designed to be proactive, rather than reactive. When mechanical failure or other operational problems are likely to occur, or have occurred, due to declining water levels, mitigation should be provided as described below: Define mitigation based on a field inspection to determine static depth to groundwater levels within the well and verify well construction information and pump setting information, if possible; Provide short-term water supply while a permanent solution is pursued. Short-term interim solutions serve to address the immediate impacts and ensure access to safe drinking water and	Add to small-system and domestic assistance pgm as recommended.	Assistance pgm set forth in Sec. 7.4 not all-inclusive and may be expanded pending further information during implementation.	N/A
Self-Help Enterprises	GA	SH-022		1	Interagency Collaboration		SHE appreciates MKGSA and stakeholder proposal to further collaborate and partner with other regulatory agencies during GSP implementation to ensure that its minimum thresholds and measurable objectives are maintained and that the water quality objectives of these other entities are achieved. As expressed previously, SHE believes that the strategic governance structure of GSAs can uniquely leverage resources, provide local empowerment, centralize information, and help define a regional approach to groundwater quality management unlike any other regional organization. When implemented effectively, GSAs have the potential to be instrumental in reducing levels of contaminants in their regions, thus reducing the cost of providing safe drinking water to residents. GSAs are the regional agency that can best comprehensively monitor and minimize negative impacts of declining groundwater levels and degraded groundwater quality that would directly impact rural domestic well users and S/DAC within their jurisdictions. ***When potential projects are proposed, MKGSA should consider taking leadership in coordinating regional solutions.***	GSA should take leadership role in coordinating projects to provide drinking water benefits.	MKGSA strives to colaborate with other Kaweah Subbasin GSAs on future projects. One such project is described in Sec. 7.3.6.	N/A

Self-Help Enterprises	PM	SH-018	MCR-11	1	Projects and Management Actions- Multiple Benefit/Disadvantaged Communities/Water Quality		We are pleased with the inclusion of Okieville Recharge Basin Project. A partnership has been established between Okieville and TID in order to construct the recharge basin upstream from the community that can bring mutual benefits. Indeed, groundwater recharge projects can have multiple benefits such as increasing groundwater storage and levels, as well as diluting contaminant plumes and improving groundwater quality. Carefully designed and implemented recharge projects, dry wells, on-farm recharge and storage projects type can simultaneously provide benefits to communities, farmers, and ecosystems. Moreover, these types of partnerships can enhance community engagement in projects, increase community awareness of the issues being addressed and establish a framework to support communities in their efforts to secure safe and reliable water. However, if not properly designed, recharge projects may mobilize nitrates, pesticides, and fertilizers, as well as naturally occurring contaminants, and can lead to the further degradation of groundwater quality, impacting drinking water wells. Currently, ***it is unclear if recharge, injection wells, and on-farm recharge proposed projects include precautions of groundwater quality degradation or if groundwater quality is included in the monitoring plan of these projects.*** In order to develop recharge projects that move the subbasin towards sustainability, avoid the further degradation of groundwater, and improve drinking water conditions, we recommend the following considerations and changes: Strengthen partnerships between Okieville and other DACs such as Waukena. MKGSA and TID should continue to partner with communities for the development of projects with multiple benefits that addresses overdraft while ensuring the protection and viability of important drinking water sources. When feasible, MKGSA should continue to prioritize and provide additional recognition for recharge projects near or up gradient to drinking water systems that have shared benefits: increase groundwater baseflow while at the same time addressing drinking supply needs, including improving GW quantity and quality. Include a map that overlays all of the potential recharge projects onto one map and include the location of S/DAC, domestic wells, and public water systems. As currently described, stakeholders are unable to effectively evaluate the collective potential benefits or impacts of recharge projects for drinking water users in the MKGSA. Develop criteria for recharge projects that prevent unintended impacts to drinking water. We recommend providing security considerations to ensure that all recharge and storage projects do not cause nor increase groundwater contamination. Attention should be placed on monitoring water quality, avoiding the use of contaminated soils through which water will percolate or use of surface water that is contaminated, and proposing strategies that can avoid/prevent/mitigate for any potential short and/or long term impact to drinking water wells, including domestic wells. For more information please refer to back to the guide Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act 16. 16 Community Water Center. Guide to Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act. https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Prot ecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858	Provid clarity re proposed on-farm programs and effects on water quality.	Consistent with the objectives of MKGSA as stated in Sec. 3.1, analyses of proposed projects on water quality will be made during GSP implementation. Each such project will include a monitoring component.	N/A
Self-Help Enterprises	PO	SH-002	MCR-22	1	Public Outreach- Disadvantaged Communities		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 . (DWR. (2018) Stakeholder Communication and Engagement).It invites citizens to get involved in deliberation, dialogue, and action on public issues that are important to them. More importantly, it helps leaders and decision-makers have a better understanding of the perspectives, opinions, and concerns of citizens and stakeholders, especially the underrepresented ones. This section of the GSP is generally in accordance with SGMA regulations and adequately captures beneficial uses and users of groundwater. Please consider the following recommendations to ensure more effective public engagement: Within the GSP ***include a high level summary of strategies included in the plan.*** The draft GSP currently only mentioned plan goals and requirements and would benefit from a more expanded description. ***Revise Section 1.5.2 to include water supply for Soults Tract, Lone Oak Tract, and the water systems of Waukena Elementary, Buena Vista, Oak Valley and Liberty School.*** ***Provide more information about stakeholder input and responses from the GSA to address the stakeholder input.*** ***Account for S/DAC outreach, engagement and translation services when applying for state funding, establishing and approving operating budgets and enacting groundwater fees:*** In order to ensure proper engagement of underrepresented groundwater users or the next 20 years of GSP implementation, (disadvantaged communities, residents relying on domestic wells and other Spanish speaking users), MKGSA should account for S/DAC outreach, engagement and translation services when applying for state funding, establishing and approving operating budgets and enacting groundwater fees. The GSA should hire qualified consultants who have a record of proven demonstrated success and clear qualifications for working with thesestakeholders. Effective community outreach and engagement includes, but is not limited to, conducting direct community outreach, hosting local community meetings, providing bilingual information, and making interpreting services available at meetings and workshops.	Provide more information re DACs and involvement in establishing fees/charges during GSP implementation.	Executive Summary to be expanded per comment. References to DACs and schools to be added.	1.1.2; 1.5.2.2
Self-Help Enterprises	PO	SH-003	MCR-23	1	Public Outreach		The current ***draft GSP provides limited information regarding how communication and updates related Plan implementation will take place and how this will be accomplished*** . Please consider the following suggestions: Utilize existing community venues for community meetings, workshops and events to provide information. For example, consider conducting short presentations during water board and school district board meetings. Venues should be carefully selected in order to meet the needs of the targeted audience. Identify community social media (Facebook, Instagram, etc.) groups, pages and websites and post information. Continue to develop media advisories, press releases and work with local media outlets, such as local radio stations, television stations, and local newspapers to captivate a broader audience that are not being reached via the electronic-based outreach currently used. Identify, and work with key community leaders /trusted messengers to distribute information and encourage community participation. Provide bilingual (English and Spanish) information and materials on the website, via email and consider inserting short notices (notices can include key messages, visuals and information that is relevant to the average water user) in water bills and/or community newsletters. At a minimum, this information should be provided during plan updates, and prior to critical decisions. In particular, the draft GSP released during the formal comment period should include materials highlighting key summaries of the GSP. Critical decision points can also include the adoption of groundwater fees, development and adoption of the potential Assistance Program as well as the Groundwater Allocation Framework, and the Pumping Restriction Program. Partner with other educational programs to leverage resources and explore opportunities to educate different generational groups.	Provide more supporting information re stakeholder involvement during GSP implementation.	Comment noted. Further outreach will take place during GSP implementation phase, including to small communities and school districts.	N/A
Self-Help Enterprises/ Leadership Counsel for Justice and Accountability	AL	SL-003	MCR-18	1	Projects and Management Actions- Domestic/De Minimus Extractors		The draft GSP describes a plan to develop a groundwater extraction allocation program between 2020 and 2025 (Section 7.4.2) and states that "this initial phase of an allocation program shall exclude those well owners who extract less than two AF per year (i.e., de minimis extractors)." Under Section 7.4.8.1, it is acknowledged that the early stages of planning for the assistance program will include "A determination by the GSA to not regulate any de minimis extractor, i.e., any well owner pumping two acre-feet or less annually." This provision is critical to ensure that drinking water users, including DACs and other domestic well users, will continue to have access to drinking water and therefore, ***the GSP should provide stronger clarification that this provision will be included in any allocation program through and beyond the 2025 timeframe.*** As described above, the draft GSP indicates that it will not impose pumping restrictions on well owners that extract less than two AF per year, but does not address small water systems that may extract over two AF per year, but serve critical drinking water needs, such as the Soults Mutual Water Company, Okieville/ Highland Acres Mutual Water Company, and the Waukena Elementary School system. ***The GSP should therefore clearly identify how a groundwater allocation program would be designed to protect small water systems and the beneficial users that depend on them.*** As discussed above, the draft GSP identifies an impact to 21% of rural/domestic wells, and based on our "quick and dirty" evaluation herein, the actual impacts could be much higher. Given these impacts to well owners, the draft GSP identifies assistance measures that are being considered for small water systems and domestic wells (Section 7.4.8.1). If assistance measures are planned to mitigate impacts to drinking water wells, then ***the draft GSP should provide clear funding mechanisms and implementation plans for these assistance measures.*** The GSP should also consider the following in its implementation plan: -A secure and reliable funding source and mechanism for implementation of any assistance measures needs to be identified. While grant or emergency funding could potentially be available for such a program when needed, the availability of these funds is not certain. A more secure funding mechanism could be the establishment of a reserve fund that is paid into on an annual basis and accrues funds that would then available as water levels drop in the future. -The implementation of an assistance measure program should be triggered before wells begin to become unusable, so that funding will be available, and the necessary planning and contracting will be completed such that the necessary construction will be implemented without unnecessarily leaving community members without access to drinking water. Thus, the measure should be designed to be proactive, rather than reactive. - An assistance measure should not be established only in case of emergency, such as the emergency measures implemented in portions of the state during the last drought. Droughts are said to be becoming more and more frequent and severe, and as such should be included as part of the long-term sustainability planning for the subbasin. 3 Stanford, 2019. A Guide to Water Quality Requirements Under the Sustainable Groundwater Management Act, Spring 2019.	Non-regulation of de minimis extractors should extend beyond 2025; any allocation pgm should provide protections therefor. Proposed assistance pgm should provide funding mechanisms.	GW allocation pgm to be developed during first five years. DACs and domestic pumpers to be taken into consideration, including a continuance to not regulate de minimis extractors.	N/A
The Nature Conservancy	SB	NC-006		2	Kaweah Subbasin Characteristics		The base of the Subbasin corresponds with the base of freshwater. "This is generally defined as the elevation below which total dissolved solids are greater than 2,000 milligrams per liter (mg/l) (Bertoldi et al, 1991)" (p. 22 of Appendix 2A). As noted on page 9 of DWR's Hydrogeologic Conceptual Model BMP (https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_HCM_Final_2016-12- 23.pdf) "the definable bottom of the basin should be at least as deep as the deepest groundwater extractions". Thus, groundwater extraction well depth data should also be included in the determination of the basin bottom. Properly defining the bottom of the basin will prevent the possibility of extractors with wells deeper than the basin boundary from claiming exemption from SGMA due to their well residing outside the vertical extent of the basin boundary.	[Appendix 2A Section 2.2.4 Bottom of the Subbasin (p. 22)] Better define base of fresh water and base of Subbasin.	The base of freshwater in Appendix 2A was defined using best available information. We acknowledge that there is still a high degree of uncertianty due to the lack of information available to pin it down (using well logs and geophysical logs extending to depth). We will identify this as a data gap and work to fill the gap by expanding the monitoring network.	N/A
The Nature Conservancy	GP	NC-005		1	Well Permitting		This section should include a discussion of the following: Future well permitting must be coordinated with the GSP to assure achievement of the Plan's sustainability goals. The County of Tulare is currently revising their well permitting program. The City of Visalia also has a well permitting program for wells within their jurisdiction. The State Third Appellate District recently found that Counties have a responsibility to consider the potential impacts of groundwater withdrawals on public trust resources when permitting new wells near streams with public trust uses (ELF v. SWRCB and Siskiyou County, No. C083239). The need for well permitting programs to comply with this requirement should be stated in the text.	County sell-permit system should acknowledge public trust resources [Section 1.4.4 Well Permitting Process (p. 1-17)]	Subbasin GSAs have been colaborating with Tulare County on well permits and exchange of related information as described in Sec. 1.4.4.	N/A
The Nature Conservancy	IS	NC-002		1	General Plans- Interconnected Surface Waters/Groundwater-Dependent Ecosystems		his section should include a discussion of General Plan goals and policies related to the protection and management of GDEs and aquatic resources that could be affected by groundwater withdrawals, rather than being limited to goals and policies directly related to groundwater resources as the Tulare General Plan does. **Please include a discussion of how implementation of the GSP may affect and be coordinated with General Plan policies** and procedures regarding the protection of wetlands, aquatic resources and other GDEs and ISWs. This section should identity Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) within the Subbasin and if they are associated with critical, GDE or ISW habitats. **Please identify all relevant HCPs and NCCPs within the Subbasin, and address how GSP implementation will coordinate with the goals of these HCPs or NCCPs.** The Open Space and Conservation Element of the City of Visalia's General Plan includes (p. 1-14 to 1-15): "1. Protect, restore and enhance a continuous corridor of native riparian vegetation along Planning Area waterways, including the St. Johns River; Mill, Packwood, and Cameron Creeks; and segments of other creeks and ditches where feasible, in conformance with the Parks and Open Space diagram of this General Plan. 2. Establish design and development standards for new projects in waterway corridors to preserve and enhance irrigation capabilities, if provided, and the natural riparian environment along these corridors. In certain locations or where conditions require it, alternative designs may be appropriate (e.g., terraced seating or a planted wall system) 3. Place special emphasis on the protection and enhancement of the St. Johns River Corridor by establishing extensive open space land along both sides. 4. Where no urban development exists, maintain a minimum riparian habitat development setback from the discernible top of the bank: 50 feet for both sides of the Mill, Packwood, and Cameron Creek corridors and 25 feet for both sides of Modoc, Persian, and Mill Creek ditches. Where riparian trees are located within 100 feet of the discernible top of the banks of the creek corridors and 50 feet from the banks for the ditches, the setback shall be wide enough to include five feet outside the drip line of such trees. Restore and enhance the area within the setback with native vegetation as follows: a. Where existing development or land committed to development prohibits the 50-foot setback on Mill, Packwood, and Cameron Creek corridors, provide the maximum amount of land available for a development setback. b. Where existing development or land committed to development prohibits the 25-foot setback along Modoc, Persian, and Mill Creek ditches, provide the maximum amount of land available for a development setback." Please specify if any of these areas are potential GDEs and describe how they are managed. Please refer to The Critical Species LookBook[4] to review and discuss the potential groundwater reliance of critical species in the basin. **Please include a discussion regarding the management of critical habitat for these aquatic species and its relationship to the GSP. The Critical Species LookBook is available at: https://groundwaterresourcehub.org/sgma-tools/the-critical-species- lookbook/**	Provide detail as to how the GSP could affect generl plans and their recognition of GDEs and ISWs [Section 1.4.3 General Plans in Plan Area (p. 1-12 to 1-16)]	Coverage of county/city general plans considered adequate as modified by County comments.	N/A
The Nature Conservancy	IS	NC-003		1	Groundwater-Dependent Ecosystems		The monitoring programs are described, but there is no mention of how GDEs are monitored and protected. **Once GDEs are identified, please describe how existing groundwater monitoring programs are protective of GDEs, or propose additional monitoring that specifically targets GDEs.**	Comment self-explanatory [Appendix 2A Section 2.3.1 Existing Groundwater Level Monitoring (p. 37-38)]	GDEs not present within MKGSA	N/A
The Nature Conservancy	IS	NC-017	MCR-3	1	Interconnected Surface Waters		**Please specifically cite "periodic comparisons of surface water elevations and flowrate depletion in applicable stream channels and adjacent groundwater" as a data gap and further address in the monitoring section.**	Comment self-explanatory [Section 3.2.2.5 Interconnected Surface Waters (p. 3-7)]	Interconnected surface waters non-existant within MKGSA.	N/A
The Nature Conservancy	IS	NC-018	MCR-9	1	Interconnected Surface Waters/Groundwater-Dependent Ecosystems		As noted above, an inventory of the vegetation types or habitat types and ranking of the vegetation species as having a high, moderate or low value will provide rational for the statement that "the intermittent nature of this vegetative habitat is such that its temporary loss does not rise to the level of an undesirable result."	Comment self-explanatory [Section 3.2.3.5 Interconnected Surface Waters (p. 3-9)]	GDEs not present wthin MKGSA	N/A

Mid-Kaweah GSA Comment and Comment Response Matrix

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The Nature Conservancy	IS	NC-020	MCR-3	1	Groundwater Level Monitoring Network- Interconnected Surface Waters/Groundwater-Dependent Ecosystems		The GSP proposes to use groundwater level monitoring for chronic groundwater level. Some of the monitoring wells are missing well construction information (only 22 of 37 wells are complete). Only 14 of the 37 wells are screened in the Upper Aquifer. The missing well information is a known data gap and was acknowledged on p. 4-15. Two multi-level wells are proposed to help fill this data gap, shown on Figure 4-7 (p. 4-22). **The missing information should be obtained or a different well selected for monitoring.** "As stated previously, the interconnection of surface water and groundwater was disrupted many decades ago in the MKGSA. Therefore, a monitoring network and monitoring is not required for this GSA (p. 4-14)." Data has not been presented to substantiate this statement. **Please provide additional analysis to back-up this conclusion.** Per the GSP Regulations (23 CCR §354.34 (a) and (b)), monitoring must address trends in groundwater *and related surface conditions* (emphasis added). Groundwater level monitoring alone may be insufficient to establish a linkage between groundwater extraction and potentially resulting impacts to environmental resources associated with GDEs and ISWs. The cause-effect relationship between groundwater levels and the biological responses that could result in significant and unreasonable impacts to ISWs and GDEs depends on a number of complicated factors, and this relationship is not characterized or discussed. As such, it is not possible to determine whether the proposed monitoring, minimum thresholds and measurable objectives are sufficiently protective to ensure significant and unreasonable impacts to GDEs and ISWs will be prevented. **Please add monitoring of potential GDEs and at any locations where ISWs have been or were previously present.**	Omit monitoring wells having insufficient construction details; further substantiate omission of monitoring network for ISWs; expand monitoring network for potential GDEs [Section 4.4 Groundwater Level Monitoring Network (p.4-6 to 4-11)]	GDEs and ISWs not present within MKGSA; additional justification for this conslusion is provided in Sec. 2 and 5.3.5.	N/A
The Nature Conservancy	SB	NC-007	MCR-8	1	Kaweah Subbasin Characteristics- Interconnected Surface Waters/Groundwater-Dependent Ecosystems		Basin-wide cross sections provided in Figures 4 through 13 are regional, and do not include a graphical representation of the manner in which shallow groundwater may interact with ISWs or GDEs that would allow the reader to understand this topic. Please consider including an example near-surface cross section that depicts the conceptual understanding of shallow groundwater and stream interactions at different locations, including the Upper Aquifer, as well as any potential GDEs.	Include x-sections as part of HCM to depict any ISWs [Appendix 2A Section 2.2.1.3 Kaweah Subbasin Geology (p. 17-21)]	GDEs and ISWs not present within MKGSA.	N/A
The Nature Conservancy	SB	NC-021		1	Groundwater Contour Maps- Interconnected Surface Waters/Groundwater-Dependent Ecosystems		**A groundwater elevation map should be prepared for the Upper Aquifer above the Corcoran Clay**, as that is the only way one can determine the appropriate depth relationships between the surface water and the groundwater, which are needed to designate a GDE. Mixing shallow and deep wells, particularly when confined conditions may be present, can be misleading.	Annual report to include mapping/contour data re unconfined aquifer layers.	GDEs not present within MKGSA; aquifer layer mapping will be undertaken as more data becomes available.	N/A
Tulare County Resource Management Agency	AL	RM-018		1	Groundwater Allocations		"…a GSA has the authority to regulate groundwater extractions and impose an allocation mechanism." "…and an arrangement to apportion responsibilities…" ***Could we say this is achieved through the Coordination Agreement?***	Comment self-explanatory [Page 7-33]	Individual GSAs to determine allocation mechanism within their jurisdiction; Coordination Agmt to set forth water budget allocations as among the three GSAs.	N/A
Tulare County Resource Management Agency	AL	RM-020		1	Extraction Data		"Table 8-1: Sample Groundwater Extraction Summary" May want to add 'small community water systems' as a separate line from M&I and Domestic?	Comment self-explanatory [Page 8-3]	Will consider delineating this data set in annual reports to DWR	N/A
Tulare County Resource Management Agency	GA	RM-005		1	GSP Adoption		"…the MKGSA will address these issues with the adoption…" Might want to reference the GSA's authority to address these issues here and specifically detail how adoption of the GSP will address these issues.	Comment self-explanatory [Page 1-13]	Reference SGMA Sec. 10726.9	1.4.3.1
Tulare County Resource Management Agency	GA	RM-008		1	GSA Roles		This section notes the role for the GSA's in the process that you may want noted above.	Comment re County well-drilling permit as proposed	Reference SGMA Sec. 10726.9	1.4.3.1
Tulare County Resource Management Agency	GL	RM-011	MCR-2	1	Groundwater Levels- Minimum Thresholds/Measurable Objectives		"…one-third of the representative monitoring sites in all three GSA jurisdictions combined exceed their respective minimum threshold water level elevations." ***Over what time period?***	Comment self-explanatory [Page 3-5]	This is to be further addressed by the Subbasin GSAs during implementation.	N/A
Tulare County Resource Management Agency	GL	RM-013		1	Groundwater Levels-Economic Impacts		"During this 20-year period, pumping costs will rise due to higher lifts and higher energy pricing, but this condition is considered by the MKGSA as a manageable impact that has been occurring for many years and is comparable to inflationary costs experienced by agricultural businesses, municipalities, and small-system and domestic households." Can you further detail the costs comparisons?	Comment self-explanatory [Page 5-3]	Cost comparisons to be considered during GSP implementation.	N/A
Tulare County Resource Management Agency	GP	RM-006		1	General Plans- Agricultural Land		"…"work with the county and other organizations to protect prime farmland and farmland of statewide importance outside the city's Urban Development Boundary…" ***Should policies from the County General Plan be specifically referenced here?*** This discussion could reference County Adopted City General Plans (Visalia Area Community Plan) as the appropriate mechanism to coordinate land use and policy decisions within the UAB and UDB. See Tulare County General Plan Planning Framework Chapter 2 Section PF-4 and 4-A. In addition, groundwater recharge is not solely determined by FMMP designations (See Tulare County General Plan Health and Safety Element Figure 10-7 areas for groundwater recharge. In addition the following County General Plan policies including but not limited to primarily address farmland protection: AG-1.1 Primary Land Use, AG-1.2 Coordination, AG-1.3 Williamson Act, AG-1.5 Substandard Williamson Act Parcels, AG-1.6 Conservation Easements, AG-1.7 Preservation of Agricultural Lands, AG-1.8 Agriculture Within Urban Boundaries, AG-1.9 Agricultural Preserves Outside Urban Boundaries, AG-1.10 Extension of Infrastructure Into Agricultural Areas, AG-1.11 Agricultural Buffers, AG-1.12 Ranchettes, AG-1.13 Agricultural Related Uses, AG-1.14 Right-to-Farm Noticing, AG-1.15 Soil Productivity, AG-1.16 Agricultural Water Resources, AG-1.18 Farmland Trust and Funding Sources, AG-2.8 Agricultural Education Programs, LU- 1.5 Paper Subdivision Consolidation, LU-2.1 Agricultural Lands, LU 2.2 Agricultural Parcel Splits, LU-2.5 Residential Agriculture Uses, LU- 2.7 Industrial Development, RVLP- 1.1 Development Intensity, RVLP- 1.2 Existing Parcels and Approvals, RVLP- 1.3 Tulare County Agricultural Zones, RVLP- 1.4 Determination of Agricultural Land, RVLP- 1.5 Non Conforming Uses, RVLP- 1.6 Checklist	Suggestion that farmland protection considerations of County General Plan could be summarized	County General Plan summary as modified per other RMA comments considered sufficient.	N/A
Tulare County Resource Management Agency	GP	RM-010		1	Public Property Permitting		"Placement of recharge projects and management of pumping regimes in each GSA/Management Area such that acceleration of contaminant plume migration that impairs domestic and municipal supply well production as induced by GSP projects and management actions is avoided." this is important for any new community, as well as for existing communities that fall under the County's purview. Acquisition of property for public purposes may require a General Plan Referral.	Comment self-explanatory [Page 3-3]	Comment noted.	N/A
Tulare County Resource Management Agency	MU	RM-019		1	Municipal Water Use		"…capped at 55 gallons per capita per day (gpcd) in 2019 and ramped down to 50 gpcd by 2030…" It might be better to say, "May be adjusted back up from 50, based on science."	Comment self-explanatory [Page 7-41]	Comment noted.	N/A
Tulare County Resource Management Agency	PM	RM-016		1	Projects and Management Actions- Coordination Agreement		"It is the intent of the Subbasin GSAs, as stipulated in the Coordination Agreement, to continue to discuss water balances and groundwater conditions during GSP implementation and, in so doing, manage the location, extent, and financial contributions to projects and management actions of each." This would be a good place to discuss the Coordination Agreement? Specific language or chapter/section citations in the coordination agreement should be referenced here.	Comment self-explanatory [Page 6-4]	Coordination Agmt will only referenced in the GSP and not outlined in detail.	N/A
Tulare County Resource Management Agency	WB	RM-015	MCR-20	1	Water Budget/Water Accounting Framework		"Whereas the average water accounting framework water balance is positive, the comparable hydrogeologic water budget is negative by about 13,000 AF. This reduction in storage is to be expected, as water levels decline in the range of 3 feet per year over much of the GSA region. The relative contributions of multiple causes of these declines is the subject of further study and hydrogeologic analyses." ***Please provide greater of the detail in regards to the cooperative agreement to help understand why groundwater levels are trending down in the overall Kaweah, even if there is 'surplus' according to the budget in the Mid-Kaweah.***	Explain water accounting framework surplus re declining GW levels in more detail [Page 6-4]	Further hydrogeologic analyses during GSP implementation will shed light as to reasons for GW level declines in MKGSA.	N/A
Tulare County Resource Management Agency	WR	RM-017		1	Surface Water Rights/Recharge Operations		"As an irrigation district under Division 11 of the California Water Code, TID has authority to manage, regulate, and engage in groundwater recharge operations for the benefit of its landowners." ***Can you state here that the water rights under the existing contracts?***	Request for further elaboration re surface water rights [Page 7-4]	Comment noted. The selection of MOs, MTs and domestic/small-system assistance pgm is deemed sufficient to protect all beneficial users.	N/A
Various Non-Profits	DC	NP-015		1	Well inventory- Domestic		The GSP should include detailed information about the location and depths of domestic wells. Providing maps of the monitoring network overlaid with location of DACs, domestic wells, community water systems, GDEs, and any other sensitive beneficial users will allow the reader to evaluate the adequacy of the network to monitor conditions near these beneficial users.	More information needed re domestic wells and adequacy of monitoring network to track impacts thereon.	Additional information re domestic wells to be part of five-year assessment.	N/A
Various Non-Profits	GA	NP-007		1	MKGSA Organization- Advisory Committee		The SCEP identifies an intent to have up to 3 members representing DACs and/or environmental users, but the GSP does not identify who the actual members of the Advisory Committee were through the GSP development process and what organizations/interests were represented.	Comment self-explanatory	Adv. Committee members selected per GSA board policy; all have specific terms and are subject to reappointments to continue to serve during implementation.	N/A
Various Non-Profits	IS	NP-004	MCR-7	1	Beneficial Users- Environmental		The types and locations of environmental uses, species and habitats supported, and the designated beneficial environmental uses of surface waters that may be affected by groundwater extraction in the Subbasin should be specified.	Comment self-explanatory	GDEs and ISWs not present within MKGSA; additional justification for this conslusion is provided in Sec. 2 and 5.3.5.	N/A
Various Non-Profits	PO	NP-006		1	Public Outreach		The GSP listed venues for stakeholders to provide input and also stated that the MKGSA responded to stakeholders' comments during the development of the GSP. However, detailed information about stakeholder input and responses from the GSA to address the stakeholder input are not presented.	Request for more information re stakeholder input/involvement during GSP development.	More detail re public comments are forthcoming in final GSP. Minutes of Adv Committee meetings (which document stakeholder input) are part of the public record and available on the GSA website.	N/A
Various Non-Profits	PO	NP-038	MCR-22	1	Public Outreach- Disadvantaged Communities		The GSP should also discuss whether and how input from DAC members was considered and incorporated into the development of URs, MOs, and MTs.	Request for additional information re DAC involvement in setting SMCs	More detail re public comments are forthcoming in final GSP. Minutes of Adv Committee meetings (which document stakeholder input) are part of the public record and available on the GSA website.	N/A

Various Non-Profits	WI	NP-008		1	Well inventory- Domestic/Public		(Domestic and Public Supply Well Locations and Depths) The well locations and depths are not specifically identified in the GSP.	Comment self-explanatory	Future annual reports will specify these details to the extent available.	N/A
Various Non-Profits	WQ	NP-005		1	Water Quality		The GSP should clarify what criteria it uses to characterize groundwater quality as "generally good" and should ensure that, at minimum, groundwater quality conditions should include the most recent SDWIS data.	Inadequate data re good water quality characterization	Comment noted.	N/A
Various Non-Profits	DC	NP-037		1	Undesirable Results- Disadvantaged Communities		The trigger for undesirable results (⅓ of wells in all the management zones impacted) creates the potential for disproportionate impacts to disadvantaged communities; those impacts should be assessed.	Impacts of undesirable results impacts on DACs needs to be assessed.	Comment noted; addressed suficiently in Sec. 3.2.2.1	N/A
Ca Department of Fish and Wildlife	GL	DF-003		3	Minimum Thresholds- Groundwater Levels		Sustainable management criteria allow for decades of continued groundwater decline in this subbasin designated as 'Critically Overdrafted.' A. Issue: These sustainability criteria suggest that groundwater elevations at all representative wells in the subbasin can continue to decrease for the next20 years, dropping further from historically low groundwater elevations during drought years, without witnessing undesirable results. The subbasin is characterized by DWR as 'Critically Overdrafted,' meaning "continuation of present water management practices [in the basin] would probably result in significant adverse overdraft-related environmental, social, or economic impacts" (CDWR 2019). However, according to statements in the GSP, the basin has not experienced undesirable results, nor will it under projected 2040 groundwater levels "barring significant and unreasonable impacts on existing wells and freshwater storage" as stated on page 5-3; therefore, minimum thresholds allow for continued groundwater depletions. Specifically, "minimum thresholds were set at the water level projections for 2040 using the same trend in groundwater levels from 2006 to 2016" as stated on page 5-3, effectively allowing for 20 years of groundwater table declining trends and mirroring trends that contributed to the subbasin's Critically Overdrafted status. Conceptually, there is a disconnect between the subbasin's 'Critically Overdrafted' designation and the GSP's claim that the basin has not experienced undesirable results, nor will continue to have undesirable results if groundwater levels continue to decrease. b. Recommendation: The Department recommends the MKGSA reconsider minimum thresholds and measurable objectives, accounting for undesirable results for fish and wildlife beneficial uses and users of groundwater and interconnected surface water, to design sustainable management criteria that reflect a 'Critically Overdrafted' subbasin designation by seeking to improve current groundwater conditions rather than allowing for continued aquifer depletions over the next two decades.	Comment 3 Sustainable Management Criteria (Sustainable Management Criteria, 5.3 Minimum Thresholds, starting on page 5-2): Reset MTs and MOs to account for impacts related to interconnected surface waters	We recognize that in an ideal situation, groudwater level declines could be arrested or reversed immidately. However, groundwater levels have been declining for decades both in the kaweah basin as well as surrounding basins, so an immeidate reverse of this situation is not feasible either technically or economically. That being said, the MKGSA in partnership GKGSA and EKGSA is commeted to stablizing groundwater levels during the 20-year SGMA implementation period through projects and management actions which include both pumping reductions and improvements in water supply reliability through expanded groundwater recharge and transfers. We have included a more expanded discussion of depth to groundwater and groundwater level trends in Sction 2 based on this and similar comments. The presentation of depth to groundwater in section 2 shows that historic and current groundwater levels are far below (60 to 220 feet) groundwater and stream beds in MKGSA. As mentioned above, raising groundwater levels in the upper principal aquifer in teh MKGSA and reconnecting streambeds for the purpose of fish and wildlife benefts in infeasible and not in th interest of basin stakeholders participating in the development of this GSP through the Public Advisory Committee.	5.3.5
Ca Department of Fish and Wildlife	IS	DF-001	MCR-7	3	Beneficial Users- Environmental		Environmental beneficial uses and ecosystem users of water are not adequately considered throughout the plan. A. Issue: Though the GSP identifies 'environmental and ecosystem interests' on the list of interest-based categories to be considered per Water Code 10723.2, these interests are not specified nor considered in a meaningful way. For example, on the bottom of page 1-23, the narrative paragraph lists beneficial users of groundwater in the basin but excludes any mention of environmental users. In Section 1.5.2.10, page 1-25, the GSP lists 'Environmental and Ecosystem Interests,' but unlike the other beneficial users, these interests are identified only as representative environmental organizations, not as the specific groundwater end user (e.g., groundwater dependent ecosystems). The lack of specificity around and consideration of environmental beneficial users perpetuates throughout the plan. For example: i. On page 3-2, first paragraph, the sustainability goal is entirely 'enterprise' focused and does not mention any environmental beneficial users of groundwater. ii. Similarly, undesirable results largely do not reflect potential impacts. to environmental beneficial uses and users of water. These users are excluded from the analysis and effects of undesirable results or their inclusion is cursory and dismissive. For example, on page 3-9, the discussion around Interconnected Surface Waters undesirable results acknowledges and accepts the potential for the temporary loss of riparian vegetation, which does not align with General Plan Open Space and Conservation Element objectives that seek to maintain or enhance riparian habitat as presented on page 1-14. iii. On page 3-8, the GSP notes that any "undesirable results caused by habitat loss within stream channels will be evaluated on a case-by-case basis and independent of other undesirable results". This statement effectively separates instream habitat undesirable results from the GSP undesirable result analysis for all other beneficial users without specifics as to how these 'cases' may be managed. Also, habitat 'loss' suggests permanence, which may mean once a 'case' is identified, it could be too late to mitigate significant impacts to environmental beneficial uses and users of groundwater. b.Recommendation: The Department recommends the GSP identify specific habitats and species that depend on groundwater in the subbasin and define for these beneficial users undesirable results and related causes. The Department recommends reviewing and evaluating the Critical Species Lookbook (TNC 2019) for threatened and endangered species within the basin, as well as for narrative on species and habitat groundwater dependence that can be a model for describing environmental beneficial uses and users of groundwater in the GSP.	Comment #1 Environmental Beneficial Users: (Introduction, 1.5.2 Beneficial Uses and Users, starting on page 1-23):	We recognize that in an ideal situation, groudwater level declines could be arrested or reversed immediately for the creation of ecosystem benefits through connected surface and groundwaters as suggested by CDFW through this comment. However, groundwater levels have been declining for decades both in the kaweah basin as well as surrounding basins, so an immeidate reverse of this situation is not feasible either technically or economically. That being said, the MKGSA in partnership GKGSA and EKGSA is commeted to stablizing groundwater levels during the 20 year SGMA implementation period through projects and management actions which include both pumping reductions and improvements in water supply reliability through expanded groundwater recharge and transfers. We have included a more expanded discussion of depth to groundwater and groundwater level trends in Section 2 based on this and similar comments. The presentation of depth to groundwater in section 2 shows that historic and current groundwater levels are far below (60 to 220 feet) groundwater and stream beds in MKGSA. Based on this comment we have also added to our objective statement in Section 3 and to our Projects in SEction 7, that to the extent possible the MKGSA will strive to develop water supply projects that have environmental/ecosystem benefits and that will support the efforts of other agencies and non-profit organizations with the effort to develop mulit-benefit projects. As mentioned above, raising groundwater levels in the upper principal aquifer in teh MKGSA and reconnecting streambeds for the purpose of fish and wildlife benefts in infeasible and not in th interest of basin stakeholders participating int eh development of this GSP through the Public Advisory Committee.	Added references to ecosystem benefits as objectives in goal statement (Section 3.1) in the development projects and management actions to stabilize groundwater levels. Section 7.1 has been modified to explain that the MKGSA will work to create and enhance ecosystem benefits through the development and implementation of the projects and programs selected to achieve sustainable groundwater management in the MKGSA.
Ca Department of Fish and Wildlife	IS	DF-002	MCR-3	3	Undesirable Results- Interconnected Surface Waters		The GSP offers an inconsistent and incomplete analysis of interconnected surface waters and related sustainable management criteria (SMC). A. Issue: On page 5-1, the GSP establishes 'non-applicability' of Interconnected Surface Waters sustainable management criteria, but poorly justifies and inconsistently applies this conclusion. Below are a series of GSP excerpts and CDFW comments. i. On page 3-41 , the undesirable result analysis for Interconnected Surface Waters states, "Depletions of interconnected surface waters are minimal and, to the extent they occur, impact only vegetation along the banks of unlined channels within the forebay regions of the aquifer system where natural channels exhibit gaining reaches from time to time. Undesirable results may occur should any such groundwater-dependent vegetation disappear from locations of known historic existence." ii. On page 3-5 states "Groundwater elevations shall serve as the sustainability indicator and metric for chronic lowering of groundwater levels and, by proxy, for and interconnected surface waters. Justification for use of groundwater elevations as a proxy in this instance is provided in Section 5." iii. On page 3-7 states, "The water level sustainability indicator is to serve, by proxy, for establishing interconnected surface waters. Periodic comparisons of surface water elevations and flowrate depletions in applicable stream channels and adjacent groundwater will be pertinent to this establishment." iv. On page 3-9 states, "Water bodies, primarily stream channels, which become temporally disconnected throughout the year from the underlying water table may experience the disappearance of adjacent vegetative habitat which may be considered as a beneficial use of groundwater. Such occurrences are generally restricted to the upper reaches of applicable channels in the fore bay region of the aquifer system near the Sierra foothills. The consensus among Subbasin GSAs and stakeholders is that the intermittent nature of this vegetative habitat is such that its temporary loss does not rise to the level of an undesirable result." Each of the above statements suggest that the basin has some surface water groundwater interconnectivity, and that groundwater elevation will serve as a proxy metric for Interconnected Surface Waters monitoring. The last sentence for page 3-9 above, suggests the consensus is more the expressed opinion of the stakeholders and not based on scientific or engineering verification. v. On page 4-14, states, "As stated previously, the interconnection of surface water and groundwater was disrupted many decades ago in the MKGSA. Therefore, a monitoring network and monitoring is not required for this GSA." vi. On page 5-18 states "Insufficient information and flow data exist with which to gauge seasonal connections and relative importance of any vegetative habitat known to intermittently exist along stream channel banks." The above two statements suggest that the GSP is dismissing all groundwater surface water connectivity as non-existent, despite an absence of data and previous suggestion that there is some degree of interconnectivity. Notably, the data gaps identified in the plan do not include Interconnected Surface Waters (see pages 2-2 and 4-14); and though the GSP proposes use of groundwater elevation as a proxy for Interconnected Surface Waters depletions on page 3-7, no further justification or application of that proxy metric is included. b. Recommendations: To reconcile the inconsistent and inadequate consideration of Interconnected Surface Waters depletions in the GSP, the Department recommends the MKGSA consider: i. Installing shallow groundwater monitoring wells near potential GDEs and Interconnected Surface Waters, potentially pairing multiple-completion wells with streamflow gauges for improved understanding of surface water-groundwater interconnectivity. ii. Identifying the estimated quantity, timing, and location of streamflow depletions in the subbasin per 23 CCR 354.28 (c)(6)(A). If this information is unavailable, identify and define a timely and clear approach to estimating these values. iii. Re-evaluating sustainable management criteria based on an improved understanding of Interconnected Surface Waters and based on undesirable results for environmental beneficial users of groundwater and Interconnected Surface Waters. 1. Even though potential undesirable results are defined for Interconnected Surface Waters depletions, the causes for these depletions are not identified in Section 3.2.1.5 Causes Leading to Undesirable Results: Interconnected Surface Water. Causes leading to undesirable results for all other applicable SMC are identified.	Comment #2 Interconnected Surface Waters (Multiple Sections/Pages):	Based on this comment by DFWS, we have modified our plan to more clearly demonstrate that within the MKGSA, currect, historic and projected future groundwater levels are disconnected from streambeds and rooting depths. Section 2 now includes and an expanded presentation of groundwater level trends, depth to groundwater and water budget.	Sec 2.3, 2.4 and 2.5
Ca Department of Fish and Wildlife	IS	DF-004	MCR-3	3	Groundwater-Dependent Ecosystems		Starting on page 146, the GOE identification section, pursuant to 23 CCR § 354.16 (g), is based on very limited information to demonstrate exclusion of ecosystems that may depend on groundwater. A. Issue: Methods applied to the Natural Communities Commonly Associated with Groundwater (NCCAG) dataset to eliminate potential GDE's are not robust. i. Depth to Groundwater: The removal of areas with a depth to groundwater greater than 50 feet in Spring 2015 relies on a single-point-in-time baseline hydrology, specifically a point in time that is several years into a historic drought when groundwater levels were trending significantly lower due to reduced surface water availability. Exclusion of potential GDEs based on this singular groundwater elevation measurement is questionable because it does not consider representative climate conditions (i.e., seasons and a range of water type years) and it does not account for GDEs that can survive a finite period of time without groundwater access (Naumburg et al. 2005), but that rely on groundwater table recovery periods for long term survival. ii. Adjacent to Surface Water: The GSP did not fully evaluate potential GDEs that depend on adjacent losing surface water bodies and a GDE's adaptability and opportunistic nature in accessing water supply. The GSP assumption that these potential GDEs are accessing and primarily dependent on surface water is based on proximity to a surface water source, but this assumption is poorly justified and there is no acknowledgement of the potential for shifting reliance between surface and ground water. Additionally, GDEs that are near interconnected surfa?e water bodies may depend on sustained groundwater elevations that stabilize the gradient or rate of loss of surface water, meaning that ecosystems near interconnected surface waters may depend on sustainable groundwater elevations. Therefore, it is possible that any of these potential GDEs rely on groundwater during specific seasons or water year types. B. Recommendations: The Department recommends the MKGSA consider the follqwing for information gathering related to GDEs: i. Depth to Groundwater: Develop a hydrologically robust baseline which includes areas with a depth to groundwater greater than 50 feet that relies on multiple, climatically representative years of groundwater elevation and that accounts for the inter-seasonal and inter-annual variability of GOE water demand. ii. Adjacent to Surface Water: Re-evaluate potential GDEs that are in proximity to a losing surface water body. The Department recommends the GSP be more conservative and all-inclusive until there is evidence that the overlying ecosystem has no significant dependence on groundwater across seasons and water year types. The Department advises that these riparian GOE beneficial users of groundwater and surface water are carefully considered in the analysis of undesirable results and minimum thresholds for depletions of interconnected surface waters. iii. Include additional references for evaluation: The Department recognizes that NCCAG (Klausmeyer et al. 2018) provided by California Department of Water Resources (CDWR) is a good starting reference for GDE's; however, the Department recommends the GSP include additional resources for evaluating GOE locations. The Department recommends consulting other references, including but not limited to the following tools and other resources: the California Department of Fish and Wildlife (CDFW) Vegetation Classification and Mapping Program (VegCAMP) (CDFW 2019A); the CDFW California Natural Diversity Database (CNDD8) (2019B); the California Native Plant Society (CNPS) Manual of California Vegetation (CNPS 2019A); the CNPS California Protected Areas Database (CNPS 2019B); the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (2018); the USFWS online mapping tool for listed species critical habitat (2019); the U.S. Forest Service CALVEG ecological grouping classification and assessment system (2019); and other publications by Klausmeyer et al. (2019), Rohde et al. (2018), The Nature Conservancy (TNC) (2014), and Witham et al. (2014).	Comment #4 Section 5.3.5 Minimum Thresholds - Interconnected Surface Waters on pages 5-7 to 5-8 and Appendix 2A Section 2.10 Kaweah Subbasin Basin Setting Components. Groundwater-Dependent Ecosystems.	The expanded presentation of depth to groundwater demonstrating that MKGSA is a disconnected groundwater system has been provided in Section 2 of this document in reponse to this commment from DFWS. Further discussion of GDEs as suggested by DFWS is not warrented since groundwater is the upper principa; aquifer is far below the rooting depth of pheatophyts.	Sec 2.3, 2.4 and 2.5

Edward Henry	LS	EH-012		2	Land Subsidence- Correlation with Groundwater Levels		It states, " ... Over-pumping during drought periods, which may result in new lows in terms of groundwater elevations, is of particular concern based on current scientific understanding of subsidence trends in this region. Regional correlations of water levels v. subsidence trends remain difficult to ascertain ... " and yet on Page 4-6, Section 4.2.3 Representative Monitoring, in the second sentence of the second paragraph it states, " ... The USGS and DWR have utilized changes in groundwater elevations to estimate changes in storage and have demonstrated a correlation between groundwater elevation and subsidence ... ". This appears to infer a stronger correlation of groundwater elevations and subsidence than what was stated in Section 3.2.1.3 where is states, " ... Regional correlations of water levels v. subsidence trends remain difficult to ascertain ... ". So for the Kaweah Subbasin, in general, and the MKGSA, in particular, how strong is the correlation? Because of differential subsidence and regional affects on critical infrastructure, groundwater elevations may or may not have a good or strong correlation with_ land subsidence-it that correct? It's my understanding that within the KSB there are some regions of strong correlations for groundwater elevations and land subsidence, and for other regions the correlations are quite weak? Is the language in those two sections in conflict with each other? Also see where is states, " ... Additionally, there was not sufficient data to find a good correlation between pumping and land surface subsidence ... ". With this text there is some conflicting information to the casual reader on the relationship between groundwater elevations [due to pumping] and land subsidence. (NOTE: Perhaps I'm "beating a dead horse" here with semantics and parsing words in those three above referenced sections on the correlation between groundwater elevations and land subsidence. What will DWR accept here? As noted there are data gaps and perhaps by 2025 with better monitoring sites and technology there will be a better understanding of that relationship between groundwater elevations and subsidence whether for better or worse-meaning a more positive correlation or a less positive one, or good in one region and not good in another.)	Correlations of local and regional land subsidence and water levels and water storage not adequately explained.	Detail will be added to the subsidence bullet point, or a second bullet will be made * while the basin setting and other reference information in the plan relates subsidence to water levels, in our basin it remains a data gap that will be filled over time through collection of data from our LSS monitoring network.	Section 3.2.1.3 modified to provide the clarity requested.
Edward Henry	GL	EH-011		2	Minimum Thresholds- Drought Impacts		BMP document, November 2017, page 4, under the heading Sustainability Indicators, the first indicator, "Chronic lowering of groundwater levels ... " I would like to add a direct quote from there to the end of the sentence at the top of Page 3.4 from this section of the BMP which states, "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. " A lot of people on these GSA boards, committees, etc. are not aware of the above "wiggle room" statement allowed by the State--this is a very important point. To me, the State recognizes that agriculture may have to overdraft during a declared drought period in order to be economically sustainable but then it must make-up for that overdraft in normal and wet years. After all, the primary purpose of SGMA is to stop the chronic lowering of our groundwater, and we have until 2040 to bring our groundwater into sustainability. In Section 3.2.1.1 Groundwater Levels should now read, "Undesirable results associated with groundwater level declines are caused by over-pumping or nominal groundwater recharge operations during drought periods such that groundwater levels fall and remain below minimum thresholds. Over-pumping and lack of recharge is area specific, and some GSA Management Areas experience greater adverse impacts than others. [However], 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.". (Note: The bold, italic insert above is from the Sustainable Management Criteria- BMP document, November 2017, page 4) Also note that Undesirable Results has the complete text for the definition of undesirable results for groundwater elevations (including the " ... Overdraft during a period of drought ... " caveat sentence for additional clarification): "Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and groundwater recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods. "	Explain why over-pumping during droughts need not be considered as an undesirable result if offset by recharge in wet years, in accordance with SGMA.	Add SGMA quote as referenced to Section 3.2.1.1	3.2.1.1
Edward Henry	GE	EH-007		1	MKGSA Characteristics		Municipal and Industrial Well Operators: "The City of Tulare and the City of Visalia account for about 20 and 30 percent of the land area within the MKGSA, respectively." More accurately, Tulare's land area within the MKGSA is 12.7% (13,631acres divided by 107,000 acres in MKGSA) and Visalia's land area is 21.7% (23,197 acres divided by 107,000 acres in MKGSA) for a total urban acreage of approximately 37,000 acres or 35% (~37,000 acres divided by 107,000 acres) of the MK GSA acreage.	[Page 1-24]: 1.5.2.6	Cited percentages to be revised to 12% and 22% respectively for Tulare and Visalia.	Appendix 2A?
Edward Henry	GL	EH-013		1	Minimum Thresholds- Groundwater Levels Measurement		In the third sentence of the first paragraph should be inserted "minimum threshold (MT)" before "... groundwater .." so as to read, "... If any of the representative monitoring wells fall below the minimum threshold (MT) groundwater elevation in its respective zone, undesirable results could occur ...".	[Page 5-2, 5.3 Minimum Thresholds, 5.3.1 Minimum Thresholds - Lowered Groundwater Levels, 5.3.1.1 Overview]:	Edit noted	5.3
Edward Henry	GL	EH-014		1	Measurable Objectives- Groundwater Levels		In the first row under the heading of Well ID, KSB-0922, and under the Measurable Objective heading, the fmsl figure/number is listed as a minus 19 (-19) which is incorrect as it should be positive 19 fmsl. In Appendix SB Groundwater Level Sustainable Management Criteria Hydrographs the first hydrograph is for well KSB-0922 which definitely shows a Measurable Objective of+ 19 fmsl and not a negative figure. Of the 42 listed Well IDs in Table 5-3, well KSB-0922 is the only well I compared or cross-checked the numbers to the hydrographs shown in Appendix 5-B. (Due to the tediousness of going completely through each well in that table and comparing/cross-checking them to the hydrographs, and the time constraints of thoroughly going though this GSP, I did not examine the data for each of the other 41 wells listed. Hopefully well KSB-0922 is the only well in Table 5-3 in incorrect data.)	[Page 5-5, Table 5-3]: Summary of Groundwater Level Sustainability Management Criteria for MKGSA:	Corrections noted for Sec. 5 and related appendices	5
Edward Henry	GS	EH-020		1	Optimal Objective- Groundwater Storage		In the second sentence of the paragraph following the bullet points it states, " ... Figure 5-3 shows the results of this analysis indicating that the measurable objective has 641,000 AF in storage at 2040, and the optimal objective has 1,356,000 AF in storage at 2040 ... ". When going back to Figure 5-3 on Page 5-10, that figure shows the Optimal Objective at 1,340,000 AF rather than the number of 1,356,000 AF cited above-that's a difference of 16,000 AF (which is almost the amount of groundwater pumped annually by the City of Tulare at roughly 18,000 AF). Which number is correct?	Comment self-explanatory [Page 5-21, 5.4.2 Groundwater Storage Measurable Objectives]:	Corrected text to have on optimal objective of 1,340,000	5.4.2
Edward Henry	MU	EH-005		1	Municipal Water Use- Landscaping		***Simple calculation: 700 sq miles x 640 acre/sq mile = 448,000 acres within the KSB. Current accepted KSB acreage is 441,000 acres. So which figure is the most accurate? If the 441,000 acres is correct, then the "occupying some 700 sq miles" needs to be ch***	Comment self-explanatory	Acreage citings to be made consistent	1, App. 2A
Edward Henry	OR	EH-016		1	Internal referencing/GSP Organization		In the paragraph beginning with the sentence, " ... The results of this well impact analysis ... ", there is reference to " ... Figure 5-2 is an example plot showing 144 domestic wells in Hydro geologic Zone 2 ... ". ***None of the plots and statistical well summaries categorized by zone (1-10) have listings by Figures which makes it difficult to locate what is listed as Figure 5-2. Can this be corrected to add a Figure x.x, accordingly, to each of the plot and statistical well summaries?*** Also not seeing the well impact evaluation summaries referred to in the following sentence, " ... The well impact evaluation summaries for all zones (Appendix SC) indicate that 18 percent of agricultural wells, 9 percent of public wells, and 21 percent of rural residential wells including domestic wells ... ". ***There is no summary for all zones-only plots by each zone without Figure x.x assignments.***	Suggested improvements to well hydrographs as cited [Page 5-7]	Figure 5-2 is included in the GSP with a figure title. To improve the presentation of plots in Appendix 5C we will add the Hydrogeologic Zone location map copied in from Appendix 5A. The summary by zone is included as a table in the bottom right area of each plot.	5.3.1.3
Edward Henry	OR	EH-023		1	Hydrogeologic Zones- Table Formatting/Internal Referencing		[Appendix 5A] The term "hydrogeologic zone(s)" (AKA HZs) is used 14 times in the MKGSA GSP, and yet there is not an actual map/figure of the KSB showing those nine (9) HZs of which there are four (4) HZs in the MKGSA—1, 2, 4, and 7. An excellent map/figure is found (at the MKGSA website) under Documents, Section 5 Appendices, Appendix 5A Overview of Application of Hydrogeologic Zones for Development of Groundwater Level Minimum Thresholds, Figure 5.1 on Page A5-1. For easy reference by the reader of this GSP, I would suggest imbedding Figure 5.1 into Section 2. Basin Setting at the bottom of Page 2-5 and above the Section 2 – Basin Setting explanation box. In the first sentence of the third paragraph from the bottom on Page 2-5, it reads in part, "…Each MA's minimum thresholds have been determined using the hydrogeologic zone mapping…", and yet there is no HZs map in this GSP. Since the word "…mapping…" is used here, this would be an excellent place to include/insert this map/figure. After the word "…mapping…", should be added (Figure 5.1), so as to read, "…Each MA's minimum thresholds have been determined using the hydrogeologic zone mapping (Figure 5.1)…".	Clarity sought re application of hydrogeologic zones (HZ) in setting MTs	Appendix 5A does include a map of the Hydrogeologic Zones, It's Figure 5-1 of Appendix 5A. MKGSA staff and the consulting team believe it's best to keep the HZ mapping and analysis in the Appendix rather than bringing a new technical figure into the Section 2 of the GSP.	No changes required
Edward Henry	OR	EH-024		1	Hydrogeologic Zones- Internal Referencing		In [Appendix 5B] Groundwater Level Sustainable Management Criteria Hydrographs there are approximately 34 hydrographs. In the heading at the top of each hydrograph there is a well designation (plus other information), i.e. Well KSB-0922, but it does not identify the HZ where that particular well is located. After some prolonged looking, Well KSB-0922 can be found in HZ1. It would be more convenient if the HZ for each hydrograph were to be labeled with the HZ in the heading as shown in the example below: Well KSB-0922 – HZ1 Mid Kaweah GSA Well ID: CID_038 Aquifer System: Unknown – Model Layer 3 Also, none of the 34 hydrographs listed in Appendix 5B have a Figure designation, i.e. Figure x.xx, in their lower left-hand corner as do other Figures and Tables in this GSP and the accompanying Appendices at the MKGSA website. Having all Tables and Figures labeled as such would be more convenient for referencing and cross-checking when needed.	No change	GSP explains that HZ were used to reach concensus with Advisory Committee and stackholders with the basin on the approach to setting SMC. Acutally SMCs are set at each monitoring well, so no need to tie these back to the HZ since all future monitoring and reporting will be based on representative monitoring program..	No change
Edward Henry	OR	EH-025		1	Hydrogeologic Zones- Internal Referencing		In the last sentence of the second complete paragraph down from the top of Page 5-19 of this GSP it states, "…This approach is summarized in the bullet list that follows and is illustrated on Figure 5.1 of Appendix 5A:…". There is a definite inaccuracy here related to "…Figure 5.1 of Appendix 5A:…" as Figure 5.1 is a map/figure (not a hydrograph) of the Hydrogeologic Zones in the KSB (see map/figure below). Could you be referring instead to Figure 5.2 through Figure 5.5 in Appendix 5A, OR RATHER is it in Appendix 5B where the first hydrograph (unlabeled—no Figure designation) is shown as Well KSB-0922? In looking further at the "…bullet list…" and in the discussions that follow about the minimum thresholds, measurable objectives, and interim milestones, it seems logical that Well KSB-0922 is the well being referred to here as the example illustration. But since Well KSB-0922 does not have a Figure designation attached to it, it was confusing initially. (See hydrograph of Well KSB-0922 on Page 2 of 2 below.) In the second sentence of the next to the last paragraph on Page 5-19 it states, "…Figure 5-1 shows these criteria at a single well in the southwest area of MKGSA and Appendix 5B includes these criteria for each well…". That "…single well…" is Well KSB-0922 which is in HZ1 (the southwest area of the MKGSA) but it does not have a Figure 5-1 designation (confusing). All 34 hydrographs in Appendix 5B need to be updated with a Figure designation, i.e. Figure x.xx, in the lower left-hand corner (below the hydrograph) of the each hydrograph for a more concise and easier referencing process. As mentioned earlier on Page 2 of 2, Addendum #4 (of these GSP comments) where the example for Well KSB-0922 – HZ1 is shown (to include the HZ number), it is first of all suggested here that the "well title headings" include the HZ for all 34 hydrographs. Secondly, it also would be very convenient to have all hydrographs grouped by Hydrogeologic Zones for easier referencing in this GSP. Although on Page 5-2 it states, "…one-third of the Subbasin's representative monitoring sites exceeding minimum thresholds for water levels would constitute an undesirable result…", it would be very helpful to know if those exceedances are random within the KSB or even the MKGSA or if one HZ is statistically more heavily impacted than another HZ. If those exceedences were isolated to a particular HZ, then possibly Projects and Management Actions could be specifically tailored to that HZ or a region of that HZ, and/or the Management Area occupying that HZ. There is the possibility the exceedances could occur in only one Management Area of a particular HZ (which potentially traverses one or more Management Areas—i.e. HZ4 which traverses all three Management Areas of the MKGSA) and not throughout an entire HZ. As an example, what if the "…one-third…" exceedances occurred only in the northeast section of the City of Tulare which is in part of HZ4? The whole KSB and the MKGSA should not be penalized in that scenario. In summary, there are several main points here: First, is to identify the HZ in which each well resides and add to each well's "well title headings" which HZ it's located in, and secondly, would be to group the 34 wells by HZ. In the MKGSA GSP in Table 4-5: Groundwater Level monitoring network Well Summary on Page 4-8 there are 43 Well IDs listed, and yet in Appendix 5B there are hydrographs for only 34 wells. That's a difference of nine monitoring wells without hydrographs. All nine wells are in the Tulare Irrigation District and have the following Well ID: KSB-1320s; KSB-1320d; KSB-1408s; KSB-1408d; KSB-1536s; KSB-1536d; KSB-1545s; KSB-1545d; & KSB-1879. With the exception of KSB-1879 the other eight wells appear to have good and complete Well Construction Information as listed in those three columns of Table 4-5. Why are those nine wells which are listed in Table 4-5 not showing hydrographs in Appendix 5B?	Inconsistencies between Figures 5-1 and 5-2; improve application of HZs as they relate to monitoring wells	Text modified on Page 5-19 to refer to all three hydrographs of Appendix 5A (Figure 5-2, 5-3 and 5-4). Since the reader is confused by the similarity in naming convention between GSP Section 5 figures and appendix 5a figures, we have renamed the Appendix 5A figures as follows: 5A1, 5A2, 5A3, 5A4. We appreciate the suggestion, but respectfully disagree with the reviewers that we more strongly coorelate the representative monitoring wells with hydrogeologic zones in the plan (see response to comment above). Regarding KSB-1879 althought TID does currently monitoring this well, we are removing it from the representative monitoring network becuase well construction information is not available and it is in close proximity to KSB-1903 for which we have construciton information. So KSB-1879 will be removed from Table 4-5 and Figure 4-4 in the GSP.	Table 4-5 and Figure 4-4

Edward Henry	OR	EH-026		1	Sustainable Yield/Internal Referencing		A general comment on the term "sustainable yield" as it is used in the MKGSA GSP. The term "sustainable yield" is used a total of 10 times in this GSP but it does not indicate or state an actual numerical value for the "sustainable yield" in any of the text. At many of the KSB's GSA meetings over the past 6 months it's been stated by the 3 GSA managers and others, and shown in tabular form that the "sustainable yield" is 659,999 AF (660,000 AF rounded up) for the KSB. This is depicted on Page 6-3, Table 6-2: GSA Apportionment, of this GSP. (NOTE: This table is also known as the Water [Supply] Accounting Framework, and also referred to as the "Three Buckets" accounting method) In that table in the lower right-hand comer is the figure of 659,999 which is oftened referred to as the "sustainable yield" but not specifically labeled as such. I would suggest putting a double asterisks(**) after the 659,999 number. Then below the table add this additional footnote (to the ones already there) with a double asterisks (* *). The footnote would then read, " ... **Sustainable Yield for KSB ... ". Although "sustainable yield" is used 10 times, there is no concise definition of the term "sustainable yield" found anywhere in this GSP. At the MKGSA website under Documents in Section 3 Appendices, 3B Sustainable Management Criteria Best Management Practices, 5. KEY DEFINITIONS, Page 34, it gives the definition of "sustainable yield" as follows: (w) "Sustainable yield" means the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result. Perhaps this definition should be inserted in parenthesis the first time the term "sustainable yield" (last bullet point) is used in the 1. Introduction, General Information, 1.1.1 Purpose of GSP on Page 1-1. That last bullet point would now read in part, "... the sustainability goal and ensure that the Subbasin is ultimately operated within the sustainable yield. ("Sustainable yield" means the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result.)...".	Need to define "sustainable yield within the GSP.	Good comment, we have made the following changes to the GSP based on this comment:1) Added "Sustainable Yield" to a new glossary of terms at the front of the document, 2)Added reference to the sustainabile yield of the basin in the expanded executive summary, 3) Added the footnote to Table 6-2 as suggested.	Executive Summary, Section 6
Edward Henry	SB	EH-001	MCR-5	1	Kaweah Subbasin Characteristics		Simple calculation: 700 sq miles x 640 acre/sq mile = 448,000 acres within the KSB. Current accepted KSB acreage is 441,000 acres. So which figure is the most accurate? If the 441,000 acres is correct, then the "occupying some 700 sq miles" needs to be changed to "689 sq miles" to be more accurate (441,000 acres divided by 640 acre per sq mile = 689 sq miles).	Comment self-explanatory Page 1-1, 1.1.2 Executive Summary]: 1.1.2-"occupying some 700 sq miles"	References to KSB acreage to be made consistent within reason.	1.1.2; Appendix 2A
Edward Henry	SB	EH-003	MCR-5	1	Kaweah Subbasin Characteristics		Kaweah Subbasin (696 sq miles). By calculation: 696 sq miles x 640 acres/sq mile = 445,000 which is different than section 1.1.2 at "700 sq miles" which calculates/equates to 448,000 acres in the KSB. There needs to be agreement and accuracy on the total acreage within the KSB.	Comment self-explanatory [Page 1-4]: 1.4.1	References to KSB acreage to be made consistent within reason.	1.1.2; Appendix 2A
Edward Henry	WI	EH-004		1	Well Density		Figures 1-6 (Domestic)and 1-7 (Production). Both of these figures show these two types of wells within the jurisdictional boundaries of Tulare and Visalia. With specific regard to Figure 1-7 (Production), it is surprising that there are agriculture production wells within the jurisdictional boundaries of both of these cities. Is this data accurate?	Comment self-explanatory [Page 1-9]	This data and inforamation was provdied by DWR. The GSP is recommending a well characterization and assessment study be performed early in the implementation period. As such, improvements to these general well density maps will likly be include in the first 5-year update to the plan.	1.4.2
Edward Henry	WQ	EH-002		1	Water Quality- Impact of septic systems		Top of the page-should add in "possible degraded individual septic systems as the result of age, poor maintenance, and/or lack of routine service. " See attachment from Washington State Department of Health, How Nitrogen from Septic Systems Can Harm Water Quality. https://www.doh.wa.gov/Portals/1/Documents/4450/337-142-Nitrogen-Removal-from-OSS-FactSheet.pdf (See Attachment A). Would add in "minimum" threshold (MT) and "measurable" objective (MO).	Comment self-explanatory Page 1-2	Text modified as requested in Section 1.1.2., but SMC have not been modified based on this comment.	Section 1.1.2
Kings County Water District	WQ	KC-017		2	Data Gaps- Water Quality		The District would view the following as additional data gaps: 1) regionally, there is very little data on water quality at specific depths because of current well construction (screens across hundreds of feet), 2) The groundwater quality of many rural residential home owners is not understood by local GSAs. Please consider revising.	Comment self-explanatory	The following was added to Section 2: •Water quality data for domestic (rural residential home owners) and agricultural irrigation wells •Understanding of groundwater quality trends with depth (i.e. between upper and lower principal aquifers and vertical changes within each principal aquifer)	Section 2.2
Kings County Water District	GS	KC-013	MCR-15	2	Undesirable Results- Groundwater Storage		Sec. 3.2.2.2 contains a statement about there being a direct relationship between change in storage and groundwater levels. Please see the District's previous comment on Section 3.2.1.2. Please consider revising.	Insufficient discussion of local and regional correlations between water levels and changes in groundwater storage.	Our understanding of Basin Conditions including the correlation between changes in groundwater levels and changes in storage will be improved through the collection and analysis of empirical data from our planned representative monitoring networks. Updates the the GSP on 5 -year increments during the implementation period will reflect this improved understanding.	That is a correct observation. This new monitoring data along with the implementation of special projects and programs to improve the basin understanding will be reported to the Stakeholders and DWR in annual reports as well as the 5-year updates to the GSPS.
Kings County Water District	IS	KC-011	MCR-16	2	Interconnected Surface Waters		includes this statement, "Depletions of interconnected surface waters are minimal and, to the extent they occur, impact only vegetation along the banks of unlined channels within the forebay regions of the aquifer system where natural channels exhibit gaining reaches from time to time. " The District views that depletions of interconnected surface water would also negatively impact deliveries of surface water to right holders due to the increased losses to groundwater. Please consider revising.	Discuss occurance of interconnected surface waters and impacts of associated seepage losses on downstream water right holders.	Further justification to be provided re lack of GDEs in Sec. 2.2 and inapplicability of ISWs in Sec. 5.3.5.	Text modified as suggest in Section 3.2.1.5. With the MKGSA, surface and groundwater systems are disconnected and support information for this fact have been included in Section 2 in response to comments.
Kings County Water District	HM	KC-016		1	Data Gaps- Groundwater Levels/Groundwater Storage		The District would view the following as additional data gaps: 1) aquifer characteristics to inform the assumptions currently being made, 2) well construction information for many existing wells and related information on how much water is being pumped in the confined aquifer versus the unconfined aquifer , 3) direct measurements of the amount of groundwater being pumped in agricultural areas, 4) information on bound versus more recoverable groundwater, 5) more accurate information on the base of fresh groundwater across the subbasin, 6) information to validate or criticize the HCM and aquifer descriptions from recent SkyTEM efforts. Please consider revising.	Certain HCM information that is lacking should be further disclosed as data gaps.	New bullets and further explaination of existing bullets have been added to Section 2.2	2.2
Kings County Water District	GE	KC-005		1	Executive Summary		The Executive Summary appears to be a placeholder and does not seem to be developed enough or meet DWR requirements about helping laymen.	Comment self-explanatory	A much expanded executive summary have been added at the request of Kings County Water District as well as other reviewers.	1.1.2
Kings County Water District	LS	KC-015		1	Undesirable Results- Land Subsidence		The District would view that continued land subsidence would also increase the flood risks to residents and critical facilities (hospitals, prisons, domestic and municipal wells, etc.) in and around flood zones. Please consider revising.	Comment self-explanatory [3.2.3.3 - Potential Effects from continued Land Subsidence, page 3-8]	Suggest text has been added to Section 3.2.3.3	3.2.3.3
Leadership Counsel for Justice and Accountability	DC	LC-001		3	Disadvantaged Communities		The Draft GSP omits critical data, and does not give DWR or the public sufficient information to evaluate compliance with state law or the impact of the plan on beneficial users. Specifically, the Draft GSP has not clearly evaluated the impact of the plan on domestic well users and disadvantaged communities, which are likely to cause a disparate impact on protected groups pursuant to state civil rights law. Further, the GSP has not committed to a clear program to address those impacts. The GSP also does not contain sufficient information on groundwater contamination in the GSA area, and does not clearly show how the actions of the other GSAs in the subbasin will achieve sustainability throughout the subbasin. The GSA also does not provide adequate information about the plan for continued public engagement during GSP implementation. More information about each of these gaps in data and information is included below. The GSP cannot be adopted until this key information is made available to the public. The GSA must incorporate this information into the Draft GSP before the Draft GSP can be effectively reviewed by the public or by DWR.	GSP doesn't discuss impacts on small-system or domestic users; no discussion of contamination of groundwater as it relates to these users. Plan should disclose any data gaps in this regard.	DACs and SDAC locations are showing in Section 1. Repeating this information on all maps is not practical. In response to this and related comment, we have modified several figure to show the locations sall rural water sytems relative to our representative monitoring sites. Effected Figures are 4-1, 4-3, 4-4, 4-5, 4-6, 4-7, 5-5, 5-8 and 7-1. Adding domestic well owners to these figures is not feasible wihtout overcrowd. However, we have included well density maps in Section 1 for the GSP so that interested stakeholders are able to between understand monitoring and project development throughout the GSA incuding areas with a high density domestic well. As discussed in numerouse advisory committee meetings, the quality of data avaiable on domestic wells is a "work in progress". DWR, the GSAs, and the environmental justice community are all working to better define the status (operations or abandoned), locaiton, well depth, static and pumping depth to water in these wells. Once this improved information is available reviewed and verified by MKGSA staff and our consultants, we may make changes to monitoring, projects, and even our measurable objectives and minimum thresolds in response. Also with this improved infomration and once available, MKGSA will be in a better postions to assist and protect small well owners because doing is of high value to the MKGSA. As discussed in nemerous advisory committee meetings, the MKGSA plan to partner with the environmental justice community in purusing and administering grant and project to improve both water supply and water quallity to small and disadvantaged communities in our GSA as well as rural and domestic groundwater users.	Text and figure modificaitons in Sections 4, 5, and 7.

Leadership Counsel for Justice and Accountability	GL	LC-010		3	Measurable Objectives- Groundwater Levels		The SGMA regulations require the GSA to set measurable objectives and interim milestones that "achieve the sustainability goal for the basin within 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon." Measurable objectives must be more ambitious than the minimum thresholds, and must be the point at which the GSA has determined that it will not exceed its sustainable yield, and therefore avoid "significant and unreasonable" impacts on beneficial users. The GSA has taken the 2006-2016 trend line and set the measurable objective for 2040 at the groundwater elevation reached by the trend line in 2030. The GSA has not evaluated how this groundwater elevation will affect domestic well users and disadvantaged communities, whose critical drinking water resources will be impacted by a decline in groundwater levels. In fact, the attached Focused Technical Report shows that approximately 64% of domestic wells in the GSA area will be dewatered if groundwater levels reach the measurable objectives, and an additional 9% of domestic wells will be partially dewatered. The GSA cannot therefore have considered the interests of this beneficial user group in determining its measurable objectives, and is likely to have a disparate impact on a protected group if it pursues this course of action. In order to show that it has considered impacts on domestic well users and disadvantaged communities, and ensure that it is not causing a disparate impact on groups protected from such impact by state civil law, the GSA must conduct a complete analysis of how many wells will be impacted by this measurable objective, in particular domestic wells and small community system wells in disadvantaged communities. It should measure whether the impacts to wells are "significant and unreasonable" by consulting with domestic well owners and disadvantaged communities. If its current measurable objective will cause a disparate impact or cause significant and unreasonable impacts to these beneficial user groups, it must modify its measurable objective to comply with its legal obligations. It is also unclear how the measurable objectives will achieve the sustainable yield. The GSA must clarify how achieving the measurable objectives at all representative monitoring wells will cumulatively result in attaining the sustainable yield for the GSA area. The GSA must include the following in its Draft GSP to bring its measurable objectives into compliance with law: The GSA must clarify how its measurable objectives will achieve the sustainable yield. The GSA must analyze how many wells will be fully or partially dewatered at the groundwater elevation of the proposed measurable objective. The GSA must show how it has considered the needs of all beneficial users, including drinking water users, in setting its measurable objectives, by publishing the above analysis in the GSP and showing how it consulted with domestic well users and disadvantaged communities to set a measurable objective that avoids significant and unreasonable impacts to their beneficial user groups.	Need to reset MOs such that unresonable impacts to DACs and domesrtic users are avoided. The 2030 trend-line selection is not justified in this regard.	It is incorrect to claim that the MKGSA in partnership with the other two GSAs in the basin have not considered impacts to other domestic wells. The focus of Appendix 5A and a series of advisory committee meetings during the development of the GSP were dovoted to this topic and it should be noted that althought the environmental justice community were represented at the table and in the audience and after repeated requests, were not able to provide technical information on small and domestic wells that added to our analysis. We presented our well impact analysis in several meetings. Then, at the very end of the public review period, the environmental justice community provided a technical report focused on the impact of our Thresholds and Objectives on domestic wells using a difference approah and possibly a difference data set than MKGSA had when were preformed the analysis document in the GSP and Appendicies. Furthermore, update request for the technical inforamtion that this study was based on, we were told that the information was still draft and could not be released to use for review. Following the close of the Public Reivew period, we requested a meeting with LCJA and CWC along with the authors of the technical report provided with their comments. We were told that the well impact dataset and tool used to develop their techncial report, were still avaibale for our review. If MKGSA had had the opportunity to undertand the datasets used for theses new well impact analysis or if their analysis and report could have been made available earlier in the GSP process, we would have taken this information under consideraiton in setting thresholds and objectives. We have agreed with the Advisory Committee and MKGSA Board that when the LCJA amd CWC well datasets and tools are available for public review and applicatoin, the MKGSA, will review and consider this information in future update to the GSP. We	Section 7.4.8
Leadership Counsel for Justice and Accountability	GL	LC-008	MCR-13	2	Undesirable Results- Groundwater Levels	19 23 CCR § 354.26. 20 23 CCR § 354.26.	Undesirable results are the point at which "significant and unreasonable" impacts on beneficial users caused by declining groundwater levels. The SGMA regulations require GSAs to justify their undesirable results by including the "[p]otential effects on the beneficial uses and users of groundwater."19 GSAs must also describe the "processes and criteria relied upon to define undesirable results."20 The Draft GSP's undesirable results for groundwater levels are inadequate because significant and unreasonable impacts will occur without triggering an undesirable result. The Draft GSP states that "one-third of the representative monitoring sites in all three GSA jurisdictions combined exceed their respective minimum threshold water level elevations."21 Violating one-third of the minimum thresholds of the entire subbasin's representative monitoring wells would have unreasonably severe impacts on domestic well users, particularly given that reaching the minimum thresholds in the Mid Kaweah GSA alone would dewater 71% of domestic wells in the Mid Kaweah GSA area and partially dewater an additional 15% of domestic wells.22 The Draft GSP acknowledges the serious financial impact of having to drill deeper wells, well failures, and the increased energy costs of pumping water from lower depths, but the undesirable result for groundwater levels does not prevent either of these impacts.23 Furthermore, the vast majority of wells the GSA would allow to go dry before triggering plan failure would be overwhelmingly upon domestic well users and disadvantaged communities, causing a disparate impact in violation of state law. In order to avoid these disparate impacts, the GSA must change the undesirable result or define its own local undesirable result to prevent widespread drinking water impacts to protected groups in the GSA area. In order to avoid a violation of state civil rights law and avoid causing significant and unreasonable impacts as required by the SGMA, the GSA must: Include a local undesirable results definition that makes it clear that the GSA will locally define and address an undesirable result within its service area and protect beneficial users of groundwater. 19 23 CCR § 354.26. 20 23 CCR § 354.26. 21 Mid Kaweah GSA Draft GSP p. 3-5, dated July 2019. 22 Focused Technical Report, p. 4. Our analysis shows a much larger impact on domestic wells than the evaluation of well impacts in the Draft GSP. 23 Mid Kaweah GSA Draft GSP p. 3-8, dated July 2019.	Criteria used to apply a one-third threshold trigger for undesirable results are insufficient, and result in significant dewatering of domestic wells.	Staff meet wih Self Help Enterprises in October 2019 to discuss the discrepencies between dewatering estimtes provided by the environemental justice community on the MKGSAs GSP at the end of the public review period. We agreed that MKGSA would review the technical under pinnings of the database and drawdown tool used by the environmental justice for the MKGSA. See response to previous comment as well. This new information will be taken into account during the next update of this plan becuaase we were unable to assess thier well dataset and tool in time to make changes to our objectives and thresholds.	various
Leadership Counsel for Justice and Accountability	GL	LC-009	MCR-13	2	Minimum Thresholds- Groundwater Levels	25 23 CCR § 354.26. 26 23 CCR § 354.28. 27 23 CCR § 354.28.28 Water Code § 106. 29	The groundwater levels sustainable management criteria set by the GSAs must be the point that, "if exceeded, may cause undesirable results."24 Therefore it must have the purpose of avoiding 24 23 CCR § 354.28. "significant and unreasonable" impacts on beneficial users caused by declining groundwaterlevels.25 For groundwater levels specifically, GSAs must place minimum thresholds for each monitoring site at the level "that may lead to undesirable results."26 Under the SGMA regulations, the GSA should provide a description of "the information and criteria relied upon to establish minimum thresholds," an explanation of how the proposed minimum thresholds will "avoid undesirable results," and "how minimum thresholds may affect the interests of beneficial uses and users of groundwater."27 The GSA must also consider that drinking water use has been recognized as the "highest use of water" by the California legislature, and should consult with stakeholders to ensure that the minimum threshold is set is such a way as to guarantee the human right to drinking water to all individuals in the subbasin.28 The Mid Kaweah GSA's approach to setting minimum thresholds does not "consider the interests of" drinking water beneficial users. The GSA's proposed minimum thresholds would allow the current rate of pumping (established by the trend from 2006 to 2016) to continue at least until 2040, and possibly after 2040. The GSA contains an evaluation of well impacts that shows that 21% of wells will go dry, but our analysis shows a much larger impact: taking into account well screen intervals on domestic wells in the GSA, the attached Focused Technical Report shows that 71% of the domestic wells in the GSA will be fully dewatered at the minimum threshold, and an additional 15% will be partially dewatered.29 The GSA has therefore chosen to allow large amounts of pumping to occur at the potential expense of up to 86% of the domestic wells in the GSA area. Since domestic well users are de minimis pumpers and are not part of this aquifer-depleting pumping, this will be a disproportionately negative impact on domestic users, the majority of whom belong to a group protected by state civil rights law. This therefore will cause a disparate impact in violation of state civil rights law. In order to show that it has considered impacts on domestic well users and disadvantaged communities, and ensure that it is not causing a disparate impact on groups protected from such impact by state civil law, the GSA must conduct an analysis of how many wells will be impacted by reaching this minimum threshold, in particular domestic wells and small community system wells in disadvantaged communities. It should also quantify the increased pumping costs associated with the increased lift at the projected water levels. Then, it must measure whether the impacts to wells and household finances are "significant and unreasonable" by consulting with domestic well owners and disadvantaged communities. If its current choice of minimum threshold will cause a disparate impact or cause significant and unreasonable impacts to these beneficial user groups, it must modify its minimum threshold to comply with its legal obligations. The Mid Kaweah GSA must set minimum thresholds that consider the interests of drinking water beneficial users and do not create a disparate impact on protected groups by doing the following: 25 23 CCR § 354.26. 26 23 CCR § 354.28. 27 23 CCR § 354.28.28 Water Code § 106. 29 Focus Technical Report, p. 4 Accurately evaluate the number of wells that will be impacted should water levels reach the proposed minimum thresholds, taking into account their well screen depth, and the increased pumping costs associated with the increased lift at the projected water levels. Consider drinking water impacts in shaping minimum thresholds, and ensuring that protected groups are protected from disparate and disproportionately negative impact. The GSA must show how it has considered the needs of all beneficial users, including drinking water users, in setting its minimum thresholds, by publishing the above analysis in the GSP and showing how it consulted with domestic well users and disadvantaged communities to set a minimum threshold that avoids significant and unreasonable impacts to their beneficial user groups. In order to protect drinking water users, the GSAs should place the minimum threshold at a level above where the shallowest domestic well is screened in each Threshold Area. Provide a robust drinking water protection program to prevent impacts to drinking water users and mitigate drinking water impacts that occur.	Criteria used to set minimum thresholds (MTs) are insufficient, and result in significant dewatering of domestic wells. Detailed analyses of MT impacts on DACs and domestic wells should be included in the GSP.	Staff meet wih Self Help Enterprises in October 2019 to discuss the discrepencies between dewatering estimtes provided by the environemental justice community on the MKGSAs GSP at the end of the public review period. We agreed that MKGSA would review the technical under pinnings of the database and drawdown tool used by the environmental justice for the MKGSA. See response to previous comment as well. This new information will be taken into account during the next update of this plan becuaase we were unable to assess thier well dataset and tool in time to make changes to our objectives and thresholds.	various
Leadership Counsel for Justice and Accountability	PM	LC-014	MCR-11	2	Projects and Management Actions- Disadvantaged Communities/Domestic	Water Code § 10723.2. 47 Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l). 48 Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l)	The GSA must consider the interests of beneficial users including domestic well owners and disadvantaged communities46 and avoid disparate impacts on protected groups.47 In light of the impacts on domestic well users and disadvantaged communities from the policy decisions discussed above, the GSP must therefore include Projects and Management Actions that protect domestic well users and disadvantaged communities from the drinking water impacts that will occur from the GSA's policy decisions. As noted above and on the attached Focused Technical Report, the minimum thresholds for groundwater levels put more than 86% of domestic wells in the GSA area at risk of full or partial dewatering, and the groundwater quality sustainability goals leave domestic wells unprotected from increased contamination. Furthermore, the GSP cannot create a disparate impact on protected groups pursuant to state law. Without proactive policies and projects to mitigate forthcoming disparate impacts, communities and homes belonging to protected groups based on race, national origin and ethnicity will experience a disproportionately negative impact in violation of state civil rights law. Because the GSP as written will cause a disparate impact on protected groups, and does not consider the interests of domestic well users or disadvantaged communities, the GSP must include projects to prevent and mitigate those impacts.48 The Draft GSP's chapter on Projects and Management Actions contains two projects that may help protect against disparate impacts, but those projects as written are not sufficient to prevent disparate impacts. The recharge basin next to Okieville is a positive step in the right direction towards protecting Okieville's drinking water supply and quantity. The Small Systems/Domestic Well Owner Assistance program could help prevent disparate impacts and show that the GSA has considered the interests of domestic well owners and small systems, but the GSA's Board of Directors has not committed to doing this program, and does not define how the assistance measures will be implemented or funded. Before adoption, the Mid Kaweah GSA must clearly commit to projects and management actions to prevent disparate impacts on vulnerable water users, and have defined timelines for those projects. The Draft GSP's potential groundwater extraction allocation program also raises 46 Water Code § 10723.2. 47 Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l). 48 Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l). concerns from the perspective of domestic well users and disadvantaged communities. Such a scheme could negatively impact critical drinking water resources if the GSA does not ensure that small systems, in addition to domestic wells, are exempt from pumping restrictions. In order to prevent disparate impacts on protected groups, and show that it has considered the interests of all beneficial users including domestic well users and disadvantaged communities, the GSA should consider the following projects and management actions: Clearly Commit to a Drinking Water Protection Program for the Mid Kaweah GSA Service Area: The GSP contains a potential program to assist domestic well owners and small water systems obtain solutions to drinking water issues in the GSA area. This is a step in the right direction, but needs a more solid commitment and a defined scope and proposed activities. We recommend some parameters for a potential program below, and are glad to work with the GSA on shaping an effective program for preventing drinking water impacts from declining groundwater levels, increased groundwater contamination, and subsidence. We recommend that the GSA consider the following factors in approving such a program: -Eligible activities in the program should include: drilling of new wells or deepening wells if homes' wells go dry due to declining groundwater levels, increased energy costs from pumping from deeper depths,49 assistance in connecting to larger water systems. -Any project funded by the program must be guided by the residents or communities that are recipients of program benefits. Community input into a project will ensure project success, by learning from resident experience and knowledge to shape a project that will best suit their drinking water needs. -The GSA must ensure that the program is accessible for all residents who may need its assistance. The program should work with local agencies and organizations to spread information about the program, should not require residents to opt in to the program, and the GSA must provide translated materials regarding the program.50 Such a program must be proactive, rather than reactive. We recommend that Mid Kaweah GSA implement a Drinking Water Observation Plan (DWOP) that will serve as a warning system so that the GSA is aware of when wells are going dry, or when wells are going to become 49 Recent research has concluded that "in the Tulare Lake area, with an average well depth of 120 feet, pumping would require 175 kWh per acre-foot of water. In the San Joaquin River and Central Coast areas, with average well depths of 200 feet, pumping would require 292 kWh per acre-foot of water." 50 Gov. Code, §§ 7293, 7295 contaminated from groundwater management activities, so it can take action to prevent drinking water impacts before they occur. This DWOP should trigger proactive measures wherein the GSA should act before wells lose production capacity or before wells become contaminated, to ensure that community members are not left without access to safe and reliable drinking water. Wherever possible, and whenever it is the community's preference, the GSA should strive to assist residents on domestic wells and small community water systems with connecting to larger drinking water systems. If consolidation is not possible, the GSAs should support the deepening of wells, installation of treatment facilities or POE/POU treatment in homes and offset the increased energy costs for pumping water from a lower level. In the interim, the GSA should collaborate with local and state agencies to provide emergency bottled water for consumption and sanitary purposes. Recharge Basins In or Near Disadvantaged Communities and Domestic Well Clusters: The Mid Kaweah GSA should replicate projects like the Okieville project throughout the GSA area wherever DACs and clusters of domestic wells exist. The GSA should opt for these kinds of recharge projects with health co-benefits over on-farm recharge, which is likely lead to accelerate	Provide stronger assurance and commitment to a small-system and domestic well assistance program; determine pro-active measures as part of the program.	The following has been added to Section 7.4.8 in response to this comment: The Advisory Committee has agreed to the following to begin within the early years (before 2025) of implementation: o Complete a well identification and characterization study. This study will locate active wells, determine total well depth and depth to groundwater and should be given a high priority for completion. o Implement a well registration program and only owners of registered wells would be eligible for assistance. Registration would allow staff to access wells to verify well depth and depth to groundwater which will be required information to eligible for reimbursement. o Mitigation may include financial assistance in providing short-term water supply. o Long-term water supply could include financial and technical support. o Preference for connecting current domestic well users to a public water system where technically and economically feasible.	various

Self-Help Enterprises	DC	SH-010		3	Water Budget-Domestic/Public/Municipal		The GSP water budget requirements are intended to quantify the water budget in sufficient detail in order to build local understanding of how historical changes have affected the six sustainability indicators in the basin. Ultimately, this information is intended to be used to predict how these same variables may affect or guide future management actions . Another important reason for providing adequate water budget information is to demonstrate that the GSP adheres to all SGMA and GSP regulation requirements and can demonstrate the ability to achieve the sustainability goal within 20 years, and maintain sustainability over the 50 year planning and implementation horizon. 10 Galloway, D., Jones, D, and Ingebritsen, S.E. Land Subsidence in the United States. U.S. Geological Survey Circular 1182. 11 DWR, 2016. Best Management Practices for the Sustainable Management of Groundwater, Modeling (BMP #5), December 2016. The water budget made available to the public is incomplete, and a full evaluation of the model and assumptions cannot be made at this time. Without a complete GSP draft that thoroughly explains the assumptions and methods used for the development of the water budget, the public is unable to provide meaningful comments and recommendations. The GSP is missing key information that includes all information on data and assumptions used in the development of the water budget. We recommend the following changes: Summarize and highlight important information for the MKGSA from Appendix 2A. Include a single tabulation of all the sources used. The sources of data used for the water budget components are identified throughout the text of the Appendix 2-A. However, the discussion and tabulation of all data sources in a single section would improve the ability of the public to assess the data sources and evaluate the water budget assumptions for reasonableness and completeness. Provide additional information detailing how the water budget presented in Table 2-1 was estimated. Little information is provided in the draft GSP on the methods and assumptions used to estimate groundwater inflow and outflow data presented in Table 2-1. Without a complete GSP draft that thoroughly explains the assumptions and methods used for the development of the water budget, the public is unable to provide meaningful comments and recommendations. Please clarify how data was compiled, including the methods and assumptions used to estimate the small water system and rural domestic water demand. Provide additional information detailing how small water system demand was estimated in Appendix 2A. No information was provided regarding Small water system demand was reported to be estimated from data in previously published reports. Very little specific information is provided in the draft GSP on the methods and assumptions used to estimate the small water system demand. The annual demand from small water systems is shown to increase throughout the water budget period but it is not possible to determine if the values are reasonable from the information and assumptions provided in the draft GSP. Provide additional information detailing how rural domestic water demand was estimated in Appendix 2A. Appendix 2A states that rural domestic water demand and consumptive use was estimated using an assumed demand rate of 2 AFY per dwelling and the density of rural domestic dwellings. The draft GSP reports that the density of these dwellings has not changed significantly over time and, therefore, rural domestic pumping has not changed over time. The method and data used to determine the density of these dwellings is not reported and cannot be evaluated and no maps are provided in the Appendix 2A showing the locations of these rural domestic users. Revise percentage of return flow from rural domestic water to address inconsistencies: Page 99 of Appendix 2-1 states that "Similar to the rural small water system analysis above, a 70 percent portion of the pumped rural domestic water is assumed to return to groundwater via septic system percolation and irrigation return flows (Dziegielewski and Kiefer, 2010). Throughout the Subbasin, an annual total pumpage for rural users was 2,272 AF/WY on average, 30 percent of which returned to groundwater." The assumed fraction of total rural domestic pumping that returns to groundwater and the calculation of net rural domestic pumping reported in Appendix 2-A is inconsistent. It is unclear if the assumed fraction of pumping that returns to groundwater is 30% or 70%. Provide additional information regarding the assumptions used to define changes in land use and how that was incorporated into the projected water demand presented in Table 2-1 and Appendix 2A. Based on the draft GSP, current land use was determined using the 2014 DWR land use survey data. Historical changes in land use area are not reported and, at this time, it cannot be determined if land use changes, including changes in urban areas, were incorporated into the water budget as is required by GSP Regulation Section §354.18. Provide water budget annual component results broken down for each subarea in order to allow for the assessment of the spatial variability of the water budget components. Section 2.3 presents annual water budget components for water years 1997-2017 for the MKGSA area and Appendix 2-A presents the same information for the subbasin. Components related to urban and rural domestic water use are lumped into two components (wastewater inflow and M&I pumping). The relative contribution of rural domestic and small water system users to these components cannot be evaluated at this scale, thus it would be helpful to provide information to better support the evaluation of the impacts on DACs and community water systems. Include an uncertainty analysis to identify the plausible range in water budget results and an indication of the magnitude of the effects these inherent uncertainties may have on the water budget results.The draft GSP does not include any discussion of the uncertainty in the data used for the model and its effect on the water budget results, a key requirement as prescribed by GSP Regulations Section §354.12. Include an in depth discussion regarding the forthcoming sustainable yield evaluation and describe the potential implications the sustainable yield, the safe yield, and the water accounting framework could have on drinking water use in the MKGSA. The draft GSP includes minimal discussion of the sustainable yield of the subbasin or the MKGSA area, but does note that the subbasin	MKGSA water budget needs more detail re climate change and assumptions for small system pumping and return flows.	More detail on the water budget has been added to Section 2. The detail on the use of climate change datasets by dWR in our future water budget and groundwater model are found in Appendix 2A and in the gorundwater model report included as and appendix to the coordination agreement	2.3
Self-Help Enterprises	DC	SH-006		2	Water Quality/Disadvantaged Communities		SHE strongly encourages that the Groundwater Conditions section be improved in order to better achieve the objectives described in the GSP regulations and be more aligned with the guidance provided in DWR's GSP Emergency Regulations Guide. In particular, ***it is of utmost importance that information specific to the MKGSA area from Appendix 2A is discussed in this section, and that data regarding the water issues affecting groundwater sources of S/DACs and households relying on domestic wells is improved.*** As part of GSP Regulations Section §355.4, DWR is required to evaluate whether the interests of the beneficial uses and users of groundwater in the basin, as well as the land uses and property interests potentially affected by the use of groundwater in the basin, have been considered DWR. January 2018. Guidance Document for Groundwater Sustainability Plan Stakeholder Communication and Engagement. S/DACs and rural families relying on shallow domestic wells are extremely vulnerable to changes in groundwater conditions. As such, impacts to their drinking water sources caused by changes in groundwater levels, plume migration, increased degradation of groundwater quality, and subsidence should not be overlooked and these impacts deserve a more in-depth evaluation. A description of the current issues affecting these vulnerable users is key to demonstrating that the MKGSA is taking proactive actions to protect their human right to water. Without adequate characterization of current and historic challenges that communities dependent on groundwater face, MKGSA will not be able to effectively plan to quantify or avoid potential impacts related to groundwater management. Specific recommendations on how this section can be improved are provided in the forthcoming sections.	GSP sould include maps and general descriptions of DACs and domestic users within the GSA.	DACs and SDAC locations are showing in Section 1. Repeating this information on all maps is not practical. In response to this and related comment, we have modified several figure to show the location of small rural water sytems relative to our representative monitoring sites. Effected Figures are 4-1, 4-3, 4-4, 4-5, 4-6, 4-7, 5-5, 5-8 and 7-1. Adding dosmtic well owners to these figures is not feasible wihtout overcrowd. However, we have included well density maps in Section 1 for the GSP so that interested stakeholders are able to between understand monitoring and project development throughout the GSA incuding areas with a high density domestic well.	2.2
Self-Help Enterprises	GL	SH-013	MCR-2	2	Groundwater Levels- Minimum Thresholds/Measurable Objectives	354.16	The Focused Technical Review of the July 2019 Draft MKGSA GSP identified several data gaps and potential significant impacts to public water systems and domestic wells. As expressed by our organizations during MKGSA meetings, the current GSP does not adequately consider the groundwater impacts that may affect the supply and beneficial uses of groundwater as required by GSP Regulations Section 354.16. Additionally, during the previously mentioned community GSP review workshops, participants were asked to share their opinions and provide recommendations for what should be included in the Subbasin's sustainable management criteria. Participants were concerned with the proposed MT/MOs and what it could mean to their access to water. Feedback provided at the workshop included ensuring preserving drinking water supplies and addressing groundwater quality. Though we are pleased that MKGSA is considering providing assistance to small-system and domestic well owners without the financial wherewithal to service or replace their pump and well facilities, particularly those that provide potable water, we would like to highlight the following concerns and recommendations: Conflicting information: The draft GSP presents water level MTs by: (1) hydrogeologic zones that reportedly share similar groundwater conditions and hydrogeologic behavior (Table 5-2); and (2) by Representative Monitoring Wells (RMWs) (Table 5-3). According to the draft GSP, the hydrogeologic zone MTs are based on the average of the RMW MTs for a particular area. As stated in Section 5.3.1.3, "Consistent with this requirement, the minimum elevation thresholds in this Plan are set at specific levels based on four different hydrogeologic zones as defined herein." However, well impact analyses are performed based on the MTs developed for each individual RMW, and the MOs are only established at the RMWs (i.e., not by hydrogeologic zones). Based on the conflicting information presented in the draft GSP, it is not clear which set of MT values will be used for compliance purposes through the GSP implementation phase. Please ensure that the Sustainable Management Criteria, including MTs and MOs, be clearly identified and applied consistently in the GSP. Minimum thresholds are established without regard to well depths or other potential impacts: With a collective population of over 63,000 people, communities within the MKGSA area are entirely dependent on groundwater for drinking water purposes. The MKGSA includes 13 community water systems, 11 of which have less than 300 service connections but collectively serve over 5,300 people. Despite the broad and diverse dependence on groundwater for drinking water use, the approach to setting water level MTs/MOs and URs does not explicitly take these drinking water beneficial users into account. The MTs for each threshold region are set based on an assumed trajectory of decreasing water levels over the next 20 years, without regard to well depths or other potential impacts. The draft GSP includes a limited evaluation of well impacts (Section 5.3.1.3 and Appendix 5c) that compares the known screened intervals of agricultural, public, and domestic wells with the projected 2040 groundwater elevation at each well to estimate the number of wells that would be dewatered. The results of the well impact analyses are categorized by zone and well type. However, this analysis does not appear to actually evaluate the potential well impacts based on either the hydrogeologic zones MTs (Table 5-2) or the RMWs MTs/MOs (Table 5-3). In addition, which wells are within the MKGSA and the locations of these wells that are expected to be impacted are not clearly stated or mapped in the draft GSP. Therefore, the well impact analyses performed in the draft GSP does not appear to actually evaluate the potential impacts to subbasin wells associated with the MTs/MOs developed by the MKGSA. Moreover, based on the well impact evaluation in Section 5.3.1.3 and Appendix 5C, "18 percent of agricultural wells, 9 percent of public wells, and 21 percent of rural residential wells including domestic wells, would be subject to groundwater levels that would be below their constructed depth" if water levels reach the MTs, as identified at the hydrogeologic zone level. This assessment appears to have been done relative to the bottom of the total well construction depth. However, water supply wells become unusable or subject to decreased performance and longevity as water levels fall within the screened interval, which will occur before water levels reach the bottom of the well. Therefore, the actual number of domestic wells that would be significantly impacted at the proposed water level MTs would be expected to be higher than represented in the draft GSP. Lastly, our assessment of the water levels (Focused Technical Review, Figure 2) compared the well screens of the domestic wells located within a one-mile radius of RMWs to the proposed MOs and MTs. Approximately 30% of domestic wells in the MKGSA are located within the one-mile buffer of RMWs with both MT/MO and GSE data. Based on our assessment of the water levels, approximately 71% of these domestic wells would be expected to be fully dewatered and an additional 15% of these wells would be expected to be partially dewatered. Even at the MO water levels, approximately 64% of these domestic wells would be expected to be fully dewatered and 9% of these wells would be expected to be partially dewatered. These estimates are much higher than the 21% of rural residential/domestic wells identified as being impacted in Section 5.3.1.3 of the draft GSP. We acknowledge that this is a quick assessment of domestic well impacts; however, these results do not appear to be consistent with the analysis presented in the draft GSP. Furthermore, as identified in a previous comment, the draft GSP is not clear on whether MTs are intended to be applied at the RWM-level or the hydrogeologic zone level. Given that the hydrogeologic zone MTs are the average of the RMW MTs, the way the criteria are applied may have a significant difference in the level of impacts experienced at localized areas. It is therefore recommended that the assessment be revised regarding the potential impacts on drinking water users of the minimum thresholds, measurable objectives, and proposed undesirable results. Based on a revised assessment, MKGSA should develop more protective thresholds near vulnerable communities, schools, and high density areas of domestic wells to ensure the protection of these important water sources.	Establisnment of MOs and MTs not adequately explained; associated impacts on potable groundwater users not sufficiently detailed.	It is incorrect to claim that the MKGSA in partnership withtt the other two GSAs in the basin have not considered impacts to other domestic wells. The focus of Appendix 5A and a series of advisory committee meetings during the development of the GSP were dovoted to this topic and it should be noted that althought the environmental justice community were represented at the table and in the audience and after repeated requests, were not able to provide technical information on small and domestic wells that added to our analysis. We presented our well impact analysis in several meetings. Then, at the very end of the public review period, the environmental justice community provided a technical report focused on the impact of our Thresholds and Objectives on domestic wells using a difference approah and possibly a difference data set than MKGSA had when were preformed the analysis document in the GSP and Appendicies. Furthermore, update request for the technical inforamtion that this study was based on, we were told that the information was still draft and could not be release to use for review. Following the close of the Public Reivew period, we requested a meeting with LCJA and CWC along with the authors of the technical report provided with their comments. We were told that the well impact dataset and tool used to develop their techncial report, were still avaibale for our review. If MKGSA had had the opportunity to undertand the datasets used for theses new well impact analysis or if their analysis and report could have been made available earlier in the GSP process, we would have taken this information under consideraiton in setting thresholds and objectives. We have agreed wiht the Advisory Committee and MKGSA Board that when the LCJA amd CWC well datasets and tools are available for public review and applicatoin, the MKGSA, will review and consider this information in future update to the GSP. We	various
Self-Help Enterprises	WQ	SH-014	MCR-19	2	Groundwater Quality-Monitoring/Minimun Thresholds/Maximum Contaminant Levels		We are pleased that the draft GSP establishes MTs/MOs based on maximum contaminant levels (MCLs) for contaminants of concern for municipal use. However, the water quality monitoring network and analysis presented does not clearly illustrate how the MOs/MTs will adequately ensure that the water quality UR of impacting the long-term viability of the groundwater resource will be avoided, particularly for domestic water users and S/DACs. The proposed MT to allow contaminants to further degrade appears to be inconsistent with state water quality laws and policies. We recommend the following changes: Include an assessment of the concentrations of COCs at all monitoring wells to establish MT baseline conditions. The draft GSP indicates COC concentrations will be evaluated for compliance with water quality MTs in the future and where MCLs are already exceeded prior to GSP implementation, this will be considered a baseline condition that MKGSA is not responsible for remediating. It is critical that the GSP draft includes an assessment of the current concentrations in order to present the baseline conditions relative to the proposed MOs/MTs. For transparency and completeness, clearly identify on maps and in tables which set of MTs/MOs will be applied to which RMWs. These maps should clearly identify the location of DACs, small water systems, and other sensitive users so that the public is able to review and evaluate the proposed sustainability approach. The draft identifies a methodology used to distinguish between the applicability of either MCLs or agricultural WQOs as the MTs for a given RMW. As stated in Section 5.3.3.3, "if the majority of the beneficial use (greater than 50% of the pumping within a determined area) was agriculture and there were no public water systems (including schools) the minimum threshold would be a host of agricultural water quality constituents" and "If a monitoring well is located within an urban area, or near a public water system (e.g., within a mile), which includes schools, then the minimum threshold would be set at the MCL for drinking water." However, the draft GSP does not clearly identify on a map or otherwise which RMWs will use MCLs and which will use agricultural WQOs. The document also does not identify which monitoring wells are located within an urban area or near a public water system. Per 23 CCR §354.28, the draft GSP should provide a detailed explanation as to how the proposed water quality MTs may affect the interests of beneficial uses and users of groundwater or land uses and property interests. Expand groundwater quality monitoring network near Okieville. Figure 3 from the Focused Technical Review shows that there are no Representative Monitoring Wells (RMWs) with established water quality minimum thresholds set at the MCL for drinking water near the community of Okieville. We recommend expanding current RMW network to include additional representative monitoring wells both in the confined and unconfined aquifers when applicable, particularity near vulnerable communities and groundwater stakeholders. Provide a detailed explanation of how the proposed water quality MT approach and monitoring network will result in protection of groundwater for DACs and other drinking water beneficial users in the subbasin. Specifically, the draft GSP indicates that "an exceedance of any of the MCL or agricultural metrics as defined herein at any representative monitoring sites will trigger a management action within the applicable Management Area or GSA, subject to determination that the exceedance was caused by the actions of the GSA" (Section 5.3.3.3). SHE greatly appreciates MKGSA and stakeholder intention to address an exceedance of any of the MCLs or agricultural metrics if the exceedance was caused by the actions of the GSA. However, the draft GSP does not identify which management action(s) will be implemented and provide very limited description on how MKGSA will evaluate and determine if the exceedance was caused by the actions of the GSA or not. Additional information is necessary in order to evaluate whether the proposed plan is protective of beneficial users in the subbasin. Revise MT to prevent further degradation of contaminants. The draft GSP indicates that where MCLs are already exceeded prior to GSP implementation, this will be considered a baseline condition that MKGSA is not responsible for remediating. SGMA requires the prevention of undesirable impacts to water quality, including degradation of water quality. An undesirable impact is one that is "significant and unreasonable". Public water systems are required by state law to be in compliance with water quality objectives. Increased contamination levels necessitate water systems to utilize more expensive treatment methods and/or the need to purchase additional alternative supplies as blending may become more difficult or impossible. Further, communities reliant on domestic wells, who are aware of contamination in their water (while also acknowledging that many reliant upon private wells are unaware of the water quality), and use a POU/POE may no longer be able to use their devices if contaminant levels rise beyond levels where water cannot be treated. Increased contamination levels result in unreasonable impacts to safe and affordable water access and is thus inconsistent with SGMA. Therefore, the MT must be revised to prevent impacts to domestic water uses (which is listed as the highest priority use in Water Code Section 106) due to further groundwater degradation. Furthermore, there should be plans as to how to mitigate impacts in the short-term. Develop a warning system that informs MKGSA stakeholders when contaminants of concern have reached 80% of the MCL. This system is especially important for wells with COC concentrations less than 80% the MCL that experience impacts due to groundwater management activities. For wells with contaminant levels approaching the MCL, MKGSA could consider taking the following actions: notify nearby domestic well owners and community water systems; undertake an analysis to pinpoint the cause; provide information to groundwater users regarding impacts of groundwater management actions;reassess pumping allocation; and/or if the contaminant is clearly under the purview of another agency, confer with that agency to confirm a plan to address the groundwater quality problem. Clarify how the GSA plans to align the sustainable management criteria with any emerging contaminants of concern and new MCLs. Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOAs)	Identify contaminants of concern. Measurable objectives and min. thresholds not shown to protect water quality. Which of the MCLs or Ag WQOs apply at which representative monitoring wells.	Requested summary of MCLs for COCs has been added to Section 4 showing what WQO applies to each well in the network	various

Self-Help Enterprises	WQ	SH-017	MCR-18	2	Groundwater Quality-Monitoring/Minimun Thresholds/Maximum Contaminant Levels		For the reasons identified below, the water quality representative monitoring wells (RMW) are inadequate for determining if the actions of the MKGSA degrade the beneficial use of water and for ensuring that the stated water quality UR of impacting the long-term viability of the groundwater resource will be avoided —particularly for domestic water users and S/DACs. GSAs undertaking recharge, significant changes in pumping volume or location, conjunctive management or other forms of active management as part of GSP implementation, must consider the interests of beneficial users, including domestic well owners and S/DACs. For these vulnerable groups, GSAs should avoid disproportionate impacts. The draft GSP lacks representative monitoring wells in areas where drinking water users may be particularly vulnerable to groundwater supply and quality issues, leaving MKGSA with no ability to adequately measure and avoid significant and unreasonable impacts to those users. It is critical that MKGSA develop sufficient monitoring networks, capable of detecting changes in groundwater quality conditions related to groundwater management. We recommend the following changes: Identify which monitoring wells will be used to assess impacts to drinking water wells caused by groundwater quality degradation and describe how that assessment will be conducted. As required by 23 CCR § 354.28, DWR will evaluate the ability of the proposed monitoring program to properly assess impacts to beneficial users of groundwater and to protect beneficial users within the subbasin. In particular, it is important to clarify how MKGSA plans to monitor and assess drinking water wells at risk of further contamination. In specific: -For transparency and completeness, the GSP should clearly identify on maps and in tables which set of MTs/MOs will be applied to which RMWs. These maps should clearly identify the location of DACs, small water systems, and other sensitive users so that the public is able to review and evaluate the proposed sustainability approach. -Provide a focused and detailed explanation of how the proposed water quality MT approach and monitoring network will result in the protection of groundwater for S/DACs and other drinking water beneficial users in the subbasin, as required by 23 CCR § 354.28. Expand groundwater quality monitoring network near Okieville. Based on the spatial distribution of the wells dedicated to monitoring water quality presented in Figure 4-6 and 4-7 of the draft GSP, the network is not spaced evenly across the area. The water quality RMWs are located in the northern and eastern portions of the MKGSA area and the monitoring well density varies by two orders of magnitude across the MKGSA. Although the western portion of the MKGSA, including the communities of Okieville and Waukena, are more sparsely populated than the eastern portion, there are at least 200 domestic wells and several public water systems, including the Okieville/Highland Acres Mutual Water Company, Waukena Elementary School, and Buena Vista School water systems, located in this area. Figure 3 from the Focused Technical Review shows that there are no RMWs with established water quality minimum thresholds set at the MCL for drinking water near the community of Okieville. SHE recommends expanding the current RMW network to include additional representative monitoring wells, particularly near vulnerable communities and groundwater stakeholders. Specifically, consider incorporating the new well serving Okieville/Highland Acres Mutual Water Company as a RMW with established water quality minimum thresholds and quantifiable measurements of sustainability. Clarify how the GSA plans to align groundwater monitoring efforts with any emerging contaminants of concern and new MCLs. Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid(PFOAs) have been identified as emerging contaminants in the basin. Due to their emergence, it is important that MKGSA include these contaminants as COCs to be monitored and evaluated. In addition to these two contaminants, the draft GSP would benefit from an explanation of how the plan will be updated to align groundwater monitoring efforts with any emerging contaminants in the basin and any future new MCLs. Include well construction information for all RMWs included in the GSP. The draft GSP identifies 43 RMWs for water levels, but does not include well construction information for these wells as is required for all monitoring wells by 23 CCR § 352.4. This type of information is critical to allow the public and DWR evaluate if the RMWs are adequate in evaluating water levels relative to the MOs and MTs over the long term.	Which of the MCLs or Ag WQOs apply at which representative monitoring wells. Demonstrate how planned projects do not worsen water quality for DACs or domestic users.	Requested summary of MCLs for COCs has been added to Section 4 showing what WQO applies to each well in the network	various
Self-Help Enterprises	DC	SH-005	MCR-17	1	Hydrogeologic Modeling/Disadvantaged Communities		In order to better depict the hydrogeologic considerations for vulnerable groundwater users, we recommend the following changes: Summarize and highlight important information for the MKGSA from Appendix 2A. Include a description of how groundwater quality considerations also impact the potential of recharge suitability under the description of Potential Recharge Areas. Include the location of SDACs and DACs and domestic wells in Figure 16 and 18 of Appendix 2A. By adding the spatial distribution of communities, stakeholders will be better able to assess which of these communities could benefit from future recharge projects.	Highlight information pertinent to MKGSA from Appendix 2A with respect to prime recharge areas; better identify locations of DACs.	Addressed as part of Priority 3 comments.	1.4.2, 2.2
Self-Help Enterprises	LS	SH-009		1	Land Subsidence/Disadvantaged Communities		The GSP's current evaluation of land subsidence states general impacts, such as impacts to infrastructure, in particular to the Friant Kern Canal, but ***fails to describe previous and potential impacts to vulnerable communities*** . Land subsidence could result in many direct and indirect impacts to vulnerable communities. Direct impacts can include damages to community infrastructure including bridges, pipe crossings, roads; collapsing of of well casings, that result in well rehabilitation or replacement; and the mobilization and release of arsenic from clay layers into the groundwater aquifer. Indirect impacts can include flooding and long-term environmental effects. Since S/DACs, public water systems, and domestic well communities often lack the resources to address these damages, it is important to document and describe previous and potential impacts in order to prevent them from occurring or mitigate impacts if they occur. Please consider the following recommendations: Summarize and highlight important information for the MKGSA from Appendix 2A and include local knowledge of the groundwater conditions affecting groundwater use and users in MKGSA area. Include a description of possible impacts of land subsidence for S/DACs, public water systems, and domestic well communities. Include documentation of any historical impacts of land subsidence for S/DACs, public water systems, and domestic well communities in Past Land Subsidence.	Provide assessment of land subsidence on DACs and domestic well communities	Current information re subsidence is insufficient to gauge impacts on rural DACs and associated infrastructure. Will acknowledge same as a data gap. We have explanded our description of subsidence impacts in 3.2.3.3	3.2.3.3
Self-Help Enterprises	LS	SH-015		1	Land Subsidence/Disadvantaged Communities		As mentioned previously, land subsidence could have significant impacts on vulnerable community infrastructure. In communities that do not have the financial capacity to address costly infrastructure damages, impacts of land subsidence should be evaluated more closely. We recommend the following changes: Expand the description of potential impacts for S/DAC communities and rural domestic well users under the description of the Potential Impacts on Beneficial Uses and Users. Clarify the relationship between groundwater quality and land subsidence. Researchers have found that there is a relationship between land subsidence caused by overpumping and increases in contaminants like arsenic15. The section on the Relationship for each Sustainability Indicator needs to be revised to clarify that this is not applicable to the MKGSA. 15 Smith, R., Knight, R., & Fendorf, S. (2018). Overpumping leads to California groundwater arsenic threat. Nature communications, 9(1), 2089. doi:10.1038/s41467-018-04475-3	Provide assessment of land subsidence on water quality for drinking water uses	Current information re subsidence is insufficient to gauge impacts on rural DACs and associated infrastructure. Will acknowledge same as a data gap.	2.2
Self-Help Enterprises	SB	SH-004		1	Kaweah Subbasin Characteristics		The GSP basin setting requirements are intended to describe the hydrological and groundwater historical changes that have affected the six sustainability indicators. Ultimately, this information is intended to document conditions and quantify the water budget in sufficient detail in order to build local understanding of how it will be used to predict how these same variables may affect or guide future management actions . (DWR, 2016. Best Management Practices for the Sustainable Management of Groundwater, Modeling (BMP #5), December 2016.) The current GSP draft does not include information about local groundwater conditions for MKGSA, yet it encourages the reader to review Appendix 2A to understand the hydrogeologic and groundwater conditions within the context of the entire Subbasin. However, Appendix 2A is not specific to the MKGSA area and it is difficult to readily understand what parts of this assessment are specifically applicable to the MKGSA. Moreover, the lack of a summary highlighting the main conditions affecting groundwater use and users within MKGSA boundaries creates a challenge in understanding how the data will be further utilized in other sections of the GSP. It is therefore recommended to: Include specific information of the Basin Setting and trends within the MKGSA area, in particular as it pertains to the groundwater conditions in section 2 of the GSP. Providing context of local challenges in a single section within the Mid-Kaweah GSP draft GSP would improve the ability of the public to evaluate the basin setting assumptions for reasonableness and completeness to prevent and mitigate for undesirable results.	Provide data specific to MKGSA from Basin Setting report (App. 2A)	Excerpts from App. 2A pertaining to MKGSA have been added to Section 2.	2.2
Self-Help Enterprises		SH-008		1	Groundwater Quality/Disadvantaged Communities		The current characterization of groundwater quality conditions in Appendix 2A fails to recognize that several public water systems within the GSA have experienced challenges remaining in compliance for safe drinking water standards. Further, because of these data gaps in measuring groundwater quality, the extent of groundwater quality contamination for domestic wells or state small water systems is not fully quantified or accounted for in the draft GSP. This section can be improved by including a better description of groundwater quality conditions near or within S/DAC communities as well as an improvement in understanding how potential groundwater management actions could potentially impact the extent of groundwater contamination. We recommend the following changes: Summarize and highlight important information for the MKGSA from Appendix 2A and include local knowledge of the groundwater conditions affecting groundwater use and users in MKGSA area. This is particularly important considering that Appendix 2A, page 125, states that a "groundwater quality discussion" in the Basin Setting for the context of the entire Subbasin "is largely generalized, although constituents of concern are identified geographically." As such, the current characterization of groundwater quality conditions fails to adequately provide a narrative of issues affecting the supply and beneficial uses of groundwater as required by GSP Regulations Section §354.16. Include a description of historical groundwater quality conditions for each public water system. Cities, communities and schools within the MKGSA have historically had challenges meeting safe drinking water requirements. In order to prevent further degradation of groundwater quality conditions, it is important to adequately capture current challenges. At a minimum, consider including in the Mid-Kaweah GSP, section 2, information regarding cities and communities that have fluctuated in and out of compliance. According to the Human Right to Water portal, the water system of Buena Vista School has fluctuated in and out of compliance for Nitrates. The water system of Waukena Elementary School has been in and out of compliance for Uranium and Nitrates. The water system for Oak Valley School has also been in and out of compliance for Arsenic. Moreover, the water well recently drilled for Okieville only found water that meets primary water quality standards at the depth range between 894 ft to 1005 ft. Water depth less than 894 ft exceeds MCLs for Arsenic and Aluminium. Furthermore, SHE recommends providing a summary of the information regarding water quality for the City of Visalia and Tulare, including the city-wide PCE plume in Visalia. Include an assessment of current 10-year average concentrations of contaminants of concern. The maps depicting current groundwater quality conditions in Appendix 2-E only include individual contaminant concentrations over several different time periods. In order to develop the proposed minimum thresholds and measurable objectives, it is important that the current baseline conditions are established. Include a map of current 10-year average groundwater quality conditions that includes locations of vulnerable communities. Once current baseline conditions are established, it would be helpful to include the 10-year average conditions overlaid with location of S/DACs, domestic wells, public water systems, and any other sensitive beneficial users. This is important in order to adequately evaluate how groundwater quality issues correlate with drinking water supply areas. Include an analysis of how groundwater concentrations have fluctuated relative to changes in groundwater levels, particularly during drought periods. The level of concentration of a few contaminants of concern included in the GSP are directly influenced by changes in groundwater levels, both by pumping and recharge. Appendix 2-E does not include a statistical analysis of the change in contaminant concentrations relative to groundwater levels and groundwater storage. It is important to evaluate the relationship between changes in contaminant concentrations and groundwater management activities, in particular for arsenic. Revise the description of arsenic to include the causes of arsenic mobilization due to over-pumping and compression of clay layers. The GSP's description of the chemical properties of arsenic currently attributes the mobility of arsenic to absorption/desorption. The GSP should be revised to include the following ways in which groundwater management can cause arsenic to be mobilized into the aquifer: pumping in areas of the aquifer with low-oxygen conditions and/or with a pH of over 8.5 as well as over-pumping (compression of clay layers). Accurately describing the conditions that result in the mobilization of arsenic is important in order to properly evaluate how potential groundwater management actions could further facilitate its release. Revise the description of the sources and spatial distribution of nitrate to include dairies and other concentrated animal feeding operations as a source of contamination and revise the description of septic systems as a source of contamination. Dairies are a major contributor to nitrate contamination of groundwater, and thus must be included in the description of the sources of nitrates and how nitrate contamination in the basin will be addressed. Further, the mere existence of septic systems does not necessarily mean they are a source of nitrogen contamination. While poorly maintained, leaky septic systems are a very serious source of localized nitrate contamination, well-maintained septics do not pose a similar risk. We appreciate the fact septics are called out, and hope that as implementation is carried out, more research and monitoring is conducted to determine what the impact, if any, septics are playing in the nitrate contamination within the GSA boundaries. Include a discussion on the impact irrigated agriculture has upon nitrate contamination of groundwater. Better integration with nitrate regulatory programs must also be included. While the ILRP and other waste discharge programs are supposed to work on reducing nitrate loading to water sources, many of these dischargers are in still discharging above the MCL. Under SGMA, GSAs are required to address undesirable results, including addressing water quality impacts, that occurred after January 1, 2015. It is likely that in many areas nitrate concentrations have increased since the effective date of SGMA, and thus must be addressed within the GSP. Provide all maps/figures overlaid with location of S/DACs, community water systems, and any other sensitive beneficial users to allow	More information needed on public water supply systems and associated data gaps; insert excerpts from Appendix 2A in this regard.	MKGSA and our consultant obtained water quality data for public water systems from the state during preparation of hte Kaweah Basin Setting Report in 2018 and 2019 and this is document in Appendix 2A. We recognize that additional data is being made available throught the Human Right to Water portal and we will accesss this new information and consider it in our 5 year update to the GSP. Appendix 2a includes time series plots for many of the constituents of concern in the basin and the MKGSA will continue to add to these plots throughout the SGMA implementation period. MKGSAs understanding of groundwater quality trends will improve through the implementation of our reporting and monitoring program. DACs and SDAC locations are showing in Section 1. Repeating this information on all maps is not practical. In response to this and related comment, we have modified several figure to show the location of small rural water sytems relative to our representative monitoring sites. Effected Figures are 4-1, 4-3, 4-4, 4-5, 4-6, 4-7, 5-5, 5-8 and 7-1. Adding domestic well owners to these figures is not feasible wihtout overcrowd. However, we have included well density maps in Section 1 for the GSP so that interested stakeholders are able to between understand monitoring and project development throughout the GSA incuding areas with a high density domestic well.	2
Self-Help Enterprises/ Leadership Counsel for Justice and Accountability	GL	SL-001	MCR-2	2	Groundwater Levels- Minimum Thresholds/Measurable Objectives		The draft Groundwater Sustainability Plan (GSP) developed by the Mid-Kaweah Groundwater Sustainability Agency (MKGSA) sets the minimum thresholds (MTs) for groundwater levels as the groundwater levels projected through 2040 based on the average groundwater level decline observed over the 2006-2016 time period. Similarly, the MKGSA sets the measurable objectives (MOs) for groundwater levels as the groundwater levels projected through 2030 using the same declining water level trend. This approach is intended to represent continued long-term drought conditions. The draft GSP defines the undesirable result (UR) for chronic lowering of water levels as being when one-third of the representative monitoring sites in the Kaweah Subbasin (subbasin), across all three GSAs, exceed their respective MTs. This approach is consistent with the approach used in the East and Greater Kaweah GSPs and leaves key beneficial users in the subbasin, specifically domestic well users and members of disadvantaged communities (DACs), potentially vulnerable to impacts. While an assistance program is identified in the draft GSP, that program currently lacks key details that would make it a robust mitigation measure for these beneficial users. The draft GSP presents water level MTs by: (1) hydrogeologic zones that reportedly share similar groundwater conditions and hydrogeologic behavior (Table 5-2); and (2) by Representative Monitoring Wells (RMWs) (Table 5-3). According to the draft GSP, the hydrogeologic zone MTs are based on the average of the RMW MTs for a particular area. As stated in Section 5.3.1.3, "Consistent with this requirement, the minimum elevation thresholds in this Plan are set at specific levels based on four different hydrogeologic zones as defined herein." However, well impact analyses are performed based on the MTs developed for each individual RMW, and the MOs are only established at the RMWs (i.e., not by hydrogeologic zones). Based on the conflicting information presented in the draft GSP, it is not clear which set of MT values will be used for compliance purposes through the GSP implementation phase. Sustainable Management Criteria (SMC), including MTs and MOs, should be clearly identified and applied consistently in the GSP. As shown on Figure 1, the MKGSA area includes over 750 domestic wells, three DWR-designated DACs1 (i.e., Tulare, Matheny Tract, Okieville, and Waukena) with a collective population of over 63,000 people, and two additional small communities adjacent to Tulare that are dependent on groundwater for drinking water purposes (i.e., Soults Tract, and Lone Oak Tract). The MKGSA also includes 13 community water systems, 11 of which have less than 300 service connections but collectively serve over 5,300 people. Despite this broad and diverse dependence on groundwater for drinking water use, the approach to setting water level MTs/MOs and URs does not explicitly take these drinking water beneficial users into account. As described above, the MTs for each threshold region are set based on an assumed trajectory of decreasing water levels over the next 20 years, without regard to well depths or other potential impacts. The draft GSP acknowledges that impacts to small water systems and domestic wells will be greater than impacts to other well users, but according to the draft GSP, the MTs were determined to be acceptable with the implementation of potential assistance measures (Section 5.3.1.3). However, according to Section 7.4.8.1 of the draft GSP, none of the identified potential assistance measures for small water systems and domestic wells have been approved by the MKGSA Board and it is not clear how the assistance measures will be implemented or funded. The GSP should describe how this approach is protective of the diverse drinking water users in the MKGSA without a clear implementation plan for the identified assistance measures. Table 1 below identifies the current groundwater elevation and the MO and MTs for RMWs near DACs and other groundwater-dependent communities in the MKGSA. The groundwater level MT in the vicinity of these communities is an average of 118 feet lower than current conditions. In the area of Okieville2 (Chart 1 below), the MT is 171 feet lower than current conditions, and in north Tulare, the MT is 192 feet lower than current conditions. Even if groundwater levels are maintained at the proposed MOs, groundwater levels will drop by an average of 87 feet from current water levels in these areas. The draft GSP states that, based on stakeholder input, "the largest impact on declining groundwater levels historically was the dewatering of some wells, forcing homeowners, businesses, farmers, and other groundwater well owners to drill new replacement wells" (Section 5.3.1.2). Given that the subbasin is in critical overdraft and negative impacts have already been experienced by beneficial users in the MKGSA due to declining water levels, the GSP should explain how a projected additional water level decline of nearly 200 feet in some areas will result in sustainable conditions for beneficial users. The GSP should consider and quantify both the potential dewatering of wells and the increased pumping costs associated with the increased lift at the projected lower water levels. The draft GSP includes a limited evaluation of well impacts (Section 5.3.1.3 and Appendix 5c) that compares the known screened intervals of agricultural, public, and domestic wells with the projected 2040 groundwater elevation at each well to estimate the number of wells that would be dewatered. The results of the well impact analyses are categorized by zone and well type. However, this analysis does not appear to actually evaluate the potential well impacts based on either the hydrogeologic zones MTs (Table 5-2) or the RMWs MTs/MOs (Table 5-3). In addition, which wells are within the MKGSA and the locations of these wells that are expected be impacted are not clearly stated or mapped in the draft GSP. Therefore, the well impact analyses performed in the draft GSP does not appear to actually evaluate the potential impacts to subbasin wells associated with the MTs/MOs developed by the MKGSA. Since the MOs are also based on projected declining water level trends, a well impact analyses should also be performed on the MOs. Furthermore, locations of potentially impacted wells should be provided in order to assess the well impacts specific to DACs, small water systems, and other sensitive users within the MKGSA. Based on the well impact evaluation in Section 5.3.1.3 and Appendix 5C, "18 percent of agricultural wells, 9 percent of public wells, and 21 percent of rural residential wells including domestic wells,	Subbasin selection of undesirable result thresholds unduly exposes DAC water supply systems and domestic well owners. Establisnment of MOs and MTs not adequately explained; associated impacts on potable groundwater users not sufficiently detailed.	It is incorrect to claim that the MKGSA in partnership withtt the other two GSAs in the basin have not considered impacts to other domestic wells. The focus of Appendix 5A and a series of advisory committee meetings during the development of the GSP were dovoted to this topic and it should be noted that althought the environmental justice community were represented at the table and in the audience and after repeated requests, were not able to provide technical information on small and domestic wells that added to our analysis. We presented our well impact analysis in several meetings. Then, at the very end of the public review period, the environmental justice community provided a technical report focused on the impact of our Thresholds and Objectives on domestic wells using a difference approah and possibly a difference data set than MKGSA had when were preformed the analysis document in the GSP and Appendicies. Furthermore, update request for the technical inforamtion that this study was based on, we were told that the information was still draft and could not be released to use for review. Following the close of the Public Reivew period, we requested a meeting with LCJA and CWC along with the authors of the technical report provided with their comments. We were told that the well impact dataset and tool used to develop their techncial report, were still avaibale for our review. If MKGSA had had the opportunity to undertand the datasets used for theses new well impact analysis or if their analysis and report could have been made available earlier in the GSP process, we would have taken this information under consideraiton in setting thresholds and objectives. We have agreed with the Advisory Committee and MKGSA Board that when the LCJA amd CWC well datasets and tools are available for public review and applicatoin, the MKGSA, will review and consider this information in future update to the GSP. We	various

Self-Help Enterprises/ Leadership Counsel for Justice and Accountability	WQ	SL-002	MCR-18	2	Groundwater Quality-Monitoring/Minimun Thresholds/Maximum Contaminant Levels		The draft GSP sets the MTs for water quality at Maximum Contaminant Levels (MCLs) or the Agricultural Water Quality Objectives (WQOs) at each RMW based on the dominant beneficial use for that monitoring well. The MOs for water quality were set at 75% of the MCLs or WQOs. The draft GSP further defines the UR for degraded water quality as being when one-third of the RMWs in the subbasin exceed an MT. Section 2.2 of the draft GSP identifies arsenic, nitrate, certain volatile organics, and 1,2,3-trichloropropane (TCP) as Constituents of Concern (COCs) for the MKGSA due to concentrations near MCLs or due to increasing trends. The draft GSP further identifies the following constituents to be measured where applicable (Section 3.2.2.4): arsenic, nitrate, chromium-6, dibromochloropropane (DBCP), TCP, tetrachloroethylene (PCE), sodium, chloride, perchlorate, total dissolved solids (TDS). For the reasons identified below, the water quality monitoring network and analysis presented in the draft GSP does not clearly illustrate how the MOs/MTs will be sufficient to ensure that the stated water quality UR of impacting the long-term viability of the groundwater resource, particularly for domestic water users and DACs, will be avoided. The draft GSP identifies a methodology used to distinguish between the applicability of either MCLs or agricultural WQOs as the MTs for a given RMW. As stated in Section 5.3.3.3, "If the majority of the beneficial use (greater than 50% of the pumping within a determined area) was agriculture and there were no public water systems (including schools) the minimum threshold would be a host of agricultural water quality constituents" and "If a monitoring well is located within an urban area, or near a public water system (e.g., within a mile), which includes schools, then the minimum threshold would be set at the MCL for drinking water." However, the draft GSP does not clearly identify on a map or otherwise which RMWs will use MCLs and which will use agricultural WQOs. The document also does not identify which monitoring wells are located within an urban area or near a public water system. For transparency and completeness, the GSP should clearly identify on maps and in tables which set of MTs/MOs will be applied to which RMWs. These maps should clearly identify the location of DACs, small water systems, and other sensitive users so that the public is able to review and evaluate the proposed sustainability approach. Per 23 CCR §354.28, the draft GSP should provide a detailed explanation as to how the proposed water quality MTs may affect the interests of beneficial uses and users of groundwater or land uses and property interests. Figure 3 shows the water quality monitoring network identified in Figures 4-6 and 4-7 of the draft GSP, including the new proposed multi-level monitoring wells. The water quality RMWs are focused in the northern and eastern portions of the MKGSA area and the monitoring well density varies by two orders of magnitude across the MKGSA. Specifically, the density of water quality RMWs in the northern portion of the MKGSA area (Visalia area) is approximately two RMWs per square mile, the eastern portion (Tulare and surrounding area) has density of about 0.6 RMWs per square mile, and even with the new proposed wells, the western portion will have a density of about 0.06 RMWs per square mile. Although the western portion of the MKGSA, including the communities of Okieville and Waukena are more sparsely populated than the eastern portion, there are at least 200 domestic wells and several public water systems (including the Okieville/Highland Acres Mutual Water Company, Waukena Elementary School, and Buena Vista School systems) located in this area. The GSP should clearly demonstrate how the proposed water quality monitoring network in the western portion of the MKGSA area is sufficient to monitor for impacts to beneficial users in this area, given the significant density discrepancy compared to the other portions of the MKGSA area. The draft GSP stated that "An exceedance of any of the MCL or agricultural metrics as defined herein at any representative monitoring sites will trigger a management action within the applicable Management Area or GSA, subject to determination that the exceedance was caused by actions of the GSA" (Section 5.3.3.3). However, the draft GSP does not identify which management action(s) will be implemented. Additional information is necessary in order to evaluated whether the proposed plan is protective of beneficial users in the subbasin. The draft GSP states that "MKGSA will evaluate groundwater quality degradation by either directly performing groundwater sampling at representative monitoring sites and [sic] coordinating with other agencies responsible for the collection and reporting of groundwater quality through other regulatory programs" (Section 5.3.3.3). Appendix 2A of the draft GSP includes a discussion of groundwater quality conditions for the subbasin; however, it is not specific to the MKGSA area and it is difficult to readily understand what parts of this assessment are specifically applicable to the MKGSA. It is therefore recommended that the GSP include specific discussions of the water quality conditions and trends for applicable constituents and uses within the MKGSA area. It is further recommended that this analysis clearly include an evaluation of the change in water quality constituent concentrations relative to change in water levels, particularly over drought periods, to evaluate the potential relationship between water quality and groundwater management activities.3 The draft GSP identifies RMWs for water quality on Figure 4-6 and Figure 4-7, but does not include well construction information for these wells. Table 4-5 in the draft GSP shows well construction information for a subset of water level RMWs. Without well construction information for monitoring wells included in the GSP, the public and DWR cannot evaluate if the monitoring wells are: (1) adequate for evaluating water levels relative to the MOs and MTs over the long term, and/or (2) how representative the water quality sampling depths are of the zones used for drinking water purposes by domestic well users and community water systems. Pursuant to 23 CCR § 352.4, this information is required to be provided in the GSP for all monitoring wells.	Which of the MCLs or Ag WQOs apply at which representative monitoring wells; use improved mapping for this purpose. Need more discussion of specific constituents and water quality conditions within MKGSA.	DACs and SDAC locations are showing in Section 1. Repeating this information on all maps is not practical. In response to this and related comment, we have modified several figure to show the location of small rural water sytems relative to our representative monitoring sites. Effected Figures are 4-1, 4-3, 4-4, 4-5, 4-6, 4-7, 5-5, 5-8 and 7-1. Adding domestic well owners to these figures is not feasible wihtout overcrowd. However, we have included well density maps in Section 1 for the GSP so that interested stakeholders are able to between understand monitoring and project development throughout the GSA incuding areas with a high density domestic well. In response to the comment we have also expanded out representative monitoring network for water to include the small community public water system wells.	various
The Nature Conservancy	IS	NC-004		2	Interconnected Surface Waters/Groundwater-Dependent Ecosystems		This section describes the programs of USACOE, Kaweah and St. Johns Rivers Association (KSJRA), and the ditch companies. Surface water sources are listed along with the group monitoring them. Small surface streams which pass through TID's service area are noted as used, but the names are not listed. There is no mention of ISWs or GDEs and how they are monitored. Please explain how existing stream flow monitoring is protective of ISWs and GDEs.	Comment self-explanatory	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
The Nature Conservancy	IS	NC-008	MCR-8	2	Interconnected Surface Waters		Please identify interconnected surface waters in the Basin by relying on groundwater elevation and stream gauge data, specifying any data gaps that exist so that they can be resolved in the monitoring network. ISWs are best estimated by first determining which reaches are completely disconnected from groundwater. This approach would involve comparing groundwater elevations with a land surface Digital Elevation Model that could identify which surface waters have groundwater consistently below surface water features, such that an unsaturated zone would separate surface water from groundwater. Groundwater elevations that are always deeper than 50 feet below the land surface can be used to identify the aboveground reaches as disconnected surface waters. Please reconcile data gaps (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP to improve ISW mapping.	Key comment text shown in bold.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in teh MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface.	2.2, 5.3.5
The Nature Conservancy	IS	NC-009	MCR-3	2	Interconnected Surface Waters		"Depletions of interconnected surface waters are minimal and, to the extent they occur, impact only vegetation along the banks of unlined channels within the forebay regions of the aquifer system where natural channels exhibit gaining reaches from time to time. Undesirable results may occur should any such groundwater-dependent vegetation disappear from locations of known historic existence." This discussion is inadequate and is not supported by data. Please expand the discussion of ISWs to include the above referenced recommendations on identifying and mapping ISWs and provide discussion of the depletions on specific rivers or creeks.	Key comment text shown in bold.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface.	2.2, 5.3.5
The Nature Conservancy	IS	NC-010	MCR-8	2	Groundwater-Dependent Ecosystems		All three of the above referenced sections refer to or include discussion of the identification of groundwater dependent ecosystems (GDEs). Please consolidate and expand these sections of the document in GSP Appendix 2A Section 2.4 (Groundwater Elevation and Flow Conditions §354.16), since the identification of groundwater dependent ecosystems (GDEs) is a required element of Current and Historical Groundwater Conditions (23 CCR §354.16). This is a more appropriate place for the identification of GDEs, since groundwater conditions (e.g., depth to groundwater, interconnected surface water maps, groundwater quality) are necessary local information and data from the GSP in assessing whether polygons in the NC dataset are connected to groundwater in a principal aquifer. For detailed guidance on how to address GDEs, please see our publication, GDEs under SGMA: Guidance for Preparing GSPs5. In particular, note the following: Please provide a comprehensive discussion and figure(s) for the identification of GDEs. Figure 19 of Appendix 2A is titled "Potential Groundwater Dependent Ecosystems", however the figure does not actually present this. The NC dataset is a starting point for GSAs to identify GDEs in their basin. The NC dataset comprises 3,488 acres of potential GDEs for the entire Kaweah basin, representing a significant amount of GDEs to be considered. Please map the original NC dataset on Figure 19 or another figure, and document which polygons were added (and what local sources were used to identify them), removed (and the removal reason), and kept (from the original NC dataset). The basin's GDE shapefile, which is submitted via the SGMA Portal, should also include two new fields in its attribute table denoting: 1) which polygons were kept/removed/added, and 2) the change reason (e.g., why polygons were added or removed).Please refer to Attachment D of this letter for best practices for using local groundwater data to verify whether polygons in the NC dataset are supported by groundwater in an aquifer. If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network. Specifically, please note: GDEs under SGMA: Guidance for Preparing GSPs is available at: https://groundwaterresourcehub.org/public/uploads/pdfs/GWR_Hub_GDE_Guidance_Doc_2-1-18.pdf Please provide depth to groundwater contour maps. See Attachment D for best practices for completing this step. Specifically, ensure that the first step is contouring groundwater elevations, and the 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 much more accurate contours of depth-to- groundwater along streams and other land surface depressions where GDEs are commonly found. Depth to groundwater contours developed from depth to groundwater measurements at wells assumes that the land surface is constant, which is a poor assumption to make. Figure 19 presents areas marked as 'Spring 2015 Groundwater Surface within 50 feet of Ground Surface'. Spring 2015 is after the SGMA benchmark date of January 1, 2015. Please rely on groundwater condition data prior to the SGMA benchmark date. It is highly advised that seasonal and interannual groundwater fluctuations in the groundwater regime are taken into consideration. Utilizing groundwater data from one point in time (e.g., Spring 2015) can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. We highly recommend using depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. Please refer to Attachment D of this letter for best practices for using local groundwater data to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer. If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network. Please specify which data were used to determine the elevation of the stream or river bottom and the Valley Oak root zone in the basin. Page 5-18 states "The water table lies some 60 to 150 feet below the invert of all three of these channel reaches, which is generally 40 to 130 feet below the root zone of the Valley Oak", however no information is provided on the data used to determine the elevation of the stream or river bottom and these calculations. These depths suggest a root zone of approximately 20 feet, but this is not stated explicitly. There is a citation to data (Lewis and Burgy, 19646) which indicates root zones deeper than 70 feet for this species in a fractured rock aquifer. Rooting depths for the Valley Oak in this region have not been reported, and are a data gap. Furthermore, care must be taken when considering rooting depths of vegetation. Rooting depths are likely to spatially vary based on the local hydrologic conditions available to the plant. Maximum rooting depths do not take capillary action into consideration, which will vary with soil type and is an important consideration since woody phreatophytes generally do not like to have their roots submerged in groundwater for extended periods of time, and hence can access groundwater at deeper depths. In addition, while it is likely to be true that shallow water availability is necessary to support the recruitment of saplings, hydraulic lift of groundwater to shallow depths has been observed in Quercus spp. Page 33 of Appendix 2A states "The locations of these potential GDEs and hydrographs for the Subbasin indicate that the vegetation of these areas are dependent surface water flows, rather than shallow groundwater." We disagree with this statement dismissing all potential GDEs from further consideration. There are 3,488 acres of potential GDEs within the Kaweah subbasin as per the NC dataset, and the location is, as to be expected, at the interconnection between groundwater and surface water. Adverse impacts can occur to GDEs due to pumping that further separates groundwater from surface water. Please provide the rationale for this statement, including the discussion of the type of river reach (i.e., gaining or losing). Riparian vegetation may still be accessing groundwater, and hence be identified as a GDE. We highly recommend that depth to groundwater levels under the NC polygons be used as the evaluation criteria, since access to groundwater could be occurring in/near losing reaches. Please refer to Attachment D of this letter for best practices for using local	Provide more information re GDEs. [Section 5.3.5 Minimum Thresholds – Interconnected Surface Waters (p. 5-17)], [Appendix 2A Section 2.2.7.3 Delineation of recharge areas, potential recharge areas, and discharge areas, including springs, seeps, and wetlands (p. 33)], and [Appendix 2A Section 2.10 Groundwater Dependent Ecosystems (p. 146)]	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface.	2.2, 5.3.5
The Nature Conservancy	IS	NC-011	MCR-9	2	Groundwater-Dependent Ecosystems		**Once potential GDEs are identified, please provide information on the historical or current groundwater conditions in the GDEs or the ecological conditions present. Refer to GDE Pulse (https://gde.codefornature.org; See Attachment E of this letter for more details) or any other locally available data to describe depth to groundwater trends in and around GDE areas, as well as trends in plant growth (e.g., NDVI) and plant moisture (e.g., NDMI). Below is a screenshot example of data available in GDE Pulse for NC dataset polygons found in the Mid- Kaweah Subbasin: Once potential GDEs are identified, provide an inventory of the vegetation types or habitat types and rank the vegetation species as having a high, moderate or low value. Please identify whether any endangered or threatened freshwater species of animals and plants or areas with critical habitat were found in any of the GDEs. The list of freshwater species located in the Kaweah Subbasin can be found in Attachment C of this letter.**	Provide more detail re the past and current existence of GDEs within the GSA.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
The Nature Conservancy	IS	NC-014	MCR-3	2	Interconnected Surface Waters		The statement "Depletion of interconnected surface waters are minimal and, to the extent they occur, impact only vegetation along the banks of unlined channels within the forebay regions of the aquifer system…." is not backed up by evidence presented in the GSP. Once ISWs are analyzed per our comments on Checklist Items 8, 9, and 10 above, please revise this section, noting any data gaps to be filled.	Insufficient data to support conclusion of little or no interconnected surface waters with groundwater.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
The Nature Conservancy	IS	NC-015	MCR-10	2	Measurable Objectives- Groundwater Levels- Interconnected Surface Waters/Groundwater Dependent Ecosystems		The measurable objective was set equal to the water level at 2030 using the 2006-2016 water level trend for each of the wells selected as representative monitoring sites. The specific measurable objectives for all of the selected wells are listed in Table 5-3. Please explain how the measurable objectives will help achieve the sustainability goal as it pertains to the environment. After GDEs and ISWs are identified, please discuss if any impacts to GDEs or ISWs are expected. Data gaps should be noted and addressed in the Monitoring section.	Impacts of selected measurable objectives on GDEs or ISWs not discussed.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
The Nature Conservancy	IS	NC-016	MCR-10	2	Measurable Objectives- Groundwater Levels- Interconnected Surface Waters/Groundwater Dependent Ecosystems		The trend of the 2006-2016 water levels over time was used to set the minimum threshold at 2040 for each of the wells, used as representative monitoring sites, in each of four hydrogeologic zones within the Subbasin (shown on Figure 5.1, p. A5-1). The minimum thresholds and other sustainable criteria for each well are listed in Table 5-3 (p. 5-5). The minimum threshold derived in this manner means that it is based on a pre-SGMA level. After GDEs are identified, please add discussion of the possible impacts to the environment. Data gaps should be noted and addressed in the Monitoring section.	Impacts of selected measurable objectives on GDEs or ISWs not discussed; disclose and discuss related data gaps.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5

The Nature Conservancy	IS	NC-019	MCR-4	2	Undesirable Results- Interconnected Surface Waters/Groundwater-Dependent Ecosystems, Recreation		After the identification and evaluation of potential GDEs is completed, this section should discuss impacts to those GDEs. Specifically, For chronic lowering of water level, the GSP Committee considered that one-third of the representative monitoring sites (wells) exceeding minimum thresholds for water levels would constitute an undesirable result. There appears to be no additional guidance to protect potential GDEs or ISWs. Please discuss how this undesirable result can be used to avoid impacts to GDEs or ISWs. There appears to be no consideration of undesirable results on land uses that include and consider recreational uses (e.g. fishing/hunting, hiking, boating) and property interests that include and consider privately and publicly protected conservation lands and open spaces, including wildlife refuges, parks and natural preserves. Please describe how impacts to these types of properties will be avoided. Please provide more specifics on what biological responses (e.g., extent of habitat, growth, recruitment rates) would best characterize a significant and unreasonable impact to GDEs. The definition of 'significant and unreasonable' is a qualitative statement that is used to describe when undesirable results would occur in the basin, such that a minimum threshold can be quantified. Potential effects on all beneficial users of groundwater in the basin need to be taken into consideration. According to the California Constitution Article X, §2, water resources in California must be "put to beneficial use to the fullest extent of which they are capable". Please identify appropriate biological indicators that can be used to monitor potential impacts to environmental beneficial users due to groundwater conditions. Refer to Appendix E of this letter for an overview of a free, new online tool for monitoring the health of GDEs over time.	Provide more detail re the past and current existence of GDEs within the GSA. Discuss undesirable results in this context as well.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
The Nature Conservancy	WB	NC-012	MCR-1	2	Water Budget- Phreatophyte Extraction		Please clarify what the term "phreatophyte extraction' means. The text states 'Phreatophyte extraction consists of removing vegetation in riparian areas to prevent consumptive water use." If phreatophytes were indeed removed from within the Subbasin, please provide further details. If phreatophyte extraction refers to the uptake of groundwater by phreatophytes, then correct this text. It should be clearly stated if the phreatophytes are referring to GDE vegetation (riparian vegetation). Also the reference is from 2007 and the acreage and ET estimation methodology may be outdated. Please clarify what assumptions and data were used to calculate the outflow term from groundwater by phreatophytes.	[Appendix 2A Section 2.5.1.3 Summary of Water Budget Components (p. 102)] Improve text discussing phreatophyte extractions.	Phreatophyte extraction means removal of GW by the plants, applicable to eastern portion of the Subbasin only, not MKGSA. This section of the Basin Setting document has been updated to include the correct definition. Thank you.	Basin Setting
The Nature Conservancy	IS	NC-001		1	Beneficial Users- Environmental		Surface water users and the following groups were listed as Beneficial Users: "Environmental and ecosystem interests in MKGSA include representatives of the Tulare Basin Wildlife Partners, Sierra Club Mineral King Group, and Sequoia Riverlands Trust (p. 1-25)." Please identify whether or not the following beneficial uses and users of groundwater in the subbasin are present: Protected Lands, including preserves, refuges, conservation areas, recreational areas; and other protected lands; and Public Trust Uses, including wildlife, aquatic habitat, fisheries, and recreation. The types and locations of environmental uses, species and habitats supported, and the designated beneficial environmental uses of surface waters that may be affected by groundwater extraction in the Subbasin should be specified. To identify environmental users, please refer to the following: Natural Communities Commonly Associated with Groundwater dataset (NC Dataset) - https://gis.water.ca.gov/app/NCDatasetViewer/ The list of freshwater species located in the Kaweah Subbasin in Attachment C of this letter. Please take particular note of the species with protected status.	Confirm existance of environmental and other land uses and users within MKGSA [Section 1.5.2 Beneficial Uses and Users (p. 1-23 to 1-25)]	Confirm lack of preserves, refuges, conservation areas etc. to be undertaken.	1.5.2.10
Tulare County Resource Management Agency	GL	RM-012		1	Undesirable Results- Groundwater Levels		"…a determination has been made that the percentage of wells completely dewatered by 2040 should the minimum thresholds not be exceeded would not constitute an undesirable result." For clarification should that actual percentage be stated here?	Comment self-explanatory [Page 3-5]	Comment noted	Sec. 3 or 5?
Tulare County Resource Management Agency	GP	RM-002		1	General Plans- Urban		"Urban land use is located within the limits of the cities of Tulare and Visalia and the surrounding unincorporated areas within the sphere of influence for the cities." General Plan Land Use Diagrams should be referenced or included in the GSP. Tulare County General Plan Land Use Diagram Figure 4-1 (page 4-5) at a minimum should be referenced or included here.	Provide more detail re general plan land use projections [Page 1-6]:	Referece has been added to the City of Tulare, City of Visalia, and Tulare County General Plans in this section. We have also included the land Use maps from each of the General Plans in a new section 1 appendix	1.4.3.1
Tulare County Resource Management Agency	GP	RM-003		1	General Plans		"Each of the two incorporated cities in MKGSA's area have adopted General Plans. For the areas not within the limits of the incorporated cities, the Tulare County General Plan applies. The General Plans for the cities and the General Plan for the county each have land use elements which address water usage. These elements were considered in this GSP." General Plan Land Use Diagrams should be referenced or included in the GSP. Tulare County General Plan Land Use Diagram Figure 4-1 (page 4-5) at a minimum should be referenced here. This statement should describe the specific general plan elements that were reviewed.	Address in more detail County General Plan elements re water resources [Page 1-12]:	Referece has been added to the City of Tulare, City of Visalia, and Tulare County General Plans in this section. We have also included the land Use maps from each of the General Plans in a new section 1 appendix	1.4.3.1
Tulare County Resource Management Agency	GP	RM-004		1	General Plans- Water Resources		"However, the Tulare County 2012 General Plan has a Water Resources Element…" Note that the County's GP also has other elements that address water. These should be referenced. The Tulare County General Plan includes both policies and implementation measures that address water supply, wastewater treatment, adequate infrastructure, plans, programs, and funding in the following elements: Planning Framework (Chapter 2), Agriculture (Chapter 3), Land Use (Chapter 4), Economic Development (Chapter 5), Housing (Chapter 6), Environmental Resources Management (Chapter 8), Health and Safety (Chapter 10), Water Resources Chapter 11), Public Facilities and Services Chapter 14), Gen Plan Water Resources Element policies Include: Water Supply WR-1.1 Groundwater Withdrawal, WR-1.3 Water Export Outside County, WR-1.4 Conversion of Agricultural Water Resources, WR-1.5 Expand Use of Reclaimed Wastewater, WR-1.6 Expand Use of Reclaimed Water, WR 1.7 Collection of Additional Groundwater Information, WR-1.8 Groundwater Basin Management, WR-1.9 Collection of additional Surface Water Information, WR-1.10 Channel Modification, WR-3.1 Develop Additional Water Sources, WR-3.2 Develop an Integrated Regional Water Master Plan, WR-3.3 Adequate Water Availability, WR-3.4 Water Resource Planning, WR-3.5 Use of Native and Drought Tolerant Landscaping, WR-3.6 Agricultural Irrigation Efficiency, WR 3.7 Emergency Water Conservation Plan, WR-3.8 Educational Programs, WR-3.9 Establish Critical Water Supply Areas WR-3.10 Diversion of Surface Water, WR-3.11 Policy Impacts to Water Resources, WR-3.12 Joint Water Projects with Neighboring Counties, WR-3.13 Coordination of Watershed Management on Public Land PFS-2.1 Water Supply, PFS-2.2 Adequate Systems, PFS-2.3 Well Testing, PFS-2.5 New Systems or Individual Wells, Water Quality, WR-1.2 Groundwater Monitoring, WR 1.7 Collection of Additional Groundwater Information, WR-1.8 Groundwater Basin Management, WR-2.1 Protect Water Quality, WR-2.2 NPDES Enforcement, WR-2.3 Best Management Practices, WR-2.4 Construction site Sediment, WR-2.5 Major Drainage Management, WR-2.6 Degraded Water Resources, WR-2.7 Industrial and Agricultural Sources, WR-2.8 Point Source Control, WR-2.9 Private Wells, PFS-2.1 Water Supply, PFS-2.5 New Systems or Individual Wells, Implementation Measures should also be included.	Cover other elements of County General Plan re water resources	Narrative re County General Plan has been expanded accordingly	1.4.3.1
Tulare County Resource Management Agency	OR	RM-001		1	Internal Referencing		"It is one of the prime agricultural regions in the Central Valley and home to numerous small towns and communities, as well as the larger cities of Tulare and Visalia." Should reference a specific map or diagram.	[Page 1-1]:	A new basin location figure has been added	1.1.2
Tulare County Resource Management Agency	OR	RM-009		1	GSP Organization		"As shown in Figure 1-2, the MKGSA region includes three areas identified as a Census Designated Place by the 2016 U.S. Census Bureau as disadvantaged or severely disadvantaged. The City of Tulare has been identified as a Disadvantaged Community, while the community of Matheny Tract and Waukena have both been determined as a Severely Disadvantaged Community. The community of Okieville/Highland Acres is located within a 2016 U.S. Census Bureau Disadvantaged Community Tract. Stakeholders in these communities have the opportunity to consult on the plan during the agency's Board of Directors and Advisory Committee meetings and during review of this Plan." Seems to be a repeat of Section 1.5.2.3	Repetative text called out [Page 1-25]	This paragraph was struck.	1.5.2.11
Various Non-Profits	DC	NP-031	MCR-17	3	Disadvantaged Communities		DACs are not explicitly identified for purposes of developing URs, MOs and MTs, but domestic well users are discussed in terms of URs and MTs. "The potential effects of degraded water quality from migrating plumes or other induced effects of GSA actions include those upon municipal, small community and domestic well sites rendered unfit for potable supplies and associated uses, and/or the costs to treat groundwater supplies at the well head or point of use so that they are compliant with state and federal regulations."	Identify DACs and considerations in establishing URs, MTs and MOs	Text modified to include DAC in the listing	5.3.3.2, 5.3.3.3
Various Non-Profits	DC	NP-034		3	Undesirable Results- Disadvantaged Communities		Based on the presented information, domestic well uses are considered under URs and for the development of water level MOS and MTs, such as the statistical summary of well impact analysis for domestic wells, but DAC members are not explicitly considered. More detail and specifics regarding DAC members, including those that rely on smaller community drinking water systems, not only domestic wells, is necessary to demonstrate that these beneficial users were adequately considered.	Specifically address small-system well impacts in MT analyses	Text modified to include DACs, additional small community wells bring into groundwater quality monitoring program.	5.3.3.2, 5.3.3.3
Various Non-Profits	IS	NP-026	MCR-3	3	Interconnected Surface Waters/Groundwater-Dependent Ecosystems		"As stated previously, the interconnection of surface water and groundwater was disrupted many decades ago in the MKGSA. Therefore, a monitoring network and monitoring is not required for this GSA (p. 4-14)." Data has not been presented to substantiate this statement. Per the GSP Regulations (23 CCR §354.34 (a) and (b)), monitoring must address trends in groundwater and related surface conditions (emphasis added). Groundwater level monitoring alone may be insufficient to establish a linkage between groundwater extraction and potentially resulting impacts to environmental resources associated with GDEs and ISWs. The cause-effect relationship between groundwater levels and the biological responses that could result in significant and unreasonable impacts to ISWs and GDEs depends on a number of complicated factors, and this relationship is not characterized or discussed. As such, it is not possible to determine whether the proposed monitoring, minimum thresholds and measurable objectives are sufficiently protective to ensure significant and unreasonable impacts to GDEs and ISWs will be prevented.	Inadequate data presented to justify disconnect between groundwater and surface waters.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	Same as comment #8
Various Non-Profits	IS	NP-028	MCR-12	3	Figures- Groundwater-Dependent Ecosystems/Disadvantaged Communities		The GSP should include maps or information of what GDEs and DACs are in each Management Area.	Comment self-explanatory	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	5.3.3.3, 5.3.5
Various Non-Profits	IS	NP-029	MCR-8	3	Monitoring Network- Groundwater Dependent Ecosystems/Disadvantaged Communities		If any gaps exist in the monitoring networks for GDEs and DACs, they should be clearly identified in the GSP.	Comment self-explanatory	Add bullet for DAC data gaps in Sec. 2	2.2
Various Non-Profits	IS	NP-030	MCR-3	3	Interconnected Surface Waters/Groundwater-Dependent Ecosystems		The GSP should provide additional analysis to back-up the conclusion that states "the interconnection of surface water and groundwater was disrupted many decades ago in the MKGSA", and add monitoring of potential GDEs and at any locations where ISWs have been or were previously present.	Comment self-explanatory	Added more technical information in Sectin 2 addressing the disconnection between surface and groundwater	N/A
Various Non-Profits	IS	NP-032	MCR-4	3	Undesirable Results- Interconnected Surface Waters/Groundwater-Dependent Ecosystems		For chronic lowering of water level, the GSP Committee considered that one-third of the representative monitoring sites (wells) exceeding minimum thresholds for water levels would constitute an undesirable result. There appears to be no additional guidance to protect potential GDEs or ISWs.	Comment self-explanatory	We've added additional technical information to section 2 demonstrating th	N/A
Various Non-Profits	WB	NP-018		2	Water Budget- Other Demands		The demands by these sectors are stated to be included in the projected water budget, however, ***the demand by each of these sectors is not specifically identified*** , since they are all included in the "Other demand" by the GSP.	Municipal, small-system and domestic water demand estimates not sufficiently detailed.	MKGSA believes sufficient detail on the water budget is provided in Section 2 and Appendix 2A.	Section 2 and Appendix 2a

Various Non-Profits	GL	NP-035	MCR-2	2	Minimum Thresholds- Water Levels		The draft GSP identifies MTs for both hydrogeologic zones and for individual well points, but does not clearly explain which set of MTs will be applied through the implementation phase of SGMA.	Comment self-explanatory	Moved entire discussion of Hydrogeologic Zones to appendicies to avoid confusion. Text remaining in Section 5 will only address specific wells in the representative monitoring networks	5.3.1.3
Various Non-Profits	IS	NP-010	MCR-8	2	Interconnected Surface Waters		ISWs are best estimated by first determining which reaches are completely disconnected from groundwater. This approach would involve comparing groundwater elevations with a land surface Digital Elevation Model that could identify which surface waters have groundwater consistently below surface water features, such that an unsaturated zone would separate surface water from groundwater. Groundwater elevations that are always deeper than 50 feet below the land surface can be used to identify the aboveground reaches as disconnected surface waters.	Identify which surface channel reaches are 50 ft or more above underlying water table.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
Various Non-Profits	IS	NP-011	MCR-3	2	Interconnected Surface Waters/Groundwater-Dependent Ecosystems		"Depletions of interconnected surface waters are minimal and, to the extent they occur, impact only vegetation along the banks of unlined channels within the forebay regions of the aquifer system where natural channels exhibit gaining reaches from time to time. Undesirable results may occur should any such groundwater-dependent vegetation disappear from locations of known historic existence." ***This discussion is inadequate and is not supported by data.***	Insufficient data to support conclusion of little or no interconnected surface waters with groundwater.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
Various Non-Profits	IS	NP-014		2	Monitoring Network- Groundwater-Dependent Ecosystems		The GSP does not include the identified GDEs in the proposed monitoring network maps.	Discuss monitoring network as it relates to tracking GDEs	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
Various Non-Profits	IS	NP-016	MCR-8	2	Groundwater-Dependent Ecosystems		The original NC dataset should be mapped and the GSP should document which polygons were added (and what local sources were used to identify them), removed (and the removal reason), and kept (from the original NC dataset). TNC guidance on best practices should be used for the method to use local groundwater data to verify whether polygons in the NC dataset are supported by groundwater in an aquifer, in particular BMP #3, which emphasizes that GDEs should not be excluded due to partial reliance on surface water.. 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. Once GDEs are identified, the GSP should describe how existing groundwater monitoring programs are protective of GDEs, or propose additional monitoring that specifically targets GDEs.	Provide detail on use of NC data sets in identifying GDEs. Discuss monitoring network as it relates to tracking GDEs.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
Various Non-Profits	IS	NP-017		2	Interconnected Surface Waters		The GSP should identify interconnected surface waters in the Basin by relying on groundwater elevation and stream gauge data, specifying any data gaps that exist so that they can be resolved in the monitoring network, and reconcile data gaps (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP to improve ISW mapping.	Presence of any GDEs or ISWs not fully discussed in context of water-level data; disclose and discuss related data gaps.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
Various Non-Profits	IS	NP-039	MCR-7	2	Measurable Objectives- Interconnected Surface Waters/Groundwater-Dependent Ecosystems		The GSP should explain how the measurable objectives will help achieve the sustainability goal as it pertains to the environment. After GDEs and ISWs are identified, please discuss if any impacts to GDEs or ISWs are expected. Data gaps should be noted and addressed in the Monitoring section.	Discuss impacts of measurable objectives and achievement of sustainability goal on GDEs and ISWs; make note of related data gaps.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
Various Non-Profits	IS	NP-040	MCR-3	2	Interconnected Surface Waters		The GSP should specifically cite "periodic comparisons of surface water elevations and flow rate depletion in applicable stream channels and adjacent groundwater" as a data gap and further address in the monitoring section.	Discuss data gap of channel flows and groundwater elevation correlations.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
Various Non-Profits	IS	NP-041		2	Groundwater-Dependent Ecosystems		After the identification and evaluation of potential GDEs is completed, this section should discuss impacts to those GDEs. Specifically, the GSP should: (1) discuss how this undesirable result can be used to avoid impacts to GDEs or ISWs; (2) describe how impacts to these types of properties will be avoided; (3) provide more specifics on what biological responses (e.g., extent of habitat, growth, recruitment rates) would best characterize a significant and unreasonable impact to GDEs; and (4) identify appropriate biological indicators that can be used to monitor potential impacts to environmental beneficial users due to groundwater conditions.	Discuss impacts of any undesirable results on GDEs.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
Various Non-Profits	IS	NP-044	MCR-7	2	Interconnected Surface Waters/Groundwater-Dependent Ecosystems		The GSP should state how ISWs and GDEs will benefit or be protected, or what other environmental benefits will accrue.	Discuss protections afforded to GDEs and ISWs of chosen measurable objectives.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
Various Non-Profits	MA	NP-025		2	Management Areas- Groundwater-Dependent Ecosystems		"MKGSA reviewed the "Natural Community Dataset Viewer" maps for the Kaweah Subbasin to evaluate the possibility of whether groundwater dependent ecosystems could exist in the MKGSA management area. The mapping system identifies stream reaches supporting habitat that may rely on groundwater." But no management areas are specifically defined to manage GDEs.	Consider setting up Mgt Areas for protection of GDEs.	We've added additional technical information to section 2 demonstrating that groundwater and surface water in the MKGSA are disconnected systems and that depth to water in the past and currently ranges between 60 and 220 feet below ground surface and therefore groundwater in the upper principal aquifer cannot support vegatation at the ground surface.	2.2, 5.3.5
Various Non-Profits	PM	NP-042	MCR-11	2	Projects and Management Actions- Disadvantaged Communities		A brief description of a project benefit to one DAC is provided in the GSP, but not discussed in detail. A discussion should be added for each project or management action to clearly identify the benefits to DAC drinking water users and potential impacts to the water supply. For all potential impacts, the project/management action should include a clear plan to monitor for, prevent, and/or mitigate against such impacts. The GSP should identify additional actions and funding mechanisms for potential failures of achieving the MOs by the identified actions.	Projects & mgt actions should include an assessment on drinking water users and any needed mitigation measures.	We are adding the locations of DAC, SDAC and small communities to Figure 7-1. The following is included addressing expected benefits: "7.3.1.6 – Expected Benefits and Targeted Measurable Objectives Constrained only by the frequency of surplus flow conditions as referenced in Section 7.2 and its intake capacity, the Project's accrued benefits (via increased groundwater in storage) through the 50-year Planning and Implementation Horizon are estimated at 80,500 AF with average annual benefits at 1,610 AF/year. Maximum recharge in wet years is estimated to be 3,600 AF. The Measurable Objectives and Optimal Objectives (see Section 5 of this GSP) to be partially met with this Project include groundwater level stabilization and, by proxy, groundwater storage stabilization and reduction in land subsidence rates. Reduced water quality degradation is anticipated as well, as it is generally accepted that high quality, low-TDS runoff from the Sierra Nevada sources (Kaweah and San Joaquin rivers) provides improvements to groundwater quality and has historically had a dilution effect to both the unconfined and semi-confined aquifer layers."	various

Various Non-Profits	WB	NP-019	MCR-1	2	Phreatophyte Extraction		Please clarify what the term "phreatophyte extraction' means. The text states 'Phreatophyte extraction consists of removing vegetation in riparian areas to prevent consumptive water use." If phreatophytes were indeed removed from within the Subbasin, please provide further details. If phreatophyte extraction refers to the uptake of groundwater by phreatophytes, then correct this text. It should be clearly stated if the phreatophytes are referring to GDE vegetation (riparian vegetation). Also the reference is from 2007 and the acreage and ET estimation methodology may be outdated.	[Appendix 2A Section 2.5.1.3 Summary of Water Budget Components (p. 102)] Improve text discussing phreatophyte extractions.	Phreatophyte extraction means removal of GW by the plants, applicable to eastern portion of the Subbasin only, not MKGSA.	Basin Setting
Various Non-Profits	WQ	NP-002		2	MCLs		The draft GSP used the DWR Mapping Tool to identify DACs. The GSP only clearly identified CA MCLs as a source for developing MTs, while PHGs or Regional Water Quality Control Plan WQOs were not considered in the assessment of drinking water users.	Consideration of only MCLs in establishing min. thresholds is insufficient.	MKGSA will add a table summarizing MCLs and other WQOs used for compliance in our representative water quality monitoring wells. Table to be added in Section 4, but reference in section 5.	5.3.3.3
Various Non-Profits	DC	NP-001		1	Beneficial Users- Public Water Systems		"Beneficial users of groundwater in MKGSA include agricultural users, domestic well owners, municipal well operators, public water systems, local land use planning agencies, California Native American Tribes, disadvantaged communities, and entities engaged in monitoring and reporting groundwater elevations." DACs include "those served by private domestic wells or small community water systems (Water Code §10723.2(i)" The number and sizes of the public water systems within the MKGSA are not clearly described.	Details needed re DACs within MKGSA [1.5.2.1, Page 34]	Details to be provided in Sec. 1 in the form of a table summarizing public water system information.	1.4.2
Various Non-Profits	IS	NP-003	MCR-7	1	Beneficial Users- Environmental/Recreation		The GSP should identify whether or not the following beneficial uses and users of groundwater in the subbasin are present: Protected Lands, including preserves, refuges, conservation areas, recreational areas; and other protected lands; and Public Trust Uses, including wildlife, aquatic habitat, fisheries, and recreation.	Comment self-explanatory	Figure in basin setting shows areas where depth to groundwater is less than 50 and as such groundwater may provide supply to deep rooted phyeatphtes in these areas. The case of MKGSA our depth to water varies between 60 and 220 bgs, so becuase it's a disconnected system we don't think the detail GDE mapping suggested is relevent. However, we would expect these detail in GKGSA and EKGSA GSPs.	1.5.2.10
Various Non-Profits	IS	NP-009	MCR-8	1	Groundwater-Dependent Ecosystems		Figure 19 of Appendix 2A is titled "Potential Groundwater Dependent Ecosystems", however the figure does not actually present this. The NC dataset is a starting point for GSAs to identify GDEs in their basin. The NC dataset comprises 3,488 acres of potential GDEs for the entire Kaweah basin, representing a significant amount of GDEs to be considered.	Clarafication re cited figure sought [Figure 19 (Appendix 2A page 172)]	Figure in basin setting shows areas where depth to groundwater is less than 50 and as such groundwater may provide supply to deep rooted phyeatphtes in these areas. The case of MKGSA our depth to water varies between 60 and 220 bgs, so becuase it's a disconnected system we don't think the detail GDE mapping suggested is relevent. However, we would expect these detail in GKGSA and EKGSA GSPs.	Appendix 2A
Various Non-Profits	OR	NP-021		1	Internal Referencing		Most water budget information is included in the appendices. The main GSP text could provide reference or direction to the appendices where specific topics are discussed to assist readers navigate the documents.	Comment self-explanatory	Additional water budget details have been added to Section 2.	2.2
Various Non-Profits	WQ	NP-012		1	Monitoring Network- Water Quality		"Figure 4-2 (at the end of this Section) provides the current distribution of wells throughout the entire Subbasin with available data through CASGEM, local and regional agencies, and Management Areas. Figure 4-3 (at the end of this Section) shows the current groundwater level monitoring wells in the MKGSA only, with aquifer designations if known." The map of existing monitoring wells for groundwater levels is included in the Appendix 2A. No map of existing water quality monitoring networks is found in this GSP.	Request for another map of water quality networks within MKGSA [4.4.2 Page 76]	The representative groundwater quality monitoring network includes the requested information. These are the wells currently being monitored. Text will be provided to further claify this point.	4
Various Non-Profits	WB	NP-022		2	Water Budget- Climate Change		Based on the data presented, it is not clear how climate change is expected to affect some specific elements of the water budget (i.e., subsurface flows, surface water and groundwater outflows, including exports).	Lack of detail on climate change assumptions applied for projected water budget.	We applied the DWR provided climate data sets as described in the Basin Setting Document. This information was then used in the numerical groundwater model to forecast conditions in the basin and the results of groundwater modeling will be included as an appendix to the coordination agreement. The groundwter modeling results were also used to demonstrated that our measureable objective are achievable. The groundwater model also deomstrated that with favorable hydrology we may be able to acheive an optimal objective in terms of groundwater levels at 2040. More explanation has been included in Section 5.	N/A
Leadership Counsel for Justice and Accountability	DC	LC-006	MCR-21	3	Sustainability Goal- Disadvantaged Communities/Domestic		GSAs must establish a sustainability goal that "culminates in the absence of undesirable results within 20 years."14 Undesirable results are the point at which there are "significant and unreasonable impacts" from the six sustainability indicators set out in SGMA: chronic lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence, depletions of interconnected surface water.15 Also fundamental to SGMA is the obligation that GSAs must "consider the interests of" an enumerated list of beneficial users, including "holders of overlying groundwater rights, including…domestic well owners" and "disadvantaged communities, including, but not limited to, those served by private domestic wells or small community water systems."16 Therefore, the sustainability goal must be based on impacts from the six sustainability indicators, particular with respect to the impacts that they will have on beneficial users. However, instead of basing on impacts from any of the six sustainability indicators on beneficial users, the Kaweah subbasin sustainability goal focuses primarily on "the viability of existing enterprises of the region," the "water needs of existing enterprises," and local plans that create "economic and population growth." This sustainability goal focuses on water for industry, is counter to the intent of SGMA, and frustrates the goals of the law because it does not take into account the needs of or "significant and unreasonable" impacts on all types of beneficial users in the GSA area. This sustainability goal should not focus on economic growth, but rather must consider the interests of all beneficial user groups in the GSA area. The sustainability goal therefore must have co-equal quals of preserving water resources for many uses, including drinking water, environmental, urban, and agricultural. Their discussion of the Sustainability Goal also focuses on augmenting supply, and only implementing Management Actions "where necessary." Even if all projects are implemented and sustainable management criteria are complied with in the plan, many vulnerable drinking water users will still be impacted, and the GSA has not committed to implementing its domestic well and small systems management action. Instead, the GSA should focus simultaneously on projects and management actions to ensure sustainability and protect drinking water resources. Furthermore, the means by which the GSA states it will achieve this sustainability goal, through a "glidepath" approach, is geared towards protecting agricultural interests, and is likely to have severe impacts on the drinking water resources of domestic well users. The sustainability goal states that it will be reached by the combined efforts of all three GSAs. However, the coordination agreement does not clearly show how the sustainability goal will be achieved, or how actions by other GSAs in the subbasin could impact the Mid Kaweah GSA area. However, given that 86% of domestic wells are already at risk of full or partial dewatering from the GSA's proposed minimum thresholds, we know that groundwater users in the Mid 14 23 CCR § 354.24 15 Water Code § 10721(w). 16 Water Code § 10723.2. Kaweah GSA cannot afford to be further impacted by overpumping in neighboring GSAs. Therefore, we recommend that the We further recommend that the Mid Kaweah GSA set a clear sustainability goal for its own local GSA area, and ensure that the coordination agreement with the other Kaweah subbasin GSAs does not negatively impact its sustainability goal. In order to have a sustainability goal that complies with SGMA and avoids disparate impacts on protected groups under state law, the Mid Kaweah GSA must: Agree on a subbasin-wide sustainability goal that protects all types of beneficial users equitably, avoiding disparate impacts on protected groups. Work with Kaweah Subbasin GSAs to clearly define how their combined actions will achieve sustainability, and include a thorough explanation of this collective effort in the coordination agreement or each GSP. Set a clear sustainability goal for its own local GSA area. Ensure that the coordination agreement with the other Kaweah subbasin GSAs does not negatively impact the Mid Kaweah GSA's local sustainability goal. Use the the umerical groundwater model to evaluate the change in water levels at representative monitoring wells through 2040, both with and absent of the proposed Projects and Management Actions, and relative to the proposed measurable objectives and minimum thresholds. Use the above analysis to show how all types of beneficial users in the GSA area will be impacted by the proposed glidepath approach. Ensure that projects and management actions are implemented simultaneously, in order to equitably protect all beneficial users' groundwater needs.	SG should explicitly address protection for DACs and domestic users	Amplify considerations for DACs as part of Goal stmt.	3.1
Edward Henry	WB	EH-009	MCR-19	2	Water Budget Accounting		***Can further explanation be given as to how the "water [supply] accounting framework" (WSAF), Table 6-2 in Section 6, will define the "water budget", Table 2-1 in Section 2? How are they related?*** I thought each one was independent of the other-the WSAF being based on a legal construct concept/definition whereas the water budget is the physical movement of water? It is curious that by combing those two figures for the MKGSA there is essentially a 50,000 AF range (swing) from a +38,000 AF surplus in the WSAF (Table 6-2) to a-13,000 AF deficit in water budget (Table 2-1). So is/are WSAF data/inputs considered the independent variable (driver), and then the water budget would then be considered the dependent variable of the WSAF? With the approximate -13,000 AF deficit in the water budget is this the more realistic figure/calculation that should be used by the three management areas (Tulare, Visalia, & TID) when establishing Minimum Thresholds and Measurable Objectives?	Reconciliation of water budget and water accounting framework (WAF) not adequately disclosed.	Add a table in showng how you go from the WB to WAF. Clean up section 6 to be sure we are consistent with our terms in referring to either water budget vs water accounting framework.	Section 6
Edward Henry	AL	EH-031		2	De Minimus Extractors		In the second sentence of the first paragraph it states, " … this initial phase of an allocation program shall exclude those well owners who extract less than two AF per year (i.e., de minimis extractors) …". Again, I will challenge how a de minimis extractor will be identified? So if one lives in the county [not within the jurisdictional boundaries of a city-i.e. Tulare or Visalia) on a 2-3 acre parcel with a half-dozen head of beef cattle, a couple of horses, irrigated pasture(s), some fruit and nut trees, a vegetable garden, a½ acre green lawn, etc. that will be declared a de minimis extractor-there's no way that parcel/residence is a de minimis extractor? I live in Tulare on just under 1/3 of an acre, and I am definitely a de minimis user of groundwater. But because I'm within the jurisdictional boundary of Tulare, I won't have the same rights [to use that groundwater] as a de minimis extractor. Granted I don't have the risks of a well going dry or potentially degraded water quality or other well associated operation and maintenance concerns as one who has a domestic well in the county but something is wrong with this picture. Make de minimis extractors prove they are truly de minimis-keep the playing field level and equitable. Meter the de minimis extractor.	consider adding recommendation for self reporting of pumping in well mitigation program, seciton 7.	Assitence to small water systems and domestic well owners - this section as been modified based on this comment to require that self reporting of annul pumping volume as a requirement for assistence.	7.4.8
Edward Henry	WB	EH-030		2	Water Budget/Water Accounting Framework		In the third sentence of the first paragraph there is an additional correction which was missed in my original comments' submission on September 3, 2019, and it states, "…Despite the water budget surplus, as evidenced in Section 2 (Basin Setting Appendix 2A), groundwater levels and storage have been in decline within the Mid-Kaweah area…". In fact, there is not a water budget surplus as stated above (go to the MKGSA website and see Section 2 Appendices 2A, Page 109, Table 32, which shows a -77.6 TAF deficit for the entire Kaweah Subbasin), but rather it's the water accounting framework which shows a surplus within the MKGSA of around 38 TAF in Section 6 – Water Supply Accounting (on Page 6-3, Table 6-3 of this GSP). Later in that same sentence it states, "…and hydrogeologic evaluations will continue to determine the reason for the differences between the water budget surplus and the conditions of decline…". Again, it's the water accounting framework which shows a surplus (~38 TAF) and not the water budget (~ -13 TAF—see Page 2-3, Table 2-1 of this GSP). With those corrections that sentence should now read as follows, "…Despite the water accounting framework surplus, as evidenced in Section 6 – Water Supply Accounting (on Page 6-3, Table 6-3) of this GSP, groundwater levels and storage have been in decline within the Mid-Kaweah area and hydrogeologic evaluations will continue to determine the reason for the differences between the water accounting framework surplus and the conditions of decline…". I'm concerned that there is incorrect interchangeable usage of the terms water budget and water accounting framework and will confuse the causal reader. On Page 2-2, 2.3 GSA Water Budget, there's a good definition and the current estimate of the MKGSA water budget: "…This localized water budget represents the estimated physical movement of water in and out of the MKGSA area on an annual basis and provides an average for the 21-year period. During that period, average groundwater storage depletions were 12.6 thousand acre-feet (TAF) per year due to a combination of water management activities within the GSA as well as influences from neighboring GSAs both in the Kaweah Subbasin and in neighboring subbasins…". Also on Page 2-2 there is a good definition of the water accounting framework [which is specifically addressed on Page 6-3, Table 6-2 and Table 6-3 of this GSP] and shows an Imputed Balance (Table 6-3) surplus within the Mid-Kaweah area of approximately 37.8 thousand acre-feet (TAF) per year: "…To apportion responsibilities for the development of projects and management actions (extraction reductions), Section 6 of this GSP segregates groundwater inflows based on a legal construct of native, foreign, and salvaged components. These components are proportionately assigned to each of the three Subbasin GSAs. This construct and apportionment were considered and accepted by each GSA and represent a preliminary water accounting framework to be further discussed and refined during the first five-year assessment of this GSP…". These two components/entities are calculated quite differently, and should not be loosely interchanged particularly when one is negative and the other is positive.	Reconcile difference between water budget and water accounting framework values as they relate to the MKGSA.	Better distinguish between the terms "water budget" and "water accounting framework."	6.2, 7.4.2.2

Edward Henry	GS	EH-015		1	Interim Milestones- Graphing		[Section 5 Appendices]: Although the following comments may be out of contextual order but while in Section 5 Appendices (from above), I also looked at Appendix 5D: Water Storage Additions - An Alternative Approach. ***In Figure 1: Hypothetical Representation of Measurable and Optimal Objectives (on the last page), the four Interim Milestone numbers in parenthesis are shown as positive numbers. Shouldn't they be listed as negative numbers as all are below zero (0) with regards to storage depletion on the y-axis?*** They should be -21, -33, -40, & -42 TAF. Also the Storage Depletion label/units in parenthesis should be (TAF) rather than the (AF) as currently shown.	Comment self-explanatory	Corrections to App. 5D to be made if warranted.	Appendix 5D
Edward Henry	OR	EH-010		1	Undesirable Results/GSP Organization		At the end of the first sentence should add after " ... interconnected surface waters ... " the 6th Undesirable Result which is "seawater intrusion". All 6 Undesirable Results (UR) should be listed in this opening sentence as seawater intrusion is the last listed UR in section 3.2.1.6 Seawater Intrusion at the bottom of the page.	Editorial comment self-explanatory [Page 3-3, 3.2.1 Causes leading to Undesirable Results]:	Will strike the reference to ISW in Sec. 3.2.1, since none are assumed.	3.2.1
Edward Henry	OR	EH-035		1	Internal Referencing		In the first paragraph below Table 7-1, the third sentence states, " ... This range of recharge accomplishments is depicted in the "Cumulative Added Storage" bandwidth on Figure 7-5..." It should read Figure 7.6, not Figure 7-5.	Reference to correct figure noted.	Correction noted.	7.5.2
Edward Henry	OR	EH-036		1	Water Resources- Typo		At the bottom 1/3 of Table 7.2 under the heading, Combined, it has "SVP Surplus"- shouldn't read "CVP Surplus"?	Correction to reference table as noted.	Correction noted.	7.6.1
Edward Henry	OR	EH-037		1	Internal Referencing		In the paragraph below Table 7-3 in the second sentence of that paragraph it states, " ... Technical Memorandum (I'M) "Estimate of Future Friant Division Supplies For Use in Groundwater Sustainability Plans," Friant Water Authority, December 2018, included as an appendix to the Basin Setting report ... ". ***To facilitate easier location of this Technical Memorandum (TM), it should be noted or referenced that this document is in Appendix D.*** Friant Water Authority Future Water Supply Study, of Section 2 Appendices- 2A Kaweah Subbasin Basin Setting Components. At the MKGSA website the Basin Setting Components document, due to its MB size, is split-Pages 1- 200 (23.2MB) and Pages 200-373 (20.4MB). The Friant document, referenced, above is in the second half, Pages 200-373, and is the very last document listed.	Comment self-explanatory [Page 7-51]	Basin Setting report to be referenced as Appendix 2A.	7.6.1
Edward Henry	OR	EH-038		1	Annual Reporting- Typo		In the first paragraph note that September only has 30 days. " ... which will be WY 2019 (October 1, 2018 to September 31, 2019) ... "	Comment self-explanatory [Page 8-1, 8. DWR Reporting, 8.1 Annual Reporting Summary]	Correction noted.	8.1
Edward Henry	WB	EH-029	MCR-20	1	Water Budget/Water Accounting Framework		In the first sentence of the first paragraph it states, " ... As identified in GSP Section 6.1, the MK GSA 's water budget shortfall is estimated to be fairly negligible .. ". ***After "fairly negligible" consider inserting "by about -13,000 AF. .. "*** so as to read, " ... As identified in GSP Section 6.1, the MKGSA 's water budget shortfall is estimated to be fairly negligible by about -13, 000 AF. ... ". Then in the second sentence of the same paragraph ***after the word " ... surplus ... " consider inserting "at around 38,000 AF"*** so as to read, " ... a surplus at around 38,000 AF is in fact inferred based on preliminary water accounting framework ... " By inserting those figures/numbers in those two sentences would give the reader more clarity regarding the actual numbers, and would spare [the reader] the need and time to refer back to Section 6.1 in order to verify those numbers-just makes for an easier read. ***In the third sentence of that same paragraph there is a major typo reference/category-water budget versus water accounting framework.*** It states in part, " ... hydrogeologic evaluations will continue to determine the reason for the differences between the water budget surplus and the conditions of decline..". That's incorrect as it's not the " ...water budget surplus ... " which in fact has a deficit by about -13,000 AF but rather it's the " ... water accounting framework ... " that has a 38,000 AF surplus. With the correction that portion of the sentence should now read, hydrogeologic evaluations will continue to determine the reason for the differences between the water accounting framework surplus and the conditions of decline..".	Suggested edits to water accounting framework descriptions and related figures [Page 6-4, 6. Water Supply Accounting, 6.3 Water Accounting Framework Allocation]:	Clarity to be added to better distinguish between hydrogeologic water budget and water accounting framework budget.	6.2
Edward Henry	WB	EH-034	MCR-20	1	Water Budget/Accounting Framework		In the first sentence of the first paragraph on Page 7-46 (below Figure 7-5) it states, " ... coupled with this GSA 's assigned share of the Subbasin water budget as articulated in Section 6 of this Plan ... ". ***Isn't it the water accounting framework which present in Section 6?*** Instead of referring to the "water budget" shouldn't replacing the term water budget with the term water accounting framework be more correct/accurate as it is articulated on Page 6-3 in Section 6 of this Plan, in Table 6-2 and Table 6-3.	Suggested edits to water accounting framework descriptions and related figures [Page 6-4, 6. Water Supply Accounting, 6.3 Water Accounting Framework Allocation]:	Clarity to be added to better distinguish between hydrogeologic water budget and water accounting framework budget.	6.2
Kings County Water District	AL	KC-004		2	Extraction across Subbasin Boundary		The District did not find any information or estimate of groundwater pumping in the MK GSA that is being used outside of the MK GSA area by landowners that have ranches that cross GSA or Subbasin boundaries.	Lack of data re groundwater exports out of Subbasin.	Add a bullet in data gap list explaining that this needs to be further studied and quantified during the implementation period.	Section 2.2 - data gaps
Kings County Water District	GS	KC-014		2	Undesirable Results- Groundwater Storage		The District would view that reduced groundwater storage also impacts beneficial users by reducing the amount of supply potentially available during a drought (when very little surface water is available for existing uses). This section does not seem to address this potential effect. Please consider revising.	Sec. 3.2.3.2 does not sufficiently discuss detrimental impacts of reductions in groundwater storage.	Add to last sentance..."such as a reduction in supply for areas not served by a surface water system."	3.2.3.2
Kings County Water District	HM	KC-006		2	Hydrogeologic Modeling		There is a listing of how the Sustainability Goal will be achieved, which includes this statement " Application of the Kaweah Subbasin Hydrologic Model (KSHM) - incorporating the- initial selection of projects and management actions by the Subbasin GSAs - and its simulation output is summarized in the Subbasin Coordination Agreement to help explain how the sustainability goal is to be achieved within 20 years of GSP implementation." The District views that the referenced simulation is only an indication of what may result if certain actions are taken. Please consider revising.	Empahsize that groundwater model simulation results are constrained to only depict assumed projects & mgt actions.	GW model and monitoring network data will both be used to ascertain achievement of the SG.	3.1
Leadership Counsel for Justice and Accountability	DC	LC-002	MCR-21	3	Disadvantaged Communities	§ 10723.2	Mid Kaweah GSA must prioritize drinking water as an essential pillar of the proposed groundwater sustainability plan. The Draft GSP will cause significant, unreasonable and disparate impacts on protected groups as a result of the sustainability goals that it has set, and has not committed to a concrete plan to prevent or mitigate those impacts. Under SGMA, the GSA is tasked with managing groundwater in a way that does not cause "significant and unreasonable impacts" to the beneficial uses and users of groundwater in the subbasin. The GSA's activities cannot avoid impacts only on certain types of beneficial users; under SGMA it must "consider the interests of" an enumerated list of all types of beneficial users, including domestic well users and disadvantaged communities on domestic wells and community water systems.1 1 Water Code § 10723.2. Furthermore, state law provides that no person shall, on the basis of race, national origin, ethnic group identification, and other protected classes, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state.2 2 Gov. Code § 11135 ["No person in the State of California shall, on the basis of sex, race, color, religion, ancestry, national origin, ethnic group identification, age, mental disability, physical disability, medical condition, genetic information, marital status, or sexual orientation, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state or by any state agency, is funded directly by the state, or receives any financial assistance from the state."]; Gov. Code § 65008 [Any discriminatory action taken "pursuant to this title by any city, county, city and county, or other local governmental agency in this state is null and void if it denies to any individual or group of individuals the enjoyment of residence, land ownership, tenancy, or any other land use in this state…"]; Government Code §§ 12955, subd. (l) [unlawful to discriminate through public or private land use practices, decisions or authorizations]. In addition, the state's Fair Employment and Housing Act guarantees all Californians the right to hold and enjoy housing without discrimination based on race, color, or national origin.3 3 Gov. Code § 12900 et seq. Lastly, the Department of Water Resources is required to consider the Human Right to Water in its evaluation of the GSA's proposed Groundwater Sustainability Plan, so the drinking water impacts of the GSP are of utmost importance in its approval.4 4 Water Code § 106.3. Small disadvantaged communities of color within the San Joaquin Valley are disproportionately impacted by unsustainable groundwater use, falling groundwater tables, dry drinking water wells, subsidence, and water quality degradation.5 5 Feinstein et al., "Drought and Equity in California" (January 2019); Balazs et al., "Social Disparities in Nitrate Contaminated Drinking Water in California's San Joaquin Valley," Environmental Health Perspectives, 19:9 (September 2011); Balazs et al., "Environmental Justice Implications of Arsenic Contamination in California's San Joaquin Valley," Environmental Health Perspectives, 11:84 (November 2012); Flegel et al., "California Unincorporated: Mapping Disadvantaged Communities in the San Joaquin Valley" (2013). As described in more detail below, and analyzed in the attached Focused Technical Review, domestic well users are de minimis pumpers in the GSA area, but the policies proposed in the Draft GSP for managing groundwater levels and groundwater quality will likely fully or partially dewater approximately 86% of domestic wells,6 6 Focused Technical Review, p. 4. creating a disproportionate impact on domestic well users. Water quality will not be monitored in proximity to private domestic wells, since drinking water contaminants will only be tested for compliance where more than 50% of the pumping around a representative monitoring well is for drinking water purposes. Furthermore, the GSA has proposed a potential program to assist domestic well users and small systems with addressing these impacts, but the program is not concrete or detailed and the GSA board has not committed to implementing the program. The negative impacts discussed in this letter, which will be allowed by the Draft GSP and may not be addressed through an effective drinking water protection program, will likely be disproportionately felt by low income communities of color, and are thus discriminatory on the basis of race, color, ancestry, and national origin. In order to prevent disparate impacts, the Mid Kaweah GSA must reassess the GSP's potential disparate impacts and include robust and proactive policies, projects, and management actions to protect vulnerable disadvantaged communities and the projected 85% of domestic wells from disparate impacts.7 7 Focused Technical Review, p. 2. The sections below provide recommendations on some ways that the GSA could do so.	The GSP does not address disparate impacts on DACs, and proposed assistance pgm is insufficient and indicates no commitment for implementation.	Small public water system locaitons have been added to all maps showing representative monitoring. Additional wells have been added to the representative water quality monitoring network to be improve monitoring in or adjacent to small water systems. Assistence program to small system and domestical well owners has been strengthen based on this and similar comments.	Sections 4, 5, and 7
Richard Garcia	IS	RG-001	MCR-16	1	Interconnected Surface Waters/Waterways		In my opinion the current M-KGSA Groundwater Sustainability Plan is an incomplete document that fails to monitor and protect the basin's natural streams and waterways. Throughout the plan ***statements are made minimizing the importance of protecting interconnected waterways*** that support and feed the underground aquifers we are tasked to sustain. The Kaweah River, Saint Johns River and Visalia's many beautiful creeks are all interconnected parts a working delta that deserver's protection and better management. Below is an example of the dismissive language used repeatedly throughout the plan: "Water bodies, primarily stream channels, which become temporally disconnected throughout the year from the underlying water table may experience the disappearance of adjacent vegetative habitat which may be considered as a beneficial use of groundwater. Such occurrences are generally restricted to the upper reaches of applicable channels in the forebay region of the aquifer system near the Sierra foothills. The consensus among Subbasin GSAs and stakeholders is that the intermittent nature of this vegetative habitat is such that its temporary loss does not rise to the level of an undesirable result. As stated previously, the interconnection of surface water and groundwater was disrupted many decades ago in the MKGSA. Therefore, a monitoring network and monitoring is not required for this GSA" Neighboring Kaweah River Sub-Basin GSA's such as the Eastern Kaweah, Greater Kaweah and several Kings County GSAs are also serviced by flows from the Tule and Kings Rivers. If a solution is to be found, neighboring intra-basin GSAs must cooperate and coordinate with each other to monitor and protect these shared waterways if sustainability plans are to succeed. A comprehensive Groundwater Sustainability Plan must consider its impact on our rivers, creeks, canals and ditches. If they are not valued and protected, what is to keep avaricious agencies from proposing upstream pipeline projects to curtail seepage and "save" water for downstream surface water customers at the expense of the entire basin's water table?	GSP fails to give due consideration to importance of surface water resources and flow system as they relate to groundwater [3.2.1.5 Causes leading to Undesirable Results Pg. 3-4], [3.2.2.5 Criteria to Define Undesirable Results Pg. 3-7], [3.2.3.5 Potential Effects on Beneficial Uses and Users Pg. 3-9], [4.8 Existing Monitoring Networks and Programs Pg. 4-14], [5.3.5 Minimum Thresholds Pg. 5-17], [5.4.5 Interconnected Surface Water Measurable Objectives Pg. 5-23]	Sustainability Goal to be enhanced to reflect importance of river, creeks and unlined channels for GW recharge; applicable recharge projects to make mention of environmental benefits.	3.1, various 7.3 sub-sections
Self-Help Enterprises	DC	SH-001	MCR-17	2	Well Inventory- Domestic/Public		In order to develop a GSP that addresses the needs of all beneficial users, it is critical that the location and groundwater needs of these communities are explicitly addressed early on in the GSP. In order to improve this section, we recommend the following: Include a map indicating the location of public water systems serving SDACs and/or DACs as well as domestic well communities. In order to contextualize the subsequent sections of the GSP, it is critical that the geographic locations of these communities be included. Maps overlaying the location of these communities should also be included in subsequent sections of the GSP, including but not limited to when describing management areas, threshold regions, or potential recharge locations. Include a description of the amount of groundwater that each public water system serving SDACs and DACs is dependent on. In addition to better quantify groundwater usage by each community, include a description of the amount of domestic wells located within the MKGSA and the estimated amount of total groundwater used by domestic well users.	GSP sould include maps and general descriptions of DACs and domestic users within the GSA.	DACS and SDACs are shown on Section 1 maps and additional descriptive inforamtion has also been provided. The locations of small community public water systems have been added to all maps showing representative monitoring in Section 4 and 5 and their proximity to projects shown on Figure 7-1.	

Self-Help Enterprises	DC	SH-007	MCR-13	2	Groundwater Levels/Disadvantaged Communities		Changes in groundwater elevation can result in significant impacts to vulnerable communities, including: increased energy costs associated with additional lift pump costs; costs associated with cleaning of the well screen; cost of lowering well pumps; costs of drilling deeper wells; complete dewatering of wells; movement of contaminant plumes; and the financial, emotional, and physical costs associated with having to rely on bottled water. This section can be improved by including a description of the groundwater level conditions in and around S/DACs and by showing whether changing groundwater levels in these communities have led to dry wells or a decrease in water production. SHE recommends the following changes: Include information of the groundwater conditions and trends that are specific to the MKGSA area from Appendix 2A. Identify communities burdened by or susceptible to changes in groundwater levels. S/DACs and domestic well owners are extremely vulnerable to changes in groundwater levels. Therefore, it is imperative that the GSP properly identify vulnerable communities that have a higher risk of being affected by changes in groundwater levels to understand: (1) where drinking water wells that are more vulnerable to groundwater level changes are located, and (2) whether changes in groundwater levels may be exacerbated in specific areas by pumping volume or location, conjunctive management or other forms of active management as part of GSP implementation. Based on the Focused Technical Analysis and extensive work with S/DACs, we believe that the following communities are susceptible to changes in groundwater levels with the risk of having their water access impaired: -Okieville-Highland Acres: The community of Okieville-Highland Acres consists of approximately 100 homes located in Tulare County, five miles west of the City of Tulare. An unknown number of private wells which serve the remaining 20 homes not connected to the recently constructed water system (based on 3.76 people per household4, the population is assumed to be 76) are susceptible to changes in groundwater levels and at risk of having their water access impacted. The depth of these wells are unknown, but typical domestic wells in the area are drilled to a depth of 130 to 225 feet. More recent domestic wells have been drilled to a depth of 360 feet in a preventive effort to declining groundwater levels. -Waukena: A severely disadvantaged private well community with a population of 175 residents. Private well communities face unique challenges and are more susceptible than most community water systems to changes in groundwater conditions, drought impacts, and water quality concerns. This is primarily due to the shallow nature of most private wells. -High density of domestic wells northwest of the City of Tulare: Similar to other private well communities, families relying on domestic wells face unique challenges and are more susceptible than most community water systems to changes in groundwater conditions, drought impacts, and water quality concerns. This is primarily due to the shallow nature of most private wells. -Water systems serving Waukena Elementary School, Buena Vista School, Palo Verde School, Liberty School, Sycamore Valley Academy, and Oak Valley School. Include a description of the impacts experienced during the 2012-2016 drought. Include a description of the successes and challenges experienced by local agencies and stakeholders when addressing impacts of the last drought, including: number of wells that were dewatered; number of households utilizing the interim household water tank program; local cost of emergency drinking water services; amount of grants/loan programs developed and utilized for replacement wells; and an estimated number of homes currently without a sustainable water source. A good understanding of what happened, including what programs and strategies worked well in effectively addressing impacts to drinking water and what strategies could be improved, can aid the MKGSA with the development of management actions that adequately prepares the GSA to prevent and mitigate potential impacts of future droughts. This planning is important for wells that supply drinking water to vulnerable populations that have limited capacity and resources to respond to extreme weather conditions. Based on SHE extensive work with S/DACs in providing water supply emergency assistance, we recommend adding the following information: -Drought conditions between Spring 2012 and Spring 2016 lowered the groundwater table, significantly impacting water access for domestic well users. Households reported water supply shortages northwest of the City of Tulare and in Okieville/ Highland Acres, a severely disadvantaged community located 5 miles west of the City of Tulare5. During the drought, water levels in Okieville declined from 102 feet below ground surface to 171 feet, a drop of almost 70 feet. A survey of dry wells indicated that 17 wells serving 27 homes went dry. Interim water tanks were installed on 13 properties as a short-term solution while a permanent solution was pursued. Households that met income requirements received bottled water deliveries paired with the water tank program. In 2016, through a cooperative multi-agency effort involving the California State Water Resources Control Board, California Department of Water Resources, and the United States Department of Agriculture, emergency drought relief funding was identified for the construction of a new water system, which included drilling a well, constructing the distribution system including meters. The community secured $2,081,000 for the construction of the water system. Phase One of the project was completed in the summer of 2019; Phase Two includes construction of a second production well. Include a groundwater surface water elevation map that includes location of vulnerable communities. It is critical that MKGSA provide maps overlaid with location of DACs, SDACs, domestic wells, public water systems, and any other beneficial users to allow the reader to evaluate how groundwater issues correlate with drinking water supply areas. Specify well depth information by use type . We recommend including the minimum, maximum, and average well depth by well type (agricultural, domestic, municipal, etc).	Elaborate more on the impacts of declining water levels on DACs and domestic well communities.	Same comment as above, DACS and SDACs are shown on Section 1 maps and additional descriptive inforamtion has also been provided. The locations of small community public water systems have been added to all maps showing representative monitoring in Section 4 and 5 and their proximity to projects shown on Figure 7-1.	Sections 4, 5, and 7
Self-Help Enterprises	WQ	SH-012	MCR-7	2	Sustainability Goal/Water Quality		The Kaweah Subbasin sustainability goal draft included in the draft GSP focuses on protecting groundwater for industry uses, which does not satisfy SGMA's intention, and does not reflect the collaborative stakeholder-driven process that took place over the course of several MKGSA Advisory Committee and Kaweah Subbasin Management Team meetings. Beginning in November 2018 and continuing over the course of several meetings, the MK Advisory Committee spent a great deal of time discussing what should and should not be included in the Sustainability Goal statement. While perspectives were varied, there was general support among committee members to set a Sustainability Goal that includes a protective stance toward groundwater quality. SHE would like to see more proactive steps taken to improve groundwater quality and tools necessary. This needs to be clearly stated in the language in the MKGSA final draft. Including human consumption in the language will make the statement stronger and demonstrate to residents they their water needs are a priority. Water quality is another important component to strengthening the Sustainability Goal. This will help the GSP meet SGMA standards. SGMA further requires a transparent and inclusive process; therefore it is critical that all GSAs within the subbasin respect guidance and recommendations previously provided by various stakeholders. Revising the sustainability goal without proper explanation or discussion with the public is not appropriate nor is it in accordance with SGMA. Additionally, upon reviewing the draft GSP, community participants at a SHE workshop in Okieville brought attention to the lack of mentioning the need for drinking water in the proposed GSP's Sustainability Goal. At the workshop, participants were provided information about SGMA, their local GSA and presented general information about the draft GSP. Participants were asked to share their vision for sustainability and provide recommendations for what should be included in the Subbasin's sustainability goal. Participants primary question if agricultural enterprises should be prioritized over human consumption. Other feedback provided at the workshop included the importance of ensuring preserving drinking water supplies and addressing groundwater quality. Based on participants' feedback and SHE involvement at several MKGSA Advisory Committee meetings and Kaweah Subbasin Management Team meetings where sustainability goal for Kaweah were discussed, SHE recommends considering the revision of the current Sustainability Goal in order to fully integrate stakeholders' vision for groundwater management. We recommend the following: Adopt the sustainability goal that was previously and extensively discussed during public meetings. The sustainability goal should include language that demonstrates MKGSA's intent to support the protection of the human right to water by "preserv[ing] the viability of cities and existing agricultural enterprises as well as the viability of school districts, smaller communities, and households relying on shallow domestic wells ". As stated by our organizations during several meetings and in written comments, Kaweah Subbasin GSAs should strive for the viability of unincorporated communities and schools, both now as well into the future. Add a clear statement of the efforts the Agency plans to take to address groundwater quality. From our understanding and based on SGMA's inclusion of UR No. 4, it is clear that water quality degradation must be addressed in a GSP. As DWR will consider the "human right to water" policy when implementing these regulations, we recommend for a clearer statement of how the GSA plans to include and address groundwater quality issues in the area. 12 Quote from draft Kaweah Subbasin sustainability goal previously developed.	Replace sustainability goal with original version promolgulated by MKGSA's Adv. Committee.	Original SG to be revisited with input from other Subbasin GSAs.	3.1
The Nature Conservancy	IS	NC-013	MCR-7	2	Sustainability Goal- Interconnected Surface Waters/Groundwater Dependent Ecosystems		"The broadly stated sustainability goal for the Kaweah Subbasin as agreed to by the three GSAs therein is, for each GSA to manage groundwater resources to preserve the quality of life through maintaining the viability of existing enterprises of the region, both agricultural and urban." There is no mention of protection of ISWs or GDEs, and no indication that environmental stakeholders were consulted. Please expand the goal to include protection of GDEs, ISWs, and critical habitats.	Subbasin Sustainability Goal makes no mention of GDEs nor ISWs	NA	3.1
Tulare County Resource Management Agency	GP	RM-007		1	Well Permitting		"The county is revising their well permit application based on GSA input. The proposed revised application is provided on the following pages." For clarification purposes, this section could clearly delineate what revisions to the well permitting application are being proposed.	Comment self-explanatory [Page 1-17]:	Text to be added re County/GSA colaboration re revised well permits and changes pertaining to GSA needs.	1.4.4
Tulare County Resource Management Agency	WB	RM-014	MCR-19	1	Water Budget		"Comparing these resulting groundwater inflow assignments to MKGSA to annual groundwater pumping for the same current period (1997-2017), as identified in Table 6-3, results in an imputed water balance surplus for MKGSA of about 38,000 AF on an average basis. Yet, as acknowledged in Section 2 of this Plan, MKGSA, like the balance of the Subbasin, experiences a historical decline in groundwater levels and attendant depletion of groundwater in storage within its jurisdictional region." This might be a good place to describe the imputed water balance in greater detail to describe the difference from the previous budget.	Provide clarity re water accounting framework budget [Page 6-3]	Clarity to be added to better distinguish between hydrogeologic water budget and water accounting framework budget.	6.2
Various Non-Profits	MA	NP-027	MCR-12	2	Management Areas- Groundwater-Dependent Ecosystems		The GSP does not identify that any of the Management Areas are specifically defined to manage GDEs or DACs.	Management Areas not established with groundwater-dependent ecosystems or DACs in mind.	Add bullet point explaing that the 2 citieis don't have DACs, The TID management area does have some DACS, so their needs will be reflected in the actions implemented for that MA. Tulare may be a DAC (double check) if so, their needs will reflected in the PMAs for that MA.	Section 2.4
Various Non-Profits	WB	NP-020		2	Water Budget- Environmental		The GSP includes the projected agricultural demand but does not include a demand associated with native vegetation and/or wetlands.	Non-ag vegetative water demand assumptions not adequately explained.	Based on limited data and science available, we assumed it would stay the same	Section 2 and Appendix 2a
Various Non-Profits	DC	NP-013		2	Monitoring Network- Disadvantaged Communities		The GSP does not include the identified DACs in the proposed monitoring network maps.	Comment self-explanatory	Same comment as above, DACS and SDACs are shown on Section 1 maps and additional descriptive inforamtion has also been provided. The locations of small community public water systems have been added to all maps showing representative monitoring in Section 4 and 5 and their proximity to projects shown on Figure 7-1.	Sections 4, 5, and 7
Various Non-Profits	DC	NP-043	MCR-14	2	Domestic Wells/Small Water Systems Assistance Program		An assistance program for small water systems and domestic wells is described, but does not include an assessment of costs or a funding mechanism or clear plan of implementation. This program is described because the acknowledged impacts the proposed water level MTs will have on these beneficial users. Such a program needs to be robust and proactive, rather than reactive, so that clean and safe drinking water is available to these users without interruption as water levels decline. It is critical that a funding mechanism be identified and implemented to ensure that this program is successful.	Comment self-explanatory	We acknowledge the importance of a clear plan and associated costs and this activitiy will be completed during early during the implementation period as approved by the MKGSA Board.	

Various Non-Profits	GL	NP-036	MCR-13	2	Minimum Thresholds- Water Levels		The approach of setting MOs and MTs based on a continued projected declining water level trend results in MOs and MTs that are significantly lower than current water levels, and those experienced during the drought. The MTs in some areas are nearly 200 feet below current water levels. For example, the MT for well KSB-1071, located near the community of Okieville, is over 170 feet below current groundwater levels and the MT at well KSB-1628, located in north Tulare, is over 190 feet below current groundwater levels. The GSP should provide maps and information clearly identifying the expected water level declines to both the MOs and MTs, and assess the effects it will have on specific areas and communities.	Elaborate on declining water levels as a result of chosen MOs and MTs on specific areas within GSA.	It is incorrect to claim that the MKGSA in partnership witht the other two GSAs in the basin have not considered impacts to other domestic wells. The focus of Appendix 5A and a series of advisory committee meetings during the development of the GSP were dovoted to this topic and it should be noted that althought the environmental justice community were represented at the table and in the audience and after repeated requests, were not able to provide technical information on small and domestic wells that added to our analysis. We presented our well impact analysis in several meetings. Then, at the very end of the public review period, the environmental justice community provided a technical report focused on the impact of our Thresholds and Objectives on domestic wells using a difference approah and possibly a difference data set than MKGSA had when were preformed the analysis document in the GSP and Appendicies. Furthermore, update request for the technical inforamtion that this study was based on, we were told that the information was still draft and could not be released to use for review. Following the close of the Public Reivew period, we requested a meeting with LCJA and CWC along with the authors of the technical report provided with their comments. We were told that the well impact dataset and tool used to develop their techncial report, were still avaibale for our review. If MKGSA had had the opportunity to undertand the datasets used for theses new well impact analysis or if their analysis and report could have been made available earlier in the GSP process, we would have taken this information under consideraiton in setting thresholds and objectives. We have agreed with the Advisory Committee and MKGSA Board that when the LCJA amd CWC well datasets and tools are available for public review and applicatoin, the MKGSA, will review and consider this information in future update to the GSP. We	5.3.1.3, 5.4.1
Various Non-Profits	PM	NP-045	MCR-11	2	Projects and Management Actions- Multiple Benefit/Environmental		The GSP should also identify if there will be habitat value incorporated into the design of projects and how the recharge ponds will be managed to benefit environmental users.	Discuss any environmental benefits of groundwater recharge projects.	GW recharge projects may provide habitat improvements.	Various 7.3 projects
Westchester Group Investment Management	AL	WG-001		2	On-Farm Recharge- Groundwater Allocations		***I do have some clarifying comments regarding the Project and Management Actions in Section 7 of the Plan.*** Specifically, the concept of on-farm recharge covered in Section 7.3.4. My comments are as follows: 1. It would be helpful to understand how on-farm recharge water quantities will be credited and accounted for. Will there be any losses applied, or "leave-behind?" 2.Will individual water user accounts be created to manage the credits? 3.In addition to on-farm recharge, I would like to see some further discussion on private water user/landowner recharge projects such as recharge basins and subsurface recharge system projects. With these projects, the same questions outlined above regarding how recharge will be credited and accounted for would be applicable. ***It would be beneficial to see these items further defined in the Plan*** , but if specifics on such Projects and Management Actions cannot be quantified at this time, I would at least like to see the Plan outline a process of how such projects and actions could be developed post Plan, and prior to implementation.	Inquiry as to rules to govern implementation of on-farm recharge program.	Those specific credits related to on farm GW recharge programs have yet to be determined by the GSP board.	
	PM	NC-022	MCR-11	1	Projects and Management Actions- Multiple Benefit/Interconnected Surface Waters/Groundwater-Dependent Ecosystems		**Please state how ISWs and GDEs will benefit or be protected, or what other environmental benefits will accrue.** Recharge ponds, reservoirs and facilities for managed stormwater recharge can be designed to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. In some cases, such facilities have been incorporated into local HCPs, more fully recognizing the value of the habitat that they provide and the species they support. For projects that will be constructing recharge ponds, **please identify if there will be habitat value incorporated into the design and how the recharge ponds will be managed to benefit environmental users.**	Identify environmental benefits of recharge projects	GDEs and ISWs do not exist in MKGSA. Narrative will be added to relavent projects to empahsize wetland improvements for water fowl.	7.3 (various)
Kings County Water District	WQ	KC-009		2	Undesirable Results- Degraded Water Quality		includes this statement, " Undesirable results associated with water quality degradation can result from pumping localities and rates, as well as other induced effects by implementation of a GSP, such that known migration plumes and contaminant concentrations are threatening production well viability are causes of Undesirable results. " This statement is very confusing. Please revise to clarify.	Comment self-explanatory.	Statement to be revised with input from other Subbasin GSAs.	3.2.1.4
Leadership Counsel for Justice and Accountability	WQ	LC-003	MCR-17	3	Groundwater Quality/Disadvantaged Communities		The SGMA regulations require GSPs to include "[g]roundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and map of the location of known groundwater contamination sites and plumes."8 The Draft GSP does not contain information about groundwater quality issues, or a map of known groundwater contamination sites and plumes. This information is critical to ensuring that beneficial users are not harmed by increased groundwater contamination resulting from the GSA's groundwater management activities. This information is particularly important for domestic well owners and small disadvantaged communities on small community water systems, whose drinking water supply is most vulnerable to groundwater contamination. Without such information, the GSA cannot measure the impact of groundwater contamination, and therefore cannot protect the drinking water needs of these vulnerable groups. To effectively consider the interests of these types of beneficial users, and avoid a disparate impact on protected groups pursuant to state civil rights law, Mid Kaweah GSA must: Include information on groundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and a map of the location of known groundwater contamination sites and plumes. Include adequate information regarding past, current and potential drinking water issues affecting small disadvantaged communities and domestic well users in the GSA area, including drinking water contamination, dry wells, and other drinking water supply and quality issues.	Inadequate assessment of groundwater contaminent conditions and related impacts re drinking water supplies.	Confirm coverage of known plumes	Appendix 2A of 2.2
Leadership Counsel for Justice and Accountability	WQ	LC-004	MCR-18	3	Monitoring Network- Groundwater Quality	23 CCR § 354.34	Pursuant to 23 CCR § 354.34, GSAs must monitor impacts to groundwater for drinking water beneficial users, particularly domestic well users and disadvantaged communities,9 9 Water Code § 10723.2. and must avoid disparate impacts on protected groups pursuant to state law.1010 Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l). The monitoring network as described in the Draft GSP fails to capture drinking water impacts on domestic wells. Representative monitoring wells are the only wells that the GSA will use to measure its compliance with its sustainable management criteria. The Draft GSP establishes two types of representative monitoring wells in the groundwater quality monitoring network: wells that will monitor for only three contaminants of concern that are harmful for agricultural production, and wells that will monitor for ten additional drinking water contaminants. The Draft GSP states that representative monitoring wells will only monitor for agricultural contaminants when over 50% of "pumping" nearby is for agriculture. This means that none of the representative monitoring wells will capture groundwater quality or supply impacts to domestic wells outside of public water systems. It is also unclear whether the water quality monitoring wells will capture impacts to domestic wells across the GSA areas because ***the GSP does not include well construction information for a majority of the water quality representative monitoring wells,*** so the public and DWR cannot evaluate whether the wells are sampling at the depths of the zones used for drinking water purposes by domestic well users and community water systems in the GSA area.1111 Focused Technical Report, p. 6. The GSA mentions that it may conduct domestic well sampling, which could be added into the groundwater quality monitoring network data. This program, if implemented effectively and if enough wells are tested with adequate frequency, could ensure that domestic wells are also being monitored for compliance with minimum thresholds. ***In order to avoid drinking water contamination from groundwater management activities, the GSA should include this program in its Management Actions, and provide a clear timeline and strategy for developing and implementing this program.*** As the attached Focused Technical Report shows, the water quality monitoring network does not cover a large portion in the west of the GSA area, which includes at least 200 domestic wells and several public water systems for DACs and schools.12 12 Focused Technical Report, p. 5. ***The GSP must demonstrate how the monitoring network will be able to monitor for impacts to beneficial users in this area.*** In developing this monitoring network, ***the GSA has not considered the interests of this beneficial user group and is likely to cause a disparate impact on the protected groups dependent on domestic wells.*** The insufficiency of the monitoring network poses a significant threat to the validity of the Plan at large, and therefore must be addressed immediately. The GSA must do the following: Improve groundwater quality monitoring network to include monitoring wells in the western portion of the GSA area, ensuring that impacts to domestic wells and water systems in this area are monitored for compliance with groundwater quality goals. Monitor for compliance with drinking water contaminants across all representative monitoring wells. All representative monitoring wells for groundwater quality must test for all Title 22 contaminants. The GSA must invest in constructing more dedicated monitoring wells and needs to explain how they plan to transition current wells in the monitoring network into dedicated monitoring wells. Include a domestic well sampling program in the GSP's Management Actions, and provide a clear timeline and strategy for developing and implementing this program.	Inadequate description of monitoring pgm to track groundwater quality issues related to drinking water uses.	Add bullet for DAC data gaps in Sec. 2 and potential monitoring for potable water conditions in Sec. 4	2.2, 4.10
Various Non-Profits	IS	NP-033	MCR-9	3	Undesirable Results- Interconnected Surface Waters/Groundwater-Dependent Ecosystems/Recreation		As noted above, an inventory of the vegetation types or habitat types and ranking of the vegetation species as having a high, moderate or low value will provide rational for the statement that "the intermittent nature of this vegetative habitat is such that its temporary loss does not rise to the level of an undesirable result." There appears to be no consideration of undesirable results on land uses that include and consider recreational uses (e.g. fishing/hunting, hiking, boating) and property interests that include and consider privately and publicly protected conservation lands and open spaces, including wildlife refuges, parks and natural preserves. The definition of 'significant and unreasonable' is a qualitative statement that is used to describe when undesirable results would occur in the basin, such that a minimum threshold can be quantified. Potential effects on all beneficial users of groundwater in the basin need to be taken into consideration. According to the California Constitution Article X, §2, water resources in California must be "put to beneficial use to the fullest extent of which they are capable".	Potential effects of undesirable results on habitat-related uses not sufficiently detailed.	GSAs to consider in Sus. Goal statement	3.1
Various Non-Profits	WB	NP-023		2	Water Budget- Domestic/Public/Municipal		The GSP also does not provide specifics on drinking water demands included for large urban water systems, domestic well users, or community water systems in the historical, current or future water budgets. This information should be provided for full transparency of the assumptions, data, and results of the water budgets.	Urban and potable water demand estimates of all magnitudes not fully explained.	We will be bringing in more water budget description information from Appendix 2A.	Sec 2.2
Various Non-Profits	WB	NP-024		2	Phreatophyte Extraction		The GSP should clarify what assumptions and data were used in the water budget to calculate the outflow term from groundwater by phreatophytes.	Phreatophyte groundwater usage not fully explained.	Confirm existing plume discussion in Basin Setting report	Refer to App. 2A
Leadership Counsel for Justice and Accountability	WQ	LC-011	MCR-18	2	Groundwater Quality- Disadvantaged Communities/Domestic	33 30 Water Code § 10721(w)(4); 23 CCR § 354.28(c)(4). 31 Water Code §§ 10727.2(d)(2); 10721(x)(4) 32 Water Code § 10723.2. 33 Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).	SGMA charged GSAs with the responsibility to protect water quality through groundwater management,30 and requires that the GSA consider the interests of all beneficial users including domestic well users and disadvantaged communities.31 ***This Draft GSP fails to incorporate performance measures and management criteria with respect to contaminants that impact human health including those contaminants with established primary drinking water standards, and in doing so, fails to conform with the requirements of SGMA.*** The Draft GSP leaves drinking water users in the subbasin vulnerable to increased drinking water contamination from the GSA's groundwater management activities or from the lack of adequate groundwater management in the subbasin. The GSA has not shown how it has considered the interests of beneficial users including domestic well owners and disadvantaged communities in shaping groundwater quality sustainable management criteria.32 Furthermore, as described in more detail below, the monitoring network for groundwater quality does not monitor or manage groundwater impacts for any domestic wells. The resulting impact from the proposed sustainable management criteria, will likely lead to disparate impacts on protected groups, in conflict with state and federal law.33 30 Water Code § 10721(w)(4); 23 CCR § 354.28(c)(4). 31 Water Code §§ 10727.2(d)(2); 10721(x)(4) 32 Water Code § 10723.2. 33 Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).	Performance measures not identified to adequately protect drinking water; monitoring network inadequate for domestic wells within MKGSA.	Position stmt re GSA not being a water quality regulatory agency charged with remediation.	N/A

Leadership Counsel for Justice and Accountability	WQ	LC-012	MCR-18	2	Minimum Thresholds- Groundwater Quality		GSAs must place groundwater quality minimum thresholds for each monitoring site at the level "that may lead to undesirable results."34 Under the SGMA regulations, the GSA should provide a 34 23 CCR § 354.28. description of "the information and criteria relied upon to establish minimum thresholds," an explanation of how the proposed minimum thresholds will "avoid undesirable results," and "how minimum thresholds may affect the interests of beneficial uses and users of groundwater."35 The GSA must also consider that drinking water use has been recognized as the "highest use of water" by the California legislature,36 and should consult with stakeholders to ensure that the minimum threshold is set is such a way as to guarantee the human right to drinking water to all individuals in the subbasin. The Draft GSP does not protect domestic wells from drinking water contamination resulting from groundwater management activities. The Draft GSP states that the number of contaminants of concern (COC) monitored at each representative monitoring well will vary by the "dominant use" of groundwater around each representative monitoring well, and that the "dominant use" is measured as "more than 50% of the pumping" around the well. Since agricultural pumping will always dominate domestic well pumping, this means that no representative monitoring wells outside of cities and community water systems will monitor for drinking water contaminants. This leaves the vast majority of domestic wells in the GSA area unmonitored and unprotected from groundwater quality impacts. This policy decision has not considered the interests of this beneficial user type, and will cause a disparate impact on protected groups pursuant to state civil rights law. The GSA should instead monitor for drinking water contaminants at all representative monitoring wells. Another concern is that there are only 4 representative monitoring wells detecting contamination from groundwater management activities outside of the cities of Tulare and Visalia.37 This will allow for contamination to occur undetected in these areas, where domestic well users and disadvantaged communities depend on groundwater for their vital drinking water resources. The GSA must immediately increase the number of representative wells in these areas of the GSA in order to avoid a disparate impact on protected groups. Also, the proposes minimum threshold is not sufficient to protect against significant and unreasonable impacts to drinking water, because it does not protect against all primary drinking water contaminants. The GSA only proposes to monitor for compliance with MCLs for six drinking water contaminants of concern "where applicable": arsenic, nitrate, chrome-6, DBCP, 123-TCP, and PCE.38 The GSA does not present a rationale to justify why these six drinking water contaminants were chosen, and why it chose not to monitor for other drinking water contaminants. This Draft GSP allows the GSA to conduct groundwater management in a way that contaminates domestic wells, and allows the GSA to cause increased contamination from other drinking water contaminants. It also allows the GSP to cause increased contamination in other drinking water contaminants known to increase from groundwater management activities, such as uranium.39 As written, the groundwater quality minimum threshold puts all drinking 35 23 CCR § 354.28. 36 Water Code § 106. 37 Draft GSP, p. 4-14. 38 Draft GSP, p. 3-6 39 Smith et al., "Overpumping Leads to California Arsenic Threat," Nature Communications (June 2018) [arsenic discharge from clay correlated with overpumping]; Jurgens et al., "Effects of Groundwater Development on Uranium" (November 2010) [strong correlation between high bicarbonate irrigation and recharge water and leaching of uranium from shallow sediments to groundwater]. water at risk of contamination from drinking water contaminants that are not included in the six contaminants of concern. The impacts of this contamination will be particularly felt by domestic wells, which are most vulnerable to drinking water contamination, and are not going to be monitored for compliance with any drinking water contamination that may result from the GSA's groundwater management activities. The GSA must therefore monitor for compliance with drinking water contaminants in all areas where drinking water wells are present, including domestic wells. The GSA must monitor for compliance with MCLs for all primary drinking water contaminants, hexavalent chromium and PFOSs/PFOAs (both of which are known to cause serious health impacts but do not have MCLs currently), as well as for contaminants that are known to increase due to groundwater pumping and groundwater management activities such as uranium.40 It is unclear when groundwater quality minimum thresholds will be triggered. We know that another GSA in the subbasin requires ten years of data before a minimum threshold for groundwater quality will be triggered. The Mid Kaweah GSP seems to communicate that a minimum threshold at a representative monitoring well will be triggered when a contaminant violates the MCL, and the GSA finds that its groundwater management activities were the cause of the increased contamination, and that the GSA will "coordinate [its] activities such that they do not result in an exceedance of any MCL."41 The GSP must clarify how these minimum thresholds will be triggered, and must require an immediate response to an MCL violation. If the GSA waits ten years to find a minimum threshold violation, that policy will likely result in communities experiencing many years of severe drinking water contamination before the GSA corrects groundwater pumping that is pulling a contaminant plume into their drinking water supply, halts recharge or irrigation activities causing uranium discharges or nitrate flushing, or curbs groundwater pumping that is causing an increase in groundwater contamination (e.g., arsenic discharge from clay).42 The communities most vulnerable to these types of drinking water impacts are domestic well owners and disadvantaged communities, and this policy will likely result in a disparate impact on protected groups under state civil rights law. Therefore the GSA must ensure that a minimum threshold violation will be found when a single test finds an MCL violation, and a correlation is found with the GSA's groundwater management activities. To bring the groundwater quality minimum thresholds into compliance with SGMA and state civil rights law, the GSA must: Monitor for compliance with all established primary drinking water standards, hexavalent chromium, and PFOSs/PFOAs, at all	Clarity needed as to whether a drinking water MCL or AG WQO governs at monitoring wells. Need specificity as to what triggers an undesirable result for water quality.	Position stmt re GSA not being a water quality regulatory agency charged with remediation. GEI will also explore the possibility of expanding the WQ RMN near the small rural cummunity water systems.	N/A
Leadership Counsel for Justice and Accountability	WQ	LC-013	MCR-18	2	Undesirable Results- Groundwater Quality		Undesirable results are the point at which "significant and unreasonable" impacts on beneficial users caused by degraded groundwater quality. The SGMA regulations require GSAs to justify their undesirable results by including the "[p]otential effects on the beneficial uses and users of groundwater."43 GSAs must also describe the "processes and criteria relied upon to define undesirable results."44 The undesirable result cannot have a disparate impact on protected groups pursuant to state civil rights law. The Mid Kaweah GSA has defined a groundwater quality undesirable result as "one-third of all Subbasin designated water quality monitoring sites exhibit a minimum threshold exceedance,and those exceedances are all associated with GSA actions."45 Like the groundwater levels minimum threshold, ***this definition of undesirable results is inadequate*** because significant and unreasonable impacts will occur without triggering an undesirable result. Violating water quality standards in one-third of the minimum thresholds of the entire subbasin's representative monitoring wells would have unreasonably severe impacts on drinking water users. Furthermore, the vast majority of wells the GSA would allow to become contaminated before triggering plan failure would be overwhelmingly upon domestic well users and disadvantaged communities, causing a disparate impact in violation of state law. The GSP states that the GSA discussed these impacts with Advisory Committee members, but it cannot have held an informed discussion because it did not have data on the actual potential impact to beneficial users. In order to avoid these disparate impacts, the GSA must change the undesirable result or define its own local undesirable result to prevent widespread drinking water impacts to protected groups in the GSA area. 43 23 CCR § 354.26. 44 23 CCR § 354.26. 45 Draft GSP, p. 3-6 In order to comply with SGMA and state civil rights law, the GSA must: Define its own local interpretation of the subbasin's undesirable result. Consider the impact of its undesirable impact on all types of beneficial users in the GSA area by evaluating the potential groundwater quality impact to beneficial users. Publish this analysis in the GSP, and show how it was used to define the undesirable results. Ensure that this undesirable result does not cause a disparate impact on protected groups under state civil rights law.	Lack of justification in selecting Subbasin undesirable result for water quality; specificity needed for individual monitoring wells used for drinking water protections.	Position stmt re GSA not being a water quality regulatory agency charged with remediation.	N/A

Appendix 2

2A Kaweah Subbasin Basin Setting Components

2B DWR Guidance Documents

- ***2Ba Hydrogeologic Conceptual Model Best Management Practices***
- ***2Bb Water Budget Best Management Practices***
- ***2Bc Resource Guide Climate Change Data and Guidance***

Appendix 2A Kaweah Subbasin Basin Setting Components

Kaweah Subbasin
Basin Setting Components

Submitted to:
East Kaweah Groundwater Sustainability Agency
Greater Kaweah Groundwater Sustainability Agency
Mid-Kaweah Groundwater Sustainability Agency

Submitted by:
GEI Consultants, Inc. and GSI Water Solutions
December 13, 2019

Prepared by: Chris Petersen and Tim Nicely

Reviewed by: Tim Thompson and Maria Pascoal

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AUTHOR INITIALS:TN, NP, BC, CP
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List of Abbreviations and Acronyms

AB	Assembly Bill
AF	Acre-feet
AF/WY	Acre-feet per Water Year
AFY	Acre-feet per Year
B-E	Bookman-Edmonston
bgs	Below Ground Surface
CalTrans	California Department of Transportation
Cal Water	California Water Service
CCTAG	Climate Change Technical Advisory Group
CIMIS	California Irrigation Management Information System
CVP	Central Valley Project
CRTN	California Real Time Network
CSRC	California Spatial Reference Center
CV-SALTS	Central Valley Salinity Alternatives for Long-term Sustainability
CWSC	U.S. Geological Survey California Water Science Center
DBCP	Dibromochloropropane
DDW	State Water Resources Control Board – Division of Drinking Water
DEM	Digital Elevation Model
DPR	Department of Pesticide Regulations
DTSC	Department of Toxic Substances Control
CDWR	California Department of Water Resources
EC	electrical conductivity
EKGSA	East Kaweah Groundwater Sustainability Agency
ESA	European Space Agency
ET	Evapotranspiration
FWA	Friant Water Authority
GAMA	Groundwater Ambient Monitoring and Assessment Program
GDE	Groundwater Dependent Ecosystem
GIS	Geographic Information System
GKGSA	Greater Kaweah Groundwater Sustainability Agency
GMP	Groundwater Management Plan
gpd	Gallons per Day
gpd/ft^2	Gallons per Day per Foot squared
GPS	Global Positioning System
GSA	Groundwater Sustainability Agency

GSP	Groundwater Sustainability Plan
HCM	Hydrogeologic Conceptual Model
HUC	Hydrologic Unit Code
ILRP	Irrigated Lands Regulatory Program
InSAR	Interferometric Synthetic Aperture Radar
IRWM	Integrated Regional Water Management
JPL	Jet Propulsion Laboratory
KDWCD	Kaweah Delta Water Conservation District
KSJRA	Kaweah & St. Johns River Association
LAS	Lower Aquifer System
LLNL	Lawrence Livermore National Laboratory
LUST	Leaking Underground Storage Tank
M&I	Municipal and Industrial
MCL	Maximum Contaminant Level
MKGSA	Mid-Kaweah Groundwater Sustainability Agency
NASA	National Aeronautics and Space Administration
NDVI	Normalized Difference Vegetation Index
NGS	National Geodetic Survey
NRCS	National Resource Conservation Service
NWIS	U.S. Geological Survey National Weather Information System
PBO	Plate Boundary Observation
PCE	Tetrachloroethylene
POTW	Publicly Owned Treatment Works
ppb	Parts per Billion
ppm	Parts per Million
RWQCB	Regional Water Quality Control Boards
SAGBI	Soil Agricultural Groundwater Banking Index
SAS	Single Aquifer System
SB	Senate Bill
SCE	Southern California Edison
SDWIS	State Drinking Water Information System
SGMA	Sustainable Groundwater Management Act
Sierra Nevada	Sierra Nevada Mountains
SJRRP	San Joaquin River Restoration Program
SMCL	Secondary Maximum Contaminant Level
SNMP	Salt and Nitrate Management Plan

SOPAC	Scripps Orbit and Permanent Array Center
SR	California State Route
Subbasin	Kaweah Subbasin
SWRCB	State Water Resources Control Board
TAF	Trillion acre-feet
TCE	Trichloroethylene
TCP	1,2,3-Trichloropropane
TID	Tulare Irrigation District
UAS	Upper Aquifer System
UAVSAR	Uninhabited Aerial Vehicle Synthetic Aperture Radar
UC Davis	The University of California at Davis
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VIC	Variable Infiltration Capacity
VOC	Volatile Organic Compound
WDR	Waste Discharge Requirement
WRI	Water Resources Investigation
WSIP	Water Storage Investment Program
WWTP	Wastewater Treatment Plant

Chapter 2. Basin Setting (§354.12)

This chapter provides a summary of the physical setting and geologic characteristics of the Kaweah Subbasin (Subbasin) that pertain to its groundwater conditions. Key aspects of this chapter include specific details related to the hydrogeologic conceptual model (HCM); current groundwater conditions and groundwater storage; the water budget including inflow and outflow details; the tools used to quantify the water budget, and, an overview of existing groundwater monitoring programs in the Subbasin.

2.1 Overview of Plan Area

The Kaweah Subbasin, as defined in California's Department of Water Resources (CDWR) Bulletin 118 (2016), lies in the Tulare Lake Hydrologic Region of the San Joaquin Valley Groundwater Basin. The Subbasin is bounded by the Kings River Subbasin to the north, the Tulare Lake Subbasin to the west, the Tule Subbasin to the south, and the Sierra Nevada Mountains (Sierra Nevada) to the east. There are three groundwater sustainability agencies (GSAs) located in the Kaweah Subbasin: East Kaweah GSA (EKGSA), Greater Kaweah GSA (GKGSA), and Mid-Kaweah GSA (MKGSA). The GKGSA and MKGSA are roughly bisected by California State Route 99 (SR 99). The Kaweah and St. Johns Rivers, Cottonwood and Mill Creeks flow from the Sierra Nevada through the northern portion of the EKGSA and GKGSA jurisdictional areas, turning southwest and toward the Tulare Lake Basin. The Yokohl and Lewis Creeks also flow from the Sierra Nevada and appear along the eastern portion of the EKGSA.

The Kaweah Subbasin is mostly located in Tulare County, with western portions of the Subbasin in Kings County. The cities of Visalia and Tulare are located in the MKGSA jurisdictional area. The cities of Exeter, Farmersville, and Woodlake are in the GKGSA jurisdictional area, as well as a portion of the City of Hanford. The City of Lindsay is in the EKGSA jurisdictional area. The land use within the cities located in the Subbasin is classified as urban, while the majority of the Subbasin's acreage is classified as agricultural. This land use is further divided into field crops, grain and hay crops, pasture, or deciduous fruits and nuts.

2.1.1 Topographic Information

The topography of the Kaweah Subbasin area is characterized by a surface of low topographic relief, with variations rarely exceeding 10 feet except in stream channels. Elevations of the Kaweah Subbasin vary from about 800 feet above sea level near the easterly boundary to about 200 feet at the westerly boundary (*Figure 1*). The land generally slopes in a southwesterly direction at about 10 feet per mile, with this slope lessening near the westerly boundary.

2.2 Hydrogeologic Conceptual Model §354.14

The purpose of a Hydrogeologic Conceptual Model (HCM) is to provide an easy to understand qualitative description of the physical characteristics of the regional hydrology; land use; geology; water quality; and principal aquifers and aquitards in the Subbasin. Once developed, an HCM is useful in providing the context to develop water budgets, monitoring networks, and identifying data gaps.

An HCM is neither a numerical groundwater model nor a water budget model. Rather, it is a written and graphical description of the hydrologic and hydrogeologic conditions that establish a foundation for development of a water budget. Refer to *Section 2.5* for information on the Subbasin water budget.

The narrative HCM description provided in this section is accompanied by graphical representations of physical characteristics of the Kaweah Subbasin to aid in the understanding of the geographic setting, regional geology, and basin geometry. This section describes the Subbasin HCM and includes an introduction and geologic context of the Subbasin within the overall Central Valley (CV) and San Joaquin Valley Groundwater Basin areas.

The HCM is primarily based on data compiled from two recent Water Resources Investigations (WRIs) within the Subbasin (Fugro West, 2007; Fugro Consultants, 2016), as well as additional data and analyses. Data include over 5,000 well completion reports for geologic data and water well design, geophysical electric logs and pumping test data from approximately 100 wells throughout the Kaweah Subbasin, as well as monitoring well data collected from DWR, Kaweah Delta Water Conservation District (KDWCD), and other GSA member agencies within the Subbasin.

The three reports cited below represent the key technical references used for this HCM. In addition to these reports, information to support the HCM was also collected from unpublished consultant reports and datasets related to work performed throughout the area, and personal communication with stakeholders and regulators.

Report on Investigation of the Water Resources of Kaweah Delta Water Conservation District (B-E, 1972). An early, comprehensive study was conducted by Bookman-Edmonston (B-E) in the early 1970s, which integrated the conjunctive supply of both the surface and groundwater of the KDWCD. During the 32-year period between water years 1935 and 1966, land use and total consumptive use narrowly varied. The report presents historical elements of several water budget components including streamflow from as early as 1903 and precipitation dating back to 1877.

Water Resources Investigation of the Kaweah Delta Water Conservation District (Fugro West, 2003 [revised 2007]). This WRI was prepared for the KDWCD in 2003 and presented a detailed geologic and hydrogeologic investigation and analysis that evaluated the quantity of groundwater in the KDWCD boundaries. The report included sources and volumes of natural recharge, water budgets, trends in water levels, and estimation of safe yield for the period of water years between 1981 and 1999. The 2003 report was revised in 2007 to account for adjustments to surface water delivery and crop water usage estimates used in the inventory method to determine changes of groundwater in storage. The overall conclusions of the 2007 report were consistent with the original 2003 investigation.

Water Resources Investigation Update, Kaweah Delta Water Conservation District (Fugro Consultants, 2016). The 2016 WRI is an updated investigation that provides technical information regarding groundwater gradients, sources and volumes of natural recharge, the annual changes of the quantity of groundwater produced (based on estimated crop water uses), changes in groundwater storage, and the trends of groundwater levels throughout the study area. This report provided updates to the 2007 WRI including the conversion of calendar years to water years and extension of the analysis to the end of calendar year 2012. Additionally, the improved crop water use results (presented in the 2013 Davids Engineering report) were also incorporated into the study.

This HCM has been written by adhering to the requirements set forth in the California Code of Regulations, Title 23, Division 2, Chapter 1.5, Subchapter 2, Article 5, Subarticle 2 (§354.14).

2.2.1 Regional Setting

The Subbasin lies within the Tulare Lake Hydrologic Region of the Central Valley of California. The Central Valley covers approximately 20,000 square miles and extends from the Cascade Range to the north, the Sierra Nevada to the east, the Tehachapi Mountains to the south, and the Coast Ranges and San Francisco Bay to the west. The Central Valley is a vast agricultural region, drained by the Sacramento and San Joaquin rivers, averaging about 50 miles in width and extending about 400 miles northwest from the Tehachapi Mountains to Redding, CA. Generally, the land surface has low relief and is the result of millions of years of alluvial and fluvial deposition of sediments derived from the tectonic uplift of the surrounding mountain ranges. Most of the valley is near sea level but is higher along the valley margins. The Central Valley is divided into three groundwater basins according to CDWR's Bulletin 118 (2016). The northern one-third of the valley is within the Sacramento River Basin, the central one-third is within the San Joaquin River Basin, and the southern one-third is within the Tulare Lake Basin. The two southernmost basins, San Joaquin River and Tulare Lake, are generally referred to as the San Joaquin Valley region. The Kaweah Subbasin is located within the Tulare Lake Basin. In the vicinity of the Kaweah Subbasin, the Central Valley is approximately 65 miles wide and is bordered on the east by the Sierra Nevada and on the west by the Coast Range (*Figure 2*).

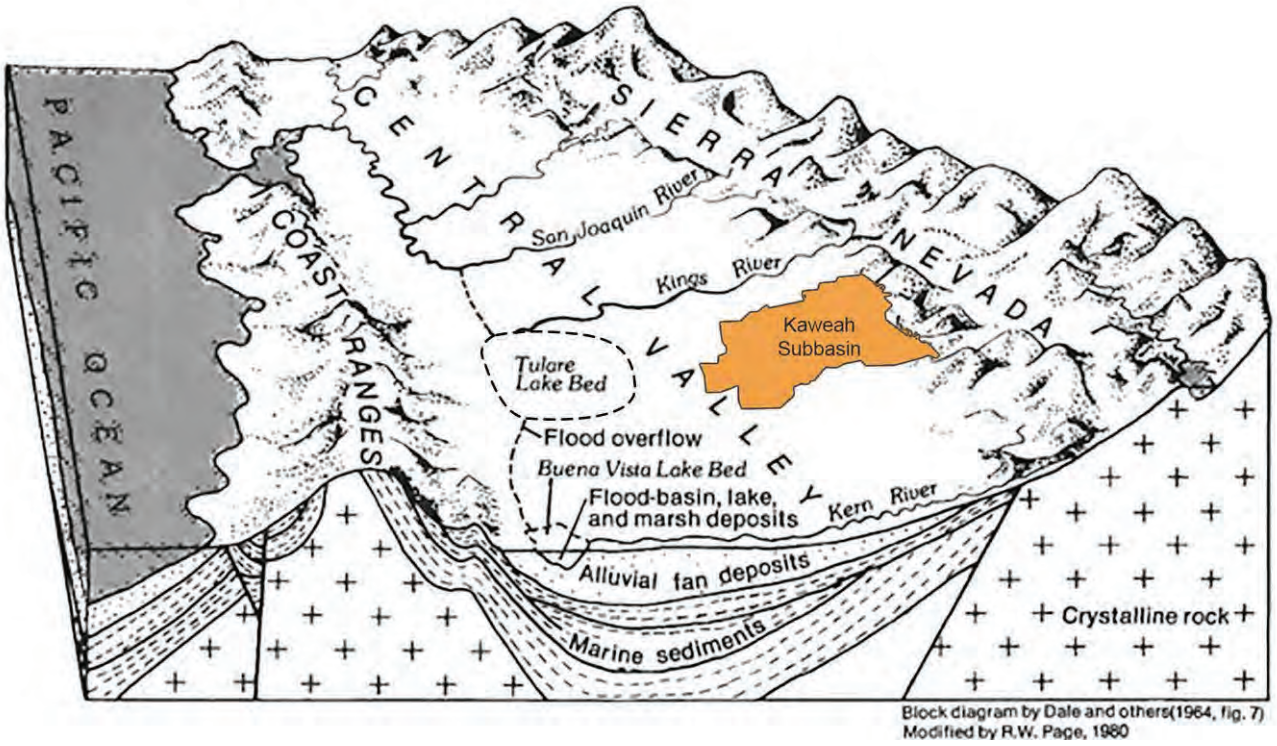

Figure 2: Isometric Block Diagram of Central San Joaquin Valley

The southern end of the Central Valley is a closed feature without external surface drainage. Tributary streams drain to depressions, the largest of which is the Tulare Lake bed located to the west of the Kaweah Subbasin boundary. The Kings, Kaweah, and Tule rivers and, on occasion, the Kern River, naturally discharge into Tulare Lake, but diversions by foothill reservoirs and irrigation activities commonly limit or prevent flows from reaching the lake (Fugro West, 2007).

2.2.1.1 Subbasin Features

The eastern portion of the Subbasin is a large alluvial deposit known as the Kaweah River fan. It is classified as a broad plain formed by a series of large coalescing alluvial deposits created by streams and rivers that drain the western slope of the Sierra Nevada.

The Kaweah River fan is characterized by a surface of low topographic relief, with variations rarely exceeding 10 feet except in stream channels. Elevations of the Kaweah Subbasin vary from about 800 feet above sea level near the easterly boundary to about 200 feet at the westerly boundary. The land generally slopes in a southwesterly direction at about 10 feet per mile, with this slope lessening near the westerly boundary.

The Kaweah River fan is separated from the larger Kings River fan to the north by Cross Creek. To the south, Elk Bayou separates the Kaweah River fan from the Tule River fan. Cottonwood Creek, an intermediate stream between Kings and Kaweah rivers, discharges onto the inter-fan area of these two systems (Davis et al, 1959; Fugro West, 2007).

In the easterly part of the Kaweah Subbasin, within and surrounding the principal rivers, surface soils are sandy and permeable, generally grading to finer materials to the west. In the inter-fan areas

adjacent to Elk Bayou and Cross Creek, soils are alkaline and less fertile than in the remainder of the Kaweah Subbasin (Fugro West, 2007).

2.2.1.2 Regional Geology

This section provides a summary of the regional geologic history and rock types of the Subbasin.

Table 1, adapted from Page, 1986 and Bertoldi et. al., 1991, provides an overview of geologic deposits in the region within the context of regional hydrologic units. The following discussion provides a summary of the major geologic units present in the area, in sequence from oldest to youngest.

Table 1: Generalized Regional Geologic & Hydrologic Units of the San Joaquin Valley

	Generalized Regional Geology (adapted from Page, 1986, table 2 and Bertoldi et. al. 1991).	Generalized Regional Hydrologic Units
Quaternary	Flood basin deposits (0 to 100 ft thick) – Primarily clay, silt, and some sand; including muck, peat, and other organic soils in Delta area. These restrict yield to wells and impede vertical movement of water. River deposits (0 to 100 ft thick) – Primarily gravel, sand, and silt; include minor amounts of clay. Among the more permeable deposits in valley.	Undifferentiated upper water-bearing zone; unconfined to semiconfined.
		Principal confining unit (modified E Clay)
Tertiary and Quaternary	Lacustrine and marsh deposits (up to 3,600± ft thick) – Primarily clay and silt; include some sand. Thickest beneath Tulare Lake bed. Include three widespread clay units – A, C, and modified E clay. Modified E clay includes the Corcoran Clay Member of the Tulare Formation. These impede vertical movement of water. Continental rocks and deposits (15,000± ft thick) – Heterogeneous mix of poorly sorted clay, silt, sand, and gravel; includes some beds of mudstone, claystone, shale, siltstone, and conglomerate. They form the major aquifer system in the valley.	Undifferentiated lower water-bearing zone; semiconfined to confined. Extends to base of freshwater which is variable.
Tertiary	Marine rocks and deposits – Primarily sand, clay, silt, sandstone, shale, mudstone, and siltstone. Locally they yield fresh water to wells, mainly on the southeast side of the valley but also on the west side near Kettleman Hills.	Below the base of freshwater and depth of water wells. In many areas, post-Eocene deposits contain saline water.
Pre-Tertiary	Crystalline basement rocks – Non-water-bearing granitic and metamorphic rocks, except where fractured.	

The oldest rocks in the area are Pre-Tertiary granitic and metamorphic rocks of the surrounding Sierra Nevada. These rocks crop out along the eastern flank of the Valley and form an almost impermeable boundary for groundwater in the Valley. In some areas, fractures and joints permit small yields of water to wells from these rocks (Page, 1986). For instance, in the eastern portion of the Kaweah Subbasin, water wells produce groundwater from fractures within the granitic bedrock.

Near the end of the Late Cretaceous period (approximately 65 million years ago), tectonic movements elevated the Coast Ranges to the west of the Central Valley and created a marine embayment. During the subsequent Tertiary period, sea levels rose and fell, periodically inundating this southern embayment. This resulted in deposition of both continental and marine sediments.

During the Pleistocene period (a period of time defined as from approximately 2.5 million to 12,000 years ago), the sea level fell, and continental sediments from alluvial and fluvial systems were deposited over the Tertiary-age deposits. These marine sediments are, in part, the source for some of the saline water that has migrated into adjacent and overlying continental deposits (Page, 1986). It is the overlying continental deposits and alluvium, however, that make up most of the regional aquifer system. During a portion of this period, brackish and freshwater lakes formed within the Central Valley and resulted in thick deposits of clay, as found throughout the upper Tulare Formation. The Corcoran Clay, specifically, has been mapped over much of the western and southwestern San Joaquin Valley. This clay layer constitutes a considerable impermeable to semipermeable zone that divides shallower upper zone water from lower zone groundwater of the regional aquifer system.

Since the Pleistocene period, the Central Valley has been dominated by sedimentary processes associated with stream channels, lakes, and rivers. Alluvial fans formed on both sides of the valley, especially on the eastern side. Deposition of fine-grained sediment carried by streams has progressively shifted toward the valley axis leaving the coarse-grained materials closer to the valley margins. The coarse-grained sediments in the fans typically are associated with stream channels. On the eastern side of the valley, these stream channels are large, laterally migrating distributary channels. Over time, shifting stream channels have created coalescing fans, forming broad sheets of interfingering, wedge-shaped lenses of gravel, sand, and fine-grained sediments, which make up the shallow continental water-bearing deposits of the regional aquifer system. Page (1986) identified various depositional environments for the continental sediments, including alluvial fan and deltaic conditions, primarily on the eastern side of the valley, and flood-plain, lake, and marsh conditions on the western side. Consequently, coarse-grained deposits are predominant on the eastern side while finer-grained deposits are predominant within the central and western areas of the Subbasin.

2.2.1.3 Kaweah Subbasin Geology

The geology underlying the Kaweah Subbasin is generally consistent with the regional geology as summarized in the preceding section. Details of the local geology, as it affects the occurrence and movement of groundwater, are provided below based on previous investigations in the area (Fugro West, 2007; Fugro Consultants, 2016). The following units are presented in sequence from the youngest (i.e., shallowest) to oldest:

Alluvium (Q), unconsolidated deposits: Non-marine (i.e., continental), water-bearing material comprised of the Tulare Formation and equivalent units. Alluvium is generally mapped in the Subbasin except where the following specific units are provided.

- Flood-basin deposits (Qb): Clay, silt, and some sand on the lateral edges of alluvial fan sediment distal from the Kaweah River.
- Younger alluvium (Qya), oxidized older alluvium (Qoa[o]) and reduced older alluvium (Qoa[r]): Coarse-grained, water-bearing alluvial fan and stream deposits.
- Lacustrine and Marsh Deposits (QTl): Fine-grained sediments representing a lake and marsh phase of equivalent continental and alluvial fan deposition. Includes the Tulare Formation and Corcoran Clay Member.

Continental Deposits – (QTc): Heterogeneous mix of water-bearing poorly sorted clay, silt, sand, and gravel.

Marine Rocks – (Tmc): Non-water-bearing marine sediments including the San Joaquin Formation. Historically, the top contact of Tmc marked the effective base of the Kaweah aquifer system because of the low permeability of Tmc and the general occurrence of brackish to saline water in Tmc (B-E, 1972).

Basement Rocks – (pT): Insignificant water-bearing granitic and metamorphic rocks, except where highly fractured in the eastern portion of the Subbasin.

A correlation table of these geologic units within the context of the hydrogeology of the Subbasin is provided as *Table 1*. *Figure 3* illustrates a location map of the geologic cross sections. These cross sections are included as *Figure 4* through *Figure 13* and demonstrate the distribution of units both laterally and with depth. A description of each geologic unit is presented below.

Unconsolidated Deposits – (Q)

The unconsolidated deposits include Alluvium (Q), younger alluvium (Qya), older alluvium (Qoa), lacustrine and marsh deposits (QTl) which include the Tulare Formation and Corcoran Clay Member, and unconsolidated continental deposits (QTc). The base of the unconsolidated deposits within the Kaweah Subbasin is projected by electric log correlation from the "upper Mya zone" (Tmc) beneath Tulare Lake Bed, eastward to the top of marine rocks (Woodring et al., 1940). The unconsolidated deposits are equivalent to the "continental deposits" from the Sierra Nevada shown on the cross sections by Klausing and Lohman (1964) and to the "unconsolidated deposits" as used by Hilton et al. (1963).

The unconsolidated deposits gradually thicken from along the western front of the Sierra Nevada to a maximum of about 10,000 feet at the western boundary of the Kaweah Subbasin. The unconsolidated deposits are divided into three stratigraphic units: younger alluvium, older alluvium, and lacustrine and continental deposits (Fugro West, 2007).

The younger alluvium interfingers and/or grades laterally into the flood basin deposits and into undifferentiated alluvium. The older alluvium and continental deposits interfinger and/or grade laterally into the lacustrine and marsh deposits or into alluvium. Furthermore, the older alluvium and continental deposits are further subdivided into "oxidized older alluvium" and "reduced older alluvium" based on depositional environment (Fugro West, 2007).

Unconsolidated deposits, which locally crop out east of the Kaweah Subbasin and extend beneath the Valley floor, were eroded from the adjacent mountains, then transported by streams and mudflows, and deposited in lakes, bogs, swamps, or on alluvial fans (Fugro West, 2007).

Oxidized deposits generally represent subaerial deposition, and reduced deposits generally represent subaqueous deposition (Davis et al., 1959). Oxidized deposits are red, yellow, and brown, consist of gravel, sand, silt and clay, and generally have well-developed soil profiles.

Flood-Basin Deposits – Qb

At the lateral edges of fanned sediment distal of the Kaweah River, there are flood-basin deposits that represent the final deposition of fine-grained sediments from periodic flooding. Clay, silt, and some sand were mapped by Page (1986).

Younger Alluvium – Qya

In the eastern portion of the Kaweah Subbasin, Qya is generally above the water table and does not constitute a major water-bearing unit. Younger alluvium consists of gravelly sand, silty sand, silt, and clay deposited along stream channels and laterally away from the channels in the westerly portion of the Kaweah Subbasin. Younger alluvium is relatively thin, reaching a maximum depth below ground surface of approximately 100 feet (Fugro West, 2007).

Oxidized Older Alluvium – Qoa(o)

The oxidized older alluvium may be unconfined in the eastern and central parts of the Subbasin. The Corcoran Clay and other lacustrine and marsh deposits (QTl) in the western part of the Subbasin divide water bearing zones of the Qoa(o) into both unconfined and confined conditions. The oxidized deposits that underlie the younger and older alluvium throughout most of the Subbasin are 200 to 500 feet thick (Croft, 1968). These consist mainly of deeply weathered, reddish brown, calcareous sandy silt and clay which can be readily identified when present. Beds of coarse sand and gravel are rare, but where present, they commonly contain significant silt and clay. The highly oxidized character of the deposits is the result of deep and prolonged weathering. Many of the easily weathered minerals presumably have altered to clay. Therefore, these deposits have low permeability (Fugro West, 2007).

The oxidized older alluvium unconformably overlies the continental deposits. The beds consist of fine to very coarse sand, gravel, silt and clay derived mainly from granitic rocks of the Sierra Nevada. Beneath the channels of the Kaweah, Tule and Kings rivers, electric logs indicate that the beds are very coarse. In the inter-fan areas in the eastern portions of the Kaweah Subbasin, metamorphic rocks and older sedimentary units contributed to the deposits. In those areas, the beds are not as coarse as the beds beneath the Kaweah, Tule, and Kings rivers. Fine grain deposits occur in the channel of Cross Creek (Fugro West, 2007).

East of SR 99, the contact of the older alluvium with the underlying oxidized continental deposits is well defined in electric logs. Structural contours, based on electric-log data, show the altitude above or below sea level of the base of the unit. The older alluvium thickens irregularly from east to west, most likely due to filling gorges cut by the ancient Tule River in the underlying oxidized continental deposits near Porterville. The base of the deposits occurs approximately 195 feet below land surface near Exeter and declines to 430 feet below land surface near Visalia and the unincorporated community of Goshen.

Reduced Older Alluvium – Qoa(r)

These deposits are saturated with unconfined conditions in the eastern part of the Subbasin and confined in the western part of the Subbasin. Reduced deposits are blue, green, or gray, calcareous, and generally are finer grained than oxidized deposits. Commonly, these deposits have a higher organic content than the oxidized deposits. In some cases, the separation between the oxidized and reduced deposits are identified on well logs based on lithologic color, although such delineation is

subjective. The coarsest grained reduced deposits were laid down in a flood plain or deltaic environment bordering lakes and swamps. Due to a high water table in parts of the eastern portion of the Kaweah Subbasin, the sediments have not been exposed to subaerial weathering conditions. The finest grained reduced sediments were mapped as flood basin, lacustrine, and marsh deposits.

The reduced older alluvium consists mainly of fine to coarse sand, silty sand, and clay that were deposited in a flood plain or deltaic environment. It overlies the continental deposits, interfingers with lacustrine and marsh deposits beneath the Tulare Lake Bed, and interfingers with alluvium, undifferentiated, north of the Tulare Lake Bed. Gravel that occurs in the oxidized older alluvium is generally absent. The deposits are sporadically cemented with calcium carbonate. Those descriptions imply, however, that the calcium carbonate is probably less abundant than in the underlying reduced continental deposits (Fugro West, 2007).

Lacustrine and Marsh Deposits – QTl

These fine-grained deposits generally do not provide reliable groundwater storage, but act as confining to semi-confining zones. The lacustrine and marsh deposits of Pliocene and Pleistocene age consist of blue-green or gray gypsiferous silt, clay, and fine sand that underlie the flood basin deposits and conformably overlie the marine rocks of late Pliocene age. In the subsurface beneath parts of Tulare Lake Bed, these beds extend to about 3,000 feet below land surface. Where the equivalent beds crop out in the Kettleman Hills on the west side of the Valley, they are named the Tulare Formation. Woodring et al. (1940) considered the top of the Tulare Formation to be the uppermost deformed bed. Therefore, by this definition, all the deformed unconsolidated deposits would form the Tulare Formation (Fugro West, 2007).

In the subsurface around the margins of the Tulare Lake Bed, lacustrine and marsh deposits form several clay zones that interfinger with more permeable beds of the continental deposits, alluvium, and older alluvium. Diagnostic fossils and stratigraphic relationships to adjacent deposits indicate these clays are principally of lacustrine origin. Clay zones are generally indicated by characteristic curves on electric logs and thereby facilitate some areal correlations between adjacent logs as shown on the hydrogeologic cross sections (***Figure 4*** through ***Figure 13).***

As many as six laterally continuous clay zones have locally been defined in the southern Valley. The most prominent of these clay zones is referred to as the Corcoran Clay. It is a member of the Tulare Formation within the Kaweah Subbasin. Clay deposits are nearly impermeable and do not yield significant water to wells (which is generally of poor water quality; Fugro West, 2007). The Corcoran Clay is the largest confining body in the area and underlies about 1,000 square miles west of SR 99. The beds were deposited in a pre-historic lake that occupied the Valley trough which varied from 10 to 40 miles in width and was more than 200 miles in length (Davis et al., 1959). The first wide-scale correlation of the Corcoran Clay was made by Frink and Kues (1954). The Corcoran Clay extends from Tulare Lake Bed to SR 99 and is vertically bifurcated near Goshen. It is about 75 feet thick on average but is approximately 140 feet thick near Corcoran (a city immediately southwest of the Kaweah Subbasin).

Continental Deposits – QTc

Represent the poorly sorted clay, silt, sand, gravel, claystone, shale, siltstone, and conglomerate that grade into the older alluvium and/or underlie older alluvium. These continental deposits are underlain by the Tertiary marine rocks (Tmc).

Marine Rocks (Non-water bearing) – Tmc

Along the eastern border of the Valley, Tertiary rocks, mainly of marine origin, underlie the unconsolidated deposits and overlap the basement complex. This unit may locally include beds of continental origin in the upper part (Croft, 1968). Outcrops of these marine rocks have not been identified in the Subbasin. The Tertiary marine rocks range in age from Eocene to late Pliocene and consist of consolidated to semi-consolidated sandstone, siltstone, and shale. They have traditionally been locally divided into several formations (Park and Weddle, 1959). Since they generally contain poor quality water (brackish and saline connate or dilute connate water) they are treated as one unit (Fugro West, 2007). Historically, the top of the Tmc is considered the effective base of the Subbasin because of the low permeability of Tmc and the general occurrence of brackish to saline water Tmc (B-E, 1972).

Basement Complex (non-water bearing) – pT

The basement complex of pre-Tertiary age consists of metamorphic and igneous rocks. These rocks occur as resistant inliers in the alluvium and as linear ridges in the foothills in the eastern-most portion of the Kaweah Subbasin. In the subsurface, they slope steeply westward from the Sierra Nevada beneath the deposits of Cretaceous age and younger rocks that compose the Central Valley fill. Escarpments interpreted as buried fault scarps are found along the eastern portion of Subbasin associated with the Rocky Hill fault. West of the escarpments, the slope of the basement complex steepens (Fugro West, 2007).

While the basement complex is considered to be non-water bearing in most areas, it is fractured and present at shallow depths in the eastern portion of the Kaweah Subbasin. Areas of Lindsay, Strathmore, and Ivanhoe and in the intermontane valleys are penetrated by many water wells. Near Farmersville and Exeter, the basement complex forms a broad, gently westward-sloping shelf overlain by 100 to 1,000 feet of unconsolidated deposits (Fugro West, 2007).

2.2.2 Geologic Features that Affect Groundwater Flow in the Kaweah Subbasin

According to CDWR's Bulletin 118 (2003), there are no reported groundwater barriers restricting horizontal flow in and out of the Kaweah Subbasin. However, the Rocky Hill fault zone as shown on ***Figure 3*** and ***Figure 5*** is not believed to affect groundwater flow within of the Subbasin. While, in the eastern portion of the Subbasin, the Rocky Hill fault offsets pre-Eocene deposits and may locally offset older alluvial deposits. These offsets are not known to disrupt groundwater flow. The linear alignment of ridges in this area generally define the fault line. Lithology data from boreholes along Cross Section B (***Figure 5***) suggest that older alluvium may be offset or vary in thickness across the Rocky Hill fault. While previous studies (Fugro West, 2007) suggested that the hydrologic connection of the oxidized alluvial aquifer may be restricted near the Rocky Hill fault, evidence of such restriction has not been noted by groundwater managers..

2.2.3 Lateral Boundaries of the Subbasin

The Kaweah Subbasin (Basin Number 5-022.11[1]) is situated within the Tulare Lake Hydrologic Region of the overall San Joaquin River Basin (Basin Number 5-022). The Kaweah Subbasin has a

[1] As defined in CDWR Bulletin 118 2016

surface area of approximately 441,000 acres (696 square miles) (CDWR, 2003). The lateral boundaries of the Subbasin are defined by various jurisdictional and geographical segments as shown on ***Figure 14***. Crystalline bedrock of the Sierra Nevada foothills defines the eastern boundary of the Subbasin while the other three sides of the Subbasin are politically, but not geologically, bounded by the following Subbasins:

Kings Groundwater Subbasin on the North

Tule Groundwater Subbasin on the South

Tulare Lake Groundwater Subbasin on the West

The political boundaries do not coincide with natural features that affect groundwater flow. Groundwater generally flows from natural recharge at higher elevations from the Sierra Nevada, west through the Subbasin to the Tulare Lake Groundwater Subbasin along the West boundary. Although groundwater flow is generally from northeast to southwest, there are some northern and southern areas where the flow direction is from east to west. These conditions indicate that there is a limited amount of underflow between Kaweah, Kings, and Tule Groundwater Subbasins.

2.2.4 Bottom of the Subbasin

The effective base of the Subbasin corresponds with the base of freshwater. This is generally defined as the elevation below which total dissolved solids are greater than 2,000 milligrams per liter (mg/l) (Bertoldi et al, 1991). The top of the Tmc has historically been used as the effective base of the Kaweah aquifer system because of its low permeability and general occurrence of brackish to saline water (B-E, 1972). However, based on abundant water quality data from wells throughout the area, the current designation of the base of freshwater is established as the base of the Tulare Formation, which is several hundred feet above the top of the Tmc in most places. This designation is based on two factors: (a) recent review of well completion reports for wells drilled within the last decade and (b) the opinions of groundwater managers and hydrogeologists working in this and adjacent basins.

The range of elevations of the effective base of the alluvial aquifer systems varies within the Subbasin from as deep as 1,100 feet below sea level in the western portion of the Subbasin near Corcoran, as indicated in B-E (1972) and Fugro West (2007), to as shallow as 50 feet below sea level east of the Rocky Hill fault (coinciding with the depth to crystalline bedrock) in the eastern portion of the Subbasin. The effective base of the aquifer system as shown on ***Figure 15*** and throughout the geologic cross sections. The depth to crystalline bedrock to the east of Rocky Hill fault marks the eastern effective bottom of the basin (***Figure 4*** through ***Figure 13***).

2.2.5 Principal Aquifers and Aquitards of the Subbasin

Groundwater in the Kaweah Subbasin occurs primarily in an alluvial aquifer system that is present throughout the area. In the central and western parts of the Subbasin, the alluvial aquifer system consists of an upper unconfined zone (Upper Aquifer System [UAS]) above the Corcoran Clay and a lower confined zone (Lower Aquifer System [LAS]) below the Corcoran Clay. In the eastern portions of the Subbasin, the Corcoran Clay is not present, and the aquifer system consists of a single merged aquifer zone (Single Aquifer System [SAS]) that is unconfined or semi-confined. ***Table 2*** provides a summary of the Hydrostratigraphy of the Subbasin.

Table 2: Hydrostratigraphy of Kaweah Subbasin

Relative Depth	Kaweah Subbasin Hydrostratigraphy West	Kaweah Subbasin Hydrostratigraphy East	Equivalent Geology West	Equivalent Geology East	General Characteristics
Shallow	Upper Aquifer System (unconfined to semi-confined) (thickness 200 to 400 ft)	Principal Aquifer A/B (Merged Zone) (semiconfined with depth) (thickness 300 to 1000 ft)	Younger Alluvium – Qya Oxidized Older Alluvium – Qoa(o)		Qoa is the major aquifer of the Subbasin
	Principal confining unit (modified Corcoran "E" Clay) (thickness 60 to 200 ft)		Lacustrine and marsh deposits – QTl: Corcoran Clay Member		
Deep	Lower Aquifer System (confined) (thickness 500 to 1000 ft)		Oxidized Older Alluvium – Qoa(o) Reduced Older Alluvium – Qoa(r) Continental Deposits - QTc		

2.2.5.1 Formation Names

The primary aquifer system in the Subbasin is made up of unconsolidated deposits of Holocene, Pleistocene, and Pliocene age, younger and older alluvium, and continental deposits. The aquifer system is split in the western and central Subbasin by confining fine-grained beds of the Tulare lake bed or the Corcoran Clay member of the Tulare Formation. These confining beds may also include flood-basin and lacustrine deposits. The Corcoran Clay confining bed grades eastward until it effectively thins and becomes either absent or discontinuous. The split aquifer is merged as a single aquifer zone of alluvium and continental deposits made up of coarser material derived from the Sierra Nevada.

Upper Aquifer System (UAS)

The UAS is present above the Corcoran Clay in the western and central portions of the Subbasin. It is made up of the following:

Flood-basin deposits (Qb) consisting of poorly permeable silt, clay, and fine sand with groundwater of poor quality, and

Younger alluvium (Qya) consisting of beds of moderately to highly permeable sand and silty sand, and

Older alluvium (Qoa[o]) which is moderately to highly permeable and is the major productive aquifer horizon in the Subbasin.

Aquitard

The upper aquifer system is underlain by an aquitard (Corcoran Clay or lacustrine and marsh deposits [QTl]) consisting of blue, green, or gray silty clay and fine sand. The Corcoran Clay

separates the upper aquifer from the lower confined aquifer and underlies the western half of the Subbasin at depths ranging from about 200 to 500 feet (Jennings, 2010). In the eastern portion of the Subbasin, where the Corcoran Clay becomes thin, discontinuous or absent, groundwater occurs in a merged Aquifer A/B under unconfined and semiconfined conditions.

The areas between the easterly edge of the Corcoran Clay and the Rocky Hill fault contain groundwater in the merged SAS in both unconfined and semi-confined continental deposits underlying the alluvium. East of the Rocky Hill Fault, the aquifer is considered merged and is semi-confined.

Lower Aquifer System (LAS)

The LAS, present in the western and central part of the Subbasin below the Corcoran Clay, is made up of the older alluvium (Qoa[o] and Qoa[r]) which is moderately to highly permeable. The LAS also includes the underlying continental deposits (QTc) where fresh water occurs; however, the majority of aquifer pumping occurs in the older alluvium. The bottom of the lower aquifer is the base of the Tulare Formation.

Single Aquifer System

In the eastern part of the Subbasin, where the Corcoran Clay thins, is discontinuous, or is absent, the upper and lower aquifers are merged into a single aquifer unit that is semiconfined. The merged zone is made up of younger alluvium (Qya), older alluvium (Qoa[o] and Qoa[r]), and continental deposits (QTc) (see ***Figure 4*** and ***Figure 5***).

2.2.5.2 Physical Characteristics

Hydrogeologic parameters of the aquifers and aquitards in the Kaweah Subbasin include average specific yield values for the upper 200 feet of sediments and numerical values of hydraulic conductivity, which are defined below. For the most part, reliable coefficients of storativity (aquifer storage) were documented in technical studies from controlled pumping tests with observation wells. The majority of these studies were carried out in the KDWCD portion, located in the GKGSA and MKGSA areas, of the Subbasin (Fugro West, 2007).

Specific Yield is defined as the volume of water that will drain by gravity from sediments within an aquifer if the regional water table were lowered. Within the Kaweah Subbasin, specific yield has been used to calculate changes of groundwater in storage for comparison to earlier time periods by the "specific yield method" (Fugro West, 2007; Fugro Consultants, 2016). Specific yield values ranged from about 6.5 percent to as high as 13.7 percent. The average specific yield of the deposits within the 10- to 200-foot-depth range is 9.9 percent, slightly below the Valley-wide average of 10.3 percent, but considerably above the average specific yield of any of the inter-stream storage units (Fugro Consultants, 2016). DWR estimated that the average specific yield for the Subbasin is 10.8 percent (DWR internal data; Davis, 1959). Sand and gravel together make up 25.6 percent of the total thickness, which is slightly below the Valley-wide average of 28 percent. Eighty percent of these coarse-grained deposits are reported as sand, twenty percent as gravel (Fugro West, 2007).

Hydraulic Conductivity is "a measure of the capacity for a rock or soil to transmit water" (Aqtesolv, 2016). Hydraulic conductivity values and storage coefficients for the entire Central Valley were compiled by Bertoldi et al. (1991). Efficiency tests for several hundred wells within the Tule and

Kaweah Subbasins were converted to well-specific capacity data, from which a single horizontal hydraulic conductivity value was assigned to each section (KDWCD, 2012; Fugro West, 2007). A range of hydraulic conductivity values are present, reflecting the broad geographic area of the entire Valley. The broad range of values, which span several orders of magnitude within the Kaweah Subbasin, reflect a heterogeneous mixture of aquifers, aquitards, and aquicludes. The horizontal hydraulic conductivity values range from approximately 1 gallon per day per foot squared (gpd/ft^2) for the confined aquifer west of SR 99 to s high as 1,000 gpd/ft^2 in the semi-confined aquifer in the eastern half part of the Kaweah Subbasin (Fugro West, 2007).

Based upon SCE (Southern California Edison) pump test reports, which provide the "specific capacity" (i.e., the gallons per minute pumped per foot of drawdown) for tested wells, representative values of regional and local hydraulic conductivity were calculated. While these data are dependent on the manner of well drilling and development, age of the well, well design, and a variety of other factors, the results are considered representative for the purposes of this study. The hydraulic properties of the principal aquifers within the Kaweah Subbasin are presented on ***Table 3*** (based on Fugro West, 2007).

Table 3: Aquifer Properties

Kaweah Subbasin Hydrostratigraphy	Associated Deposits	Average Thickness of Saturated Aquifer (feet)	Average Hydraulic Conductivity (gpd/ft^2)
Western Side			
Upper Aquifer	Older alluvial deposits	150	250
Lower Aquifer	Younger continental deposits	150	150
	Older continental deposits	800	70
Corcoran Clay	Corcoran Clay and Lacustrine and Marsh Deposits	80 to 100	<1
Eastern Side			
Single Aquifer	Older alluvium (oxidized)	250	500
	Older alluvium (reduced)	250	250
	Younger continental deposits	150	150
	Older continental deposits	800	70

Source: Modified from Fugro West, 2007

2.2.5.3 Structural Properties that Restrict Groundwater Flow

The Corcoran Clay is the most significant subsurface feature in the Kaweah Subbasin affecting the occurrence and movement of groundwater. The Corcoran Clay is a relatively impervious stratum, the eastern edge of which follows generally a north-south line about two to three miles east of SR 99. The Corcoran Clay dips to the west and usable groundwater is found both above and below this stratum.

While there is significant uncertainty about the completion of most wells in the Subbasin, it is generally suspected that wells located within the Corcoran Clay area are, for the most part, perforated in and pump from the confined aquifer system (Fugro West, 2007). The heterogeneity of aquifer properties in the Subbasin and known presence of several interfingering aquitards in the west part of the Subbasin complicate the separation of water level data representative of the confined or unconfined aquifer systems. Through 1988, annual "pressure" system water level maps (prepared by DWR) suggested that the water levels in the unconfined system and the pressure system differed by no more than 20 feet and were both substantially above the Corcoran Clay. The water level data demonstrates similar water levels between the two aquifer systems, with considerable inter-aquifer groundwater flow occurring between the two systems (via wells with perforations in both systems).

The Rocky Hill Fault disrupts pre-Eocene deposits and may locally penetrate older alluvial deposits. The fault does not offset younger alluvium (based on water level data) and does not appear to constitute a horizontal barrier to groundwater flow (CDWR, 2003; Fugro Consultants, 2007).

2.2.5.4 General Water Quality of Principal Aquifers

The Subbasin aquifer system consists of unconsolidated marine and continental deposits of Pliocene, Pleistocene, and Holocene age. The eastern half of the Subbasin consists of three stratigraphic layers: continental deposits, older alluvium, and younger alluvium (Belitz and Burton, 2012). Continental deposits from the Pliocene and Pleistocene age are poorly permeable. The major aquifer of the Subbasin is the older alluvium. The older and younger alluvium are moderately to highly permeable. The western half of the Subbasin is less permeable, and the groundwater aquifer is confined by the Corcoran Clay layer. The remainder of this section provides a summary of several

key constituents including: arsenic; nitrate; sodium; chloride; uranium1,2,3 – Trichloropropane (TCP); and Tetrachloroethylene (PCE). These constituents are known water quality concerns in the Subbasin.

In the Southeast San Joaquin Valley, arsenic is the constituent which most frequently occurs at concentrations above the drinking water standard (maximum contaminant level [MCL] = 10 ppb) in the primary aquifers (Burton and Belitz, 2012). Arsenic concentrations greater than 5 parts per billion (ppb) are primarily located within the the western part of the Subbasin (***Figure 68***). Wells evaluated in the eastern portion of the Subbasin rarely have arsenic detections. However, wells that do have detections are at concentrations less than 5 ppb. United States Geological Survey (USGS) reports indicate that wells constructed deeper than 250 feet tend to have higher arsenic levels; and these wells tend to be in the western portion of the Subbasin where wells are commonly deeper (***Figure 69***).

Nitrate is commonly detected throughout the Kaweah Subbasin with concentrations commonly higher than 8 parts per million (ppm). Wells in the eastern portion of the Subbasin have shown increasing trends over the past several years (***Figure 70***). Shallow wells have higher nitrate levels than wells deeper than 250 feet, because nitrate is a surface contaminant that primarily impacts shallower groundwater. Generalized water level contour maps were used to determine if changing water levels corresponds with increasing nitrate concentrations (***Figure 72***). Sufficient data were not available to determine if nitrate is migrating into the deeper aquifer. Overall, nitrate detections are prevalent throughout the Subbasin, with highest concentrations in the eastern portion.

A total of 21 contaminated sites have been identified in the Subbasin. There is a large PCE plume located in the city of Visalia shown on ***Figure 76.*** A city-wide investigation, lead by California Department of Toxic Substances Control (DTSC), began in 2007 to determine the responsible party and the extent of the PCE plume. Nine sites are involved in this ongoing investigation (***Figure 77***). Management actions are currently in place through the DTSC agreement with California Water Service (Cal Water) to limit these surface contaminants from spreading further in the aquifer.

Sodium and chloride levels were detected in a small portion of the wells within the Subbasin (***Figure 81***). Sodium concentrations above the Agricultural Water Quality Goal of 69 ppm were detected in 13 wells. Chloride concentrations above the Agricultural Water Quality Goal of 106 ppm were detected in five wells. Without sufficient well construction reports or depth to water level data, it is difficult to determine if there is a correlation between the two. Overall, the common water quality issues for this Subbasin are arsenic, nitrate, TCP, PCE, sodium, uranium, and chloride. More data gathering such as through a monitoring program would be beneficial to gain a better understanding between these correlations.

2.2.5.5 Primary Use of Aquifers

The Kaweah Subbasin covers an area of 441,000 acres and has been highly developed with about 322,000 acres devoted to a variety of irrigated crops and approximately 53,000 acres of urbanized area (USDA, 2018).

At present, about 1,076,400 AF of water (surface and groundwater) per year are delivered for irrigation, municipal, and industrial uses. Water used for irrigated agriculture comprises more than 94 percent of the total water use, or 1,007,400 Acre-feet per year (AFY). Irrigation requirements are met from both surface and groundwater sources, while municipal and industrial supplies are

obtained mostly from groundwater. Likewise, groundwater is the main source of water for small to large animal farms and residential dwellings in unincorporated parts of the Subbasin that are not served by municipal or small community water systems. This includes dairies and the non-agricultural ranchette properties throughout the Subbasin. The public water agencies and districts located within the Subbasin include the following:

City of Woodlake

City of Exeter

City of Tulare

Consolidated Peoples Ditch Company

Ivanhoe Public Utilities District

City of Lindsay

Exeter Irrigation District

Evans Ditch Company

Ivanhoe Irrigation District

Kaweah-Delta Water Conservation District

Kings River Conservation District

Kings County Water District

Lakeside Irrigation Water District

Lindmore Irrigation District

Lindsay-Strathmore Irrigation District

Strathmore Public Utilities District

St. Johns Water District

Tulare Irrigation District

Stone Corral Water District

Lewis Creek Water District

Private water agencies within the Subbasin include the following:

California Water Service within Visalia, Goshen

Goshen Ditch Company

Evans Ditch Company

Modoc Ditch Company

Melga Canal Company

Settlers Ditch Company

Corcoran Irrigation Company

Wutchumna Water Company

West Goshen Mutual Water Company

Longs Canal Company

Hamilton Ditch Company

Sweeney Ditch Company

Mathews Ditch Company

Uphill Ditch Company

Sentinel Butte Water Utilities Company

Farmers Ditch Company

Fleming Ditch Company

Lemon Cove Ditch Company

Oakes Ditch Company

Persian Ditch Company

Tulare Irrigation Company

Elk Bayou Ditch Company

Pratt Mutual Water Company

2.2.6 Geologic Cross Sections

Geologic cross sections depicting the structural geology and hydrologic units of the Subbasin were created based on historical reports and lithologic data from over 5,000 driller's logs and various existing geologic maps (Davis et al., 1957; Croft, 1968; B-E, 1972; Bertoldi et al, 1991; Page, 1986). Cross Sections A through J (***Figure 4*** through ***Figure 13***), provide the following information:

Relative depths and screened intervals of production wells

Lithology

Geophysical log profiles

Topography from the USGS digital elevation model (DEM)

Interpreted elevation of the top of the Corcoran clay surface

Effective base of the alluvial aquifer system

The geologic cross sections were constructed by a professional geologist. The cross sections are presented with uniform vertical exaggeration to more clearly present the subsurface data. The locations of the cross sections are shown on the map in ***Figure 3***.

These cross sections are based on interpretations of Fugro West (2007; ***Figure 4*** through ***Figure 9***) with minor modifications to the elevation of the "Effective Base of Fresh Water System." The original Fugro West cross sections were extended to include the entire Subbasin based on newly acquired well log data. ***Figure 10*** through ***Figure 13*** in the EKGSA portion of the Subbasin are based on published cross sections (USBR, 1949; Davis et. al., 1959, and Croft and Gordon, 1968).

Cross sections demonstrate in the eastern portion of the Subbasin, the Rocky Hill fault disrupts pre-Eocene deposits and may locally penetrate older alluvial deposits. The linearity of the ridges in this area defines the fault line. The Rocky Hill fault does not offset younger alluvium based on water level data (Croft, 1968; Fugro West, 2007). The primary east-west geologic cross sections (***Figure 4*** through ***Figure 6***) indicate a thickening section of unconsolidated deposits to the west across the Subbasin. For the most part, regional folding has little effect on the patterns of groundwater flow within the Subbasin or at the political Subbasin boundary. The relative relationship between the "Effective Base of Fresh Water System" within the Continental Deposits (Qtc) and the marine rocks is evident in many of these cross sections. The several hundred feet between the marine rocks and the "Effective Base of Fresh Water System" is comprised of sedimentary deposits containing saline water.

The cross sections within the EKGSA's area (***Figure 10*** through ***Figure 13***) show the relative depth of the aquifer materials in the area, which are underlain by marine rocks and/or basement complex. These cross sections are relatively short to be presented at similar scales for easy comparison to ***Figure 4*** through ***Figure 9***.

2.2.7 Physical Characteristics

2.2.7.1 Surficial geology

As presented on ***Figure 2***, the rocks that outcrop in the Subbasin include a basement complex of pre-Tertiary age consisting of consolidated metamorphic and igneous rocks to the east and unconsolidated deposits of Holocene, Pliocene, and Pleistocene age throughout the remainder of the Subbasin. Consolidated marine rocks of Pliocene age and older do not crop out in this area but are penetrated by wells in the subsurface (Jennings, 2010; Croft, 1968; Fugro West, 2007).

2.2.7.2 Soil recharge characteristics

Obtaining information on soil recharge characteristics in the Subbasin is important in understanding natural recharge to the groundwater system and for siting locations for artificial recharge projects. The University of California at Davis (UC Davis), in conjunction with the University of California Division of Agriculture and Natural Resources, developed the Soil Agricultural Groundwater

Banking Index (SAGBI). The SAGBI is a composite evaluation of groundwater recharge feasibility on agricultural land (also called Irrigation Field Flooding). The following five parameters are incorporated into the Index:

1. Deep percolation is dependent upon the saturated hydraulic conductivity of the limiting layer.
2. Root zone residence time estimates drainage within the root zone shortly after water application.
3. Topography is scored according to slope classes based on ranges of slope percent.
4. Chemical limitations are quantified using the electrical conductivity (EC) of the soil.
5. Soil surface condition is identified by the soil erosion factor and the sodium adsorption ratio.

Proximity to a water conveyance system is not a factor considered in the SAGBI composite evaluation. Each factor was scored on a range, rather than discretely, and weighted according to significance. Adjustments were then made to reflect soil modification by deep tillage (i.e., shallow hard pan is assumed to have been removed by historic farming activities) to create a modified SAGBI. Ultimately, SAGBI seeks to categorize recharge potential according to risk of crop damage at the recharge site. Usefulness of the index is diminished when evaluating locations for dedicated recharge basins. In these cases, a soil profile illustrating deep percolation potential may prove to be more useful. As is the case with any model, the SAGBI is best applied in conjunction with other available data and on-site evaluation.

Figure 16 illustrates the modified SAGBI for the Subbasin which indicates that a majority of the land within the Subbasin is favorable for recharge. This model assumes that hardpans have been largely removed by previous farming practices. Hardpans are still extensive within the EKGSA, so this model should be considered in conjunction with the unmodified SAGBI. It is locally well known that surface recharge is ineffective in the EKGSA area, but water introduced deep enough into the strata infiltrates easily in those areas identified in the modified SAGBI as "good." Soils in the Subbasin were categorized by the National Resource Conservation Service (NRCS), which indicate that the soils are mostly of fine- to course-loamy in texture. As shown on the soils map in *Figure 18*, the soils along the Lower Kaweah and St. Johns rivers, as well as those along Cottonwood, Yokohl, and Lewis creeks are the coarsest, whereas most of the remainder of the Subbasin is comprised mostly of fine to fine-loamy soil.

The presented data are based on a UC Davis study to identify potential areas favorable for enhanced groundwater recharge projects. Those projects are discussed below.

2.2.7.3 Delineation of recharge areas, potential recharge areas, and discharge areas, including springs, seeps, and wetlands

Natural Recharge Areas

Natural recharge in the Subbasin is primarily derived from seepage from the Kaweah and St. Johns rivers, and intermittent streams. Seepage of water from rivers, streams, irrigation canals, and irrigation water applied in excess of plant and soil-moisture requirements constitute the principal

sources of groundwater recharge to the aquifers. Direct precipitation contributes minor quantities of water to these aquifers (Croft and Gordon, 1968).

Potential recharge areas are presented in ***Figure 16*** as part of the soil map in support of potential future groundwater recharge projects. The data presented are the result of a study focused on the possibilities of using fallow agricultural land as (temporary) percolation basins during periods when excess surface water is available. The UC Davis study developed a methodology to determine and assign an index value to agricultural lands (i.e., SAGBI). The SAGBI analysis incorporates the following five important agricultural factors into the analysis: deep percolation, root zone residence time, topography, chemical limitations (salinity), and soil surface conditions. Notably, the data presented show the unmodified SAGBI data, which do not include areas that would benefit from the deep ripping of soils to a depth of 6 feet.

Potential Areas for Artificial Recharge

Potential artificial recharge areas can be identified using the soil data shown on ***Figure 16*** and ***Figure 18***. These maps provide a regional assessment of recharge potential and can be useful for initial screening. Local permeability, geologic structure, and an overall lack of suitable land limit the recharge potential in many areas of the Subbasin, particularly in the eastern portion (USBR, 1948). The map in ***Figure 16*** shows areas that are categorized as somewhat conducive to successful groundwater recharge projects including areas categorized as: Excellent, Good, Moderately Good and Moderately Poor. The map includes the existing recharge ponds for reference, many of which have been recharging groundwater for several decades. The results of the analysis in the Subbasin show that areas surrounding portions of the Lower Kaweah and St. Johns rivers, as well as portions of the Cottonwood Creek on the east side of the Subbasin are "Excellent" areas for agricultural recharge projects. "Good" and "Moderately Good" are present throughout all three GSAs in the Subbasin.

Existing groundwater recharge basins are locally present throughout the Subbasin for purposes of augmenting natural groundwater recharge. The supply to each recharge basin is variable from year to year. The northeast portion of the Subbasin is most suitable for artificial recharge, and the southwest portion is likewise fairly suitable. However, the northwest and southeast portion of the Subbasin are generally unfavorable, although there are some areas of moderate permeability in each (Provost and Pritchard, 2010).

Discharge Areas

East of McKay Point, the Kaweah River is a gaining stream, meaning that it derives some of its flow from groundwater that seeps upward into the riverbed. There are currently no other known groundwater discharges at ground surface (springs, seeps, etc.) originating in the area. Groundwater level maps will be presented in the Current and Historic Groundwater Conditions chapter of the EKGSA Groundwater Sustainability Plan (GSP). Other groundwater discharges include groundwater pumping and subsurface fluxes across basin boundaries. These topics are addressed in ***Section 2.4***.

Seeps, Springs, and Wetlands

Areas indicated as being wetlands in the National Wetland Inventory are illustrated in ***Figure 17.*** Some areas of freshwater emergent wetlands are present in the eastern margins of the EKGSA,

where small waterways come down from the foothills. Many small freshwater ponds are located within the EKGSA, the largest of which is located northwest of the junction of SR 137 and SR 65.

Areas identified as being potential Groundwater Dependent Ecosystems (GDEs) are presented in *Figure 19*. The information presented originates from data compiled by the Nature Conservancy, which used vegetative cover and historic maps to develop a statewide map showing the locations of potential GDEs. The locations of these potential GDEs and hydrographs for the Subbasin indicate that the vegetation of these areas are dependent surface water flows, rather than shallow groundwater.

2.2.7.4 Surface water bodies

Figure 21 depicts the major surface water features within the Subbasin, such as natural channels, man-made channels (ditches), and lakes.

Natural Channels

The Kaweah River rises in the Sierra Nevada at an elevation of over 12,000 feet and drains a watershed area of about 630 square miles above the foothill line. Terminus Reservoir, located about 3-1/2 miles east of the easterly Subbasin boundary, has a tributary drainage area of about 560 square miles, which produces about 95 percent of the total runoff of the watershed. Seepage from the river contributes to recharge within the Subbasin.

Dry Creek and Yokohl Creek are tributaries entering the Kaweah River below Terminus Reservoir and produce significant quantities of water only during flood periods. Runoff in Kaweah River is largely retained within the Subbasin and only in infrequent years of exceptionally large runoff is there escape to Tulare Lake bed. Since completion of Terminus Dam and Reservoir in 1961, seasonal storage of Kaweah River flows has been provided, which assists in regulation to irrigation demand schedules. Other than maintenance of a minimum pool for recreation, no carryover storage is provided in the reservoir.

At McKay Point, the Kaweah River divides into the St. Johns River and Lower Kaweah River branches. Water is diverted from the St. Johns and Lower Kaweah rivers and distributed through a complex system of natural channels and canals owned or operated by numerous agencies and entitlement holders within the subbasin, all of which have established rights to the use of water from the Kaweah River.

The St. Johns River, from McKay Point, flows northwesterly through the northern part of the Subbasin to a point approximately 2 miles east of SR 99 where it changes course and flows in a southwesterly direction and is joined by Cottonwood Creek. Prior to reaching SR 99 at the confluence of Cottonwood Creek, the St. Johns River becomes Cross Creek. River flows at this point are diverted into Lakeside Ditch for irrigation use by Lakeside Irrigation Water District and Lakeside Ditch Company. Corcoran Irrigation District and other Tulare Lake water users divert flows from Cross Creek into Lakelands Canal No. 2. During periods of flooding, river flows continue in the Cross Creek channel into Tulare Lake bed.

A total of about 180,000 acres can receive irrigation water from the St. Johns River through the facilities of 15 entities. It is estimated that on the average about 142,000 AF/WY was diverted from the St. Johns River between 1981 and 1999.

The principal diversion works from the St. Johns River in downstream order are as follows:

Longs Canal

Ketchum Ditch

Tulare Irrigation District Main Intake Canal

Mathews Ditch

Uphill Ditch

Modoc Ditch

St. Johns Ditch

Goshen Ditch

Lakeside Ditch

Lakelands Canal No. 2

Water is diverted from the Friant-Kern Canal to Tulare Irrigation District (TID) at a large Parshall flume (a flow measurement device) and into the St. Johns River. In addition, there are several riparian users, with the principals being the Fisher & Harrell Ranch in the lower reach of the St. Johns River east of SR 99 and Basile Ranch, west of the highway.

The Lower Kaweah River, below McKay Point, conveys water to a series of distributary channels and canals throughout the central and southerly portions of the Subbasin. Outflow from the Subbasin occurs through Mill Creek to Cross Creek and from Elk Bayou to the Tule River in the southeasterly portion of the Subbasin.

About 126,000 acres can receive irrigation water from the Lower Kaweah River system through the facilities of 10 entities. The principal diversions from the Lower Kaweah River below McKay Point in downstream order are listed below.

Hamilton Ditch

Hanna Ranch

Consolidated Peoples Ditch

Deep Creek

Crocker Cut

TIC Main Intake Canal

Fleming Ditch

Packwood Creek

Oakes Ditch

Evans Ditch

Persian and Watson

A turnout on the Friant-Kern Canal provides for releases directly into the Lower Kaweah River. The Ketchum Ditch, which diverts water from the St. Johns River, discharges into the Lower Kaweah channel.

Man-made canals and ditches

Surface water is delivered from the natural rivers and imported sources through a combination of pipes as well as man-made canals and ditches. Within the East Kaweah GSA, all surface water deliveries are conveyed through piped systems with the single exception of the Wutchumna Ditch, which is the principal water course supplying supplies water to the Ivanhoe Irrigation District. The ditch, which flows parallel to and slightly north of the St. Johns River, diverts water from the Kaweah River about 1.5 miles above McKay Point and is operated by the Wutchumna Water Company. The Friant-Kern Canal, managed by the U.S. Bureau of Reclamation (USBR), runs the length of the EKGSA, generally following the eastern border. East of the City of Lindsay it turns south and runs through the interior of the EKGSA, skirting Strathmore and continuing to the south.

Within the remainder of the Kaweah Subbasin, principal man-made conveyance system is the Main Intake Canal of the TID, which delivers comingled Kaweah River and Central Valley Project (CVP) waters for use in the TID. TID also delivers water through the Cameron Creek and Packwood Creeks below the Tagus Evans Ditch. Within the Tulare Irrigation District, the largest entitlement holder within the Kaweah Subbasin, there are a total of approximately 300 miles of unlined canals and ditches, 30 miles of piped conveyances and ¼ mile of lined canals (TID, 2012).

The headgates (diversions) from the Kaweah and St. Johns Rivers discussed in the previous section are conveyed from the headgate to the crops within the entitlement holder service areas by hundreds of miles of ditches (***Figure 21***).

Several ditch companies divert water from the Lower Kaweah River, the principal ones are listed below:

Consolidated Peoples, Farmers, and Elk Bayou Ditch Companies

Mathews

Jennings

Uphill

Modoc

Goshen

Lakeside Ditch Companies

TID, Fleming, Oakes, Evans, Watson, and Persian Ditch Companies receive water from both the Lower Kaweah and St. Johns Rivers. A schematic diagram of the Kaweah system is presented as **Figure 42**.

2.2.7.5 Source and point of delivery for imported water supplies

Imported water within the Kaweah Subbasin is delivered from both the CVP and Kings River systems, which have provide approximately 170,900 AFY on average over the historical period. These supplemental sources of water supply have been imported to the Subbasin to lands within the boundaries of the Subbasin from as early the late 1800s from the Kings River, which is currently delivered to the west portion of the Kaweah Subbasin into Lakeside Irrigation Water District. An additional source of supplemental supply to lands located within the Subbasin in the early 1950s was made available from the CVP, which is delivered through the Friant-Kern Canal (Fugro Consultants, 2016).

CVP water is diverted to the TID from three turnouts, which are located where Friant-Kern Canal crosses the Tulare Irrigation Main Canal, the St. Johns River channel, and the Lower Kaweah River channel, respectively. In addition, from time to time CVP water has been released into the Kings River channel and from there into canal systems traversing the western portion of the District towards the Lakeside Irrigation Water District. Imported water is delivered to the East Kaweah GSA through approximately 27 turnouts along the Friant-Kern Canal. The locations of the delivery points from the Friant-Kern Canal turnouts and headgates from the Kaweah, St. Johns and Lower Kaweah Rivers are presented on *Figure 21*.

2.3 Overview of Existing Monitoring Programs §354.8(c)

Groundwater monitoring and management has been underway for many decades in the Kaweah Subbasin. Currently, numerous local agencies are actively involved in the collection, review and evaluation of groundwater data for the purpose of groundwater management and protection. This section describes these monitoring programs. A groundwater management program (GMP) for TID was drafted in 1992 and 2010. The GMP focused on basin management; specifically, groundwater monitoring and sustainability, water quality, land subsidence, and surface water flow. These monitoring programs track the parameters listed below.

Groundwater Levels

Groundwater Quality

Land Subsidence

Surface Water Flow

2.3.1 Existing Groundwater Level Monitoring

The agencies located within the Kaweah Subbasin are involved in several long-term water level measurement program of wells throughout the Subbasin. Twenty-three-member agencies have collaborated and contributed data, which has been compiled and used for this Basin Setting effort. *Table 4* provides a summary of the groundwater level monitoring programs being conducted in each jurisdiction throughout the Subbasin. Groundwater level monitoring locations are shown on *Figure 20*.

Within the Kaweah Subbasin, water level data were compiled using data from DWR's CASGEM program, the three GSAs within the Subbasin and the cooperating agencies are listed below.

Several cities and communities within the Subbasin
Kaweah Delta Water Conservation District
Tulare Irrigation District
Kings County Water District
Cal Water (City of Visalia)
City of Tulare
Lindmore Irrigation District
Exeter Irrigation District
Ivanhoe Irrigation District
Lindsay-Strathmore Irrigation District
Stone Corral Irrigation District

In total, more than 1,300 wells have been identified that have water level data. However, only a small percentage of these wells (on the order of 6 percent) have available well construction information

(e.g., total depth, casing diameter, screened intervals, lithologic logs, e logs, etc.). Knowledge about the depth ranges of the screened intervals in the wells is important since there are significant water level differences in the various aquifers. The limited amount of information determining whether the wells are screened exclusively in the aquifers above or below the Corcoran Clay confining unit (i.e., the UAS or LAS, respectively) reduces the number of wells that can be used to create reliable water level contour maps. It is known that some wells are screened in the aquifers both above and below the Corcoran Clay.

Two agencies are known to have installed nested piezometers (i.e., monitoring wells with two or more separate, hydraulically-distinct casings that can measure water levels in different aquifers) in the Subbasin. KDWCD installed four such sets of wells on the west side of the Subbasin within Greater Kaweah GSA, each with separate casings that have screened intervals either above or below the Corcoran Clay. These wells show that water level difference above and below the clay can diverge by as much as 150 feet in this location. This illustrates the point that well construction information is needed to use water level monitoring data. Additionally, TID has installed four paired monitoring wells in the central part of the Subbasin within the Mid-Kaweah GSA.

2.3.1.1 Key Wells

A series of "key wells" have been identified to establish a consistent, long-term source of data to monitor the water levels in the various aquifers over the long-term. Approximately 118 wells have been preliminarily selected as key wells for the Subbasin (location shown on *Figure 20*). The wells were selected based on the following criteria:

1. A long period of record of water level data, generally extending to the present;
2. Adequate information on well construction and aquifer of completion; and
3. Geographically distributed to be representative of all areas throughout the Subbasin to provide data that adequately tracks variations in groundwater levels throughout the area.

The key wells were chosen as a subset of the entire water level monitoring database to adequately represent the Subbasin both laterally and vertically. These key wells were used along with the other monitored wells for the creation of water level contour maps and water level hydrographs. Most of the known wells in the Subbasin are either missing or have limited well construction information. Therefore, the data gap will be addressed with the following the steps below.

1. Further review of acquired well logs;
2. Conducting down-hole video surveys of wells; and
3. Installing additional monitoring wells as funds become available.

While there are limitations associated with using water level data from wells without construction information, we have performed an initial assessment of many of the available wells with a long period of record. This process allowed for the selection of wells that were used for developing an initial understanding of groundwater level variations throughout the Subbasin. It is understood that this snapshot of groundwater conditions is limited based on the unknown completion information about the wells and may change as construction data is obtained in the future. *Table 4* provides a summary of groundwater level monitoring by agency.

Table 4: Existing Groundwater Level Monitoring Programs in the Kaweah Subbasin

Agency	GSA Monitored	Frequency of Monitoring	Period of Record of Monitoring	Types of Wells Monitored	Number of Wells (approximate)	Known Completion of Wells Monitored	Number of Dual Completion Wells	Automated Monitoring
Alta Irrigation District	EK, GK	Monthly to bi-annually	1921 - 2011	Ag / Domestic	5	None	None	Unknown
Bureau of Reclamation	All	Monthly to bi-annually	1924 - 2008	Unknown	118	15	Unknown	Unknown
Cal Water (City of Visalia)	MK, GK	monthly	1971 - 2018	Municipal	104	None	Unknown	Unknown
City of Lindsay	EK	bi-annually	2016 - 2017	Municipal	3	None	None	Unknown
City of Tulare	MK	Monthly to bi-annually	1992 - 2018	Municipal	30	11	None	Unknown
Deer Creek & Tule River Authority	None?	Bi-annually	2011 - 2018	Ag / Domestic	1	None	None	Unknown
Department of Water Resources	All	Bi-annually	1930 - 2016	Various	182	7	Unknown	Unknown
Exeter Irrigation District	EK, GK	Bi-annually	1963 - 2016	Agricultural	40	None	Unknown	Unknown
Ivanhoe Irrigation District	EK	Bi-annually	1961 - 2014	Agricultural	36	Few to none	Unknown	Unknown
Kaweah Delta Water Conservation District	GK, MK, (EK?)	Monthly to bi-annually	1919 - 2018	Agricultural	425	30	4	Unknown
Kings County Water District	GK, MK	Monthly to bi-annually	1963 - 2017	Agricultural	100	3	Unknown	Unknown
Kings River Conservation District	GK	Bi-annually	2011 - 2018	Agricultural	6	3	Unknown	Unknown
Lakeside Irrigation Water District	GK, MK	Bi-annually	2012 - 2017	Agricultural	33	2	Unknown	Unknown
Lewis Creek Water District	EK	Bi-annually	1971 - 2016	Agricultural	3	1	Unknown	Unknown
Lindmore Irrigation District	EK	Bi-annually	1945 - 2016	Agricultural	104	1	Unknown	Unknown
Lindsay-Strathmore Irrigation District	EK	Bi-annually	1955 - 2016	Agricultural	7	None	Unknown	Unknown
Porterville Irrigation District	EK	Rarely	1960 - 1978	Agricultural	1	None	Unknown	Unknown
Stone Corral Irrigation District	EK	Bi-annually	2006 - 2016	Agricultural	6	1	Unknown	Unknown
Tulare Irrigation District	MK	Bi-annually	1945 - 2018	Agricultural	128	5	4	Unknown
Tule River Lower Irrigation District	EK	Bi-annually	1953 - 2010	Agricultural	10	1	Unknown	Unknown

Since the early 1900's, TID has been observing declining groundwater levels in wells they monitor. TID began managing, supplying, and delivering water to growers within their district in 1889. Recorded monitoring of groundwater levels began in the 1940's and demonstrate seasonal fluctuations as well as periods of drought. During a seven-year drought from 1987 to 1995, groundwater levels dropped as much as 50 to 120 feet. Water level recovery was accomplished in 2000, five years after the drought ended. As of 2010, TID measures groundwater levels from approximately 100 wells each spring and fall and plans on installing dedicated monitoring wells to track groundwater levels in unconfined and confined aquifers. Likewise, KDWCD also measures the depths to groundwater in wells in the central KDWCD portion of the Subbasin.

2.3.2 Existing Groundwater Quality Monitoring

Groundwater quality monitoring and reporting is currently conducted through numerous public agencies. The following sections provide a summary of databases, programs, and agencies that actively collect groundwater data and information on where the data is stored and how it was used in this Basin Setting. A summary of these programs is provided in *Section 2.2.2.3* as *Table 5*.

2.3.2.1 Local Agency Groundwater Monitoring

Many existing, local water level monitoring programs were expanded by local water districts partly in response to Assembly Bill (AB)-3030 groundwater management planning in the mid-1990's, and

subsequent Senate Bill (SB) 1938 compliant GMPs in the mid-2000s. Some district GMPs, such as those prepared by KDWCD and TID, are very detailed in providing subsurface hydrogeology, land use, and historical groundwater extents and fluctuations. Most plans provide a list of monitoring wells, associated well construction, a monitoring program, sampling plan, and an accompanying CASGEM monitoring plan.

In general, water levels and water quality in the Subbasin have been monitored annually, or twice a year where possible, and data reported biennially. Where viable, these monitoring networks will be incorporated into the defined monitoring networks for this Basin Setting and leveraged with monitoring network requirement for the Sustainable Groundwater Management Act (SGMA).

Water quality is monitored in many wells throughout the Subbasin. TID has a water quality sampling program which collects groundwater samples on a yearly basis from five private agricultural wells. However, this data is confidential to the owners and TID. Other agencies such as the Regional Water Quality Control Board, state and federal Environmental Protection Agency, USGS, SWRCB, City of Tulare, and various neighboring irrigation and water districts monitor groundwater quality in the region. TID collects and reviews data released from these agencies. The goal of the 2010 GMP was to maintain good water quality, specifically for agricultural irrigation, and to consolidate groundwater quality data into a single database (Provost & Pritchard, 2010).

TID water quality is generally excellent for both surface and groundwater supplies. Runoff from the Kaweah River and San Joaquin River is of very good to excellent quality and provides surface water supply and natural recharge for groundwater supply. The City of Tulare 2008 Consumer Confidence Report validates excellent water quality with parameters including: Total dissolved solids ranging from 86-220 ppm; specific conductance ranging from 130-340 uS/cm; and arsenic ranging from 2.1 -10 ppb.

2.3.2.2 California Drinking Water Information System Database (SDWIS)

All public drinking water systems (a system that has 15 or more service connections or regularly serves 25 individuals daily at least 60 days out of the year) are regulated by the State Water Resources Control Board (SWRCB) – Division of Drinking Water (DDW) and must demonstrate compliance with State and Federal drinking water standards through a rigorous monitoring and reporting program. Required monitoring for each well within each water system is uploaded to the DDW's database and subsequently available for the public through the State Drinking Water Information System (SDWIS). In addition to providing compliance monitoring data for each regulated water system, other information is available including monitoring frequency, basic facility descriptions, lead and copper sampling, violations and enforcement actions, and consumer confidence reports.

All drinking water systems are required to collect samples, that must include a comprehensive suite of constituents known as the "Title 22" list on a given frequency depending on the constituent and regional groundwater vulnerability. The following is a summary of the minimum sampling frequency for a public water supply well:

> General minerals, metals and organics (Synthetic Organic Chemicals and Volatile Organic Compounds) sampling is required every 3 years. If any organics are detected, sampling frequency must be increased to quarterly.
>
> Nitrate is required annually. If nitrate is ≥5 ppm, then sampling is required quarterly.

If arsenic is ≥5 ppb, sampling should be increased to quarterly.

Radiological constituents (i.e., gross alpha and uranium) are sampled periodically, depending on historical results: once every 3 years (when initial monitoring is ≥ ½ the MCL); once every 6 years (when initial monitoring is ≤ ½ the MCL), or once every 9 years (when initial monitoring is non-detect).

Public water systems provide the most abundant source of data since the testing requirements are at frequent intervals and data collection began in 1974. All sample results are easily available from the SDWIS database. When using these data to characterize groundwater quality for the Basin Setting, only raw water quality data are considered. It is important to understand that this characterization is not intended to represent water supplied by purveyors because they may provide wellhead treatment to remove or reduce contamination.

2.3.2.1 Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS)

CV-SALTS is a collaborative stakeholder driven and managed program to develop sustainable salinity and nitrate management planning for the Central Valley. The program objective is intended to facilitate the salt-reduction and nitrate-reduction implementation strategies recommended in the Salt and Nitrate Management Plan (SNMP) developed in 2017. The strategies are designed to address both legacy and ongoing salt and nitrate accumulation issues in surface and groundwater. The overarching management goals and priorities of the control efforts are: ensure safe drinking water supply; achieve balanced salt and nitrate loading; and implement long-term, managed restoration of impaired water bodies. The program is phased with the primary focus of early actions on nitrate impacts to groundwater drinking water supplies and established specific implementation activities. The Kaweah Subbasin is a Priority 1 basin for nitrate management. Consequently, the nitrate control program schedule is set to begin in 2019.

CV-SALTS will enact a nitrate control program as part of the SNMP which requires forming a management zone as a regulatory option to comply with the requirements of the nitrate program. The management zones will consist of a defined management area to manage nitrates, ensure safe drinking water, and meet applicable water quality objectives. Local management plans will be created to implement the long-term goals of the nitrate control program. As programs are implemented, there will be criteria established within each of the management areas to meet the objectives of their individual programs. While Irrigated Lands Regulatory Program (ILRP) allows for compliance of their regulatory program through coalitions that cover a broad, non-contiguous area based on similar land use, SGMA and CV-SALTS will both require management areas/zones to be contiguous areas regardless of land use.

Both the ILRP and CV-SALTS programs involve permittees and local stakeholders working towards water management objectives set forth by the State. In this regard, collaborative efforts should be made to maximize the resources of each program and provide a more integrated approach to developing local solutions for groundwater management.

2.3.2.1 Department of Pesticide Regulation

The Department of Pesticide Regulations (DPR) Ground Water Protection Program collects and evaluates samples for pesticides to (a) determine if there is a risk of groundwater contamination; (b)

identify areas sensitive to pesticide contamination; and (c) develop mitigation measures to prevent that movement. DPR obtains groundwater sampling data from other public agencies, such as SDWIS, USGS, and Groundwater Ambient Monitoring and Assessment Program (GAMA), and through its own sampling program. Sampling locations and constituents are determined by pesticides used in a region, and from review of pesticide detections reported by other agencies.

Because of their sample selection methodology, DPR typically only collects one sample per well. Repeat sampling is not performed if there are positive detections. Rather, their focus is on validating contamination through their research and sampling program. These data are reported annually along with the actions taken by DPR and the SWRCB to protect groundwater from contamination by agricultural pesticides. Annual reports are reviewed, and contaminant detections are identified in the groundwater quality characterization. In the Kaweah Subbasin, only legacy pesticides (dibromochloropropane (DBCP) and 1,2,3-TCP) are detected in the public water system wells. No pesticides currently in use were identified.

2.3.2.1 GeoTracker and EnviroStor Databases

The SWRCB oversees the GeoTracker database. This database systems allows the SWRCB to house data related to sites that impact or have the potential to impact groundwater quality. Records available on GeoTracker include cleanup sites for Leaking Underground Storage Tank (LUST) sites, Department of Defense sites, and Cleanup Program sites. Other records for various unregulated projects and permitted facilities includes Irrigated Lands, Oil and Gas production, operating Permitted Underground Storage Tanks (USTs), and Land Disposal sites.

GeoTracker is a public and secure portal that can retrieve records and view data sets from multiple SWRCB programs and other agencies through a Google maps GIS interface. This database is useful for the public and can help other regulatory agencies monitor the progress of cases. It also provides a web application tool for secure reporting of lab data, field measurement data, documents, and reports.

The DTSC oversees the EnviroStor database. This data management system tracks cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known contamination or sites where further investigation is warranted by the DTSC. This database only provides reports, inspection activities and enforcement actions completed on or after 2009. Like the GeoTracker database, this is useful for the public and other regulatory agencies to monitor progress of ongoing cases. The primary difference between the two databases is that EnviroStor only houses records for cases that DTSC is the lead regulatory agency, whereas the GeoTracker database houses records to cases from different regulatory agencies, such as at State and local levels. For the Basin Setting, both databases were searched to identify and report on any contamination sites that may have impacts to groundwater quality.

2.3.2.2 Groundwater Ambient Monitoring and Assessment (GAMA) Program

The GAMA Program was created by the SWRCB in 2000. It was later expanded by the Groundwater Quality Monitoring Act of 2001 (AB 599). AB 599 required the State Water Board to integrate existing monitoring programs and design new program elements as necessary to monitor and assess groundwater quality. The GAMA Program is based on collaboration among agencies including the State and Regional Water Boards, CDWR, DPR, USGS, and USGS National Water

Information System (NWIS), and Lawrence Livermore National Laboratory (LLNL). In addition to these state and federal agencies, local water agencies and well owners also participate in this program. The main goals of GAMA are to: improve statewide comprehensive groundwater monitoring; and increase the availability of groundwater quality and contamination information to the public. Monitoring projects in this program are described below.

GAMA Priority Basin Project: This project provides a comprehensive groundwater quality assessment to help identify and understand the risks to groundwater. The project started assessing public system wells (deep groundwater resources) in 2002 and shifted focus to shallow aquifer assessments in 2012. Since 2002, the USGS, the project's technical lead, has performed baseline and trend assessments and sampled over 2,900 public and domestic water supply wells that represent 95% of the groundwater resources in California.

GAMA Domestic Well Project: This project was conducted between 2002 and 2011 as part of the GAMA Program and sampled over 1,100 private wells in six California counties (Yuba, El Dorado, Tehama, Tulare, San Diego, and Monterey) for commonly detected chemicals. The voluntary participants received analytical test results and fact sheets, and the water quality data was included in the GeoTracker GAMA online database. The Domestic Well Project is currently on hiatus. Data from this project included nitrate concentrations and stable isotopic analysis for 29 domestic wells within the Kaweah Subbasin; these data have been incorporated into the Basin Setting.

GAMA Technical Hydrogeologic and Data Support: These efforts have expanded to include several Divisions and Programs at both the SWRCB and the Regional Water Quality Control Boards, other state agencies, and non-governmental organizations. GAMA staff are providing support for the following activities:

- Hydrogeologic analyses to evaluate drinking water sources
- Development of geothermal well and water well standards
- Technical support for state actions involving groundwater
- Hydrogeologic analysis for desalination projects
- Technical assistance for developing standard operating procedures for grant projects
- High-level Geographic Information System (GIS) projects
- Source water protection planning
- Antidegradation in groundwater planning

Although these GAMA activities were provided at a statewide level, Kaweah-specific groundwater information was used for this Basin Setting.

2.3.2.1 Irrigated Lands Regulatory Program (ILRP)

The ILRP was initiated in 2003 with a focus of protecting surface waters. Groundwater regulations were added in 2012. ILRP was implemented to protect receiving water bodies from impairment

associated with agricultural runoff, tile drain flows, and storm water runoff from irrigated fields. Elements of this program that overlap with SGMA requirements are the monitoring programs focused on identifying groundwater impairment associated with irrigated agriculture.

Currently, the program has focused on sampling surface waters. Although groundwater regulations were implemented in 2012, data collection is not scheduled to begin until Fall 2018. Throughout the Central Valley, ILRP Coalitions and other participating water agencies are coordinating their efforts as the Central Valley Groundwater Monitoring Collaborative. The Kaweah Basin Water Quality Association (an ILRP Coalition) represents a large area of irrigated agriculture within the Kaweah Subbasin.

The Coalition's Comprehensive Groundwater Quality Management Plan identified areas where groundwater is vulnerable to degradation that is caused by agricultural irrigation practices. The Groundwater Trend Monitoring Work Plan, Phase II outlines the Coalition's compliance strategies which include continuing to educate their members on management practices that are protective of water quality; reporting on management practices that are actively used; and an annual sampling program to track nitrate level trends in groundwater.

The focus of ILRP's groundwater regulation is to track nitrate level trends and determine if current management practices are protecting groundwater from further degradation. The SWRCB's objective is to eventually restore nitrate concentrations to levels below the drinking water standard of 10 parts per million (mg/L, as nitrogen). Data collected and reported as a part of ILRP are provided to the SWRCB and are available in the GAMA database for download and use. Groundwater sampling will collect samples annually from shallow domestic wells (<600-ft deep). As the program progresses, the number of wells sampled may increase. Initially, the Regional Board recommended 0-3 wells per township, but the Coalitions were not able to gain landowner authorization for this number of wells. In compromise, the Regional Board approved sampling wells with landowner agreements and have suggested the Coalitions work along with as part of the SGMA process to develop a more comprehensive monitoring network.

Once established, the annual monitoring under this program will include static water level; temperature; pH; electrical conductivity; dissolved oxygen; and nitrate. Once every five years, a limited group of general minerals will also be collected.

2.3.2.2 United States Geological Survey

The USGS California Water Science Center (CWSC), provides California water data services by conducting data collection, processing, analysis, reporting, and archiving. Data types include surface water, groundwater, spring sites, and atmospheric sites, with data often available in real-time via satellite telemetry. The NWIS groundwater database consists of wide range of data on wells, springs, test holes, tunnels, drains, and excavations. Available groundwater-specific information includes groundwater level data, well depth, aquifer parameters, and more. USGS studies and reports that were specifically used for the Basin Setting and groundwater characterization include:

> Groundwater Quality in the Shallow Aquifers of the Tulare, Kaweah, and Tule Groundwater Basins and Adjacent Highlands areas, Southern San Joaquin Valley, California. USGS and SWRCB. Fact Sheet, January 2017.

Groundwater Quality in the Southeast San Joaquin Valley, California. USGS and SWRCB. June 2012.

Status and Understanding of Groundwater Quality in the Two Southern San Joaquin Valley Study Units, 2005-2006: California GAMA Priority. Scientific Investigations Report 2011-5218. 2012.

Groundwater Quality Data in the Southeast San Joaquin Valley, 2005-2006: Results from the California GAMA Program. Data Series 351. USGS and SWRCB. 2008.

Environmental Setting of the San Joaquin-Tulare Basins, California. Water Resources Investigations Report 97-4205. 1998.

2.3.2.3 Groundwater Quality Monitoring Programs Summary

Table 5 provides summary information relating to the programs described above. Each program summary includes monitoring parameters and frequency, program objectives, and items of note relating to the Kaweah Subbasin Basin Setting.

Table 5: Existing Groundwater Quality Monitoring Programs

Programs or Data Portals	Parameters	Frequency	Program Objectives	Notes
AB-3030 and SB-1938	• Water levels are typically monitored annually. • Ag Suitability analysis (limited suite of general minerals) monitoring frequency between annual to once every 3 years.	Semiannual to Annual		Monitoring is recommended as a part of groundwater management planning. Data availability is inconsistent between Districts.
California SDWIS	Database for all public water system wells and historical sample results. Data available includes all Title 22 regulated constituents.	• Title 22 General Minerals and Metals every 3 years. • Nitrate as N annually, if ≥ 5 ppm, sampled quarterly • VOCs and SOCs sampled every 3 years. Uranium sampling depends on historical results but varies between 1 sample every 3 (when ≥ 10 pCi/L), 6 (when < 10 pCi/L) or 9 (when no historical detection) years.	Demonstrate compliance with Drinking Water Standards through monitoring and reporting water quality data.	An abundant source of data because of the required testing frequency and list of parameters.
CV-SALTS	Sampling parameters required through Waste Discharge Requirements (WDR): typically include monthly sodium, chloride, electrical conductivity, nitrogen species (N, NO_2, NO_3, NH_3), pH and other constituents of concern identified in the Report of Waste Discharge. A limited suite of general minerals is required quarterly from the source and annually from the wastewater.	Most constituents sampled monthly, quarterly general minerals from source water and annual general minerals from waste discharge. Kaweah is a Priority 1 Basin, meaning that management strategies will be initiated in 2019.	To monitor degradation potential from wastewaters discharged to land application areas.	Water quality monitoring required by CV-SALTS is consistent with the Regional Water Boards existing requirements through their WDR process. It is unlikely that additional monitoring will be required. The initial phases of the program are strongly focused on identifying sources of salinity and reducing salinity and nitrogen species in wastewaters discharged to land. By 2030, the program is expected to implement projects to aid with salt and nitrate management in the Central Valley.

Programs or Data Portals	Parameters	Frequency	Program Objectives	Notes
Department of Pesticide Regulation	Pesticides	• Annual	DPR samples groundwater to determine (1) whether pesticides with the potential to pollute groundwater are present, (2) the extent and source of pesticide contamination, and (3) the effectiveness of regulatory mitigation measures.	Data available at: https://www.cdpr.ca.gov/docs/emon/grndwtr/index.htm
GAMA (Collaboration with SWQCB, RWQCB, DWR, DPR, NWIS, LLNL)	• Constituents sampled vary by the Program Objectives. • Typically, USGS is the technical lead in conducting the studies and reporting data.	• The Priority Basin Project performed baseline and trend assessments and sampled over 2,900 public and domestic wells that represent 95% of the groundwater resources in CA. • The Domestic Well Project sampled over 180 domestic wells in Tulare County: 29 Wells were within the Kaweah Subbasin.	• Improve statewide comprehensive groundwater monitoring. • Increase the availability of groundwater quality and contamination information to the public.	USGS reports prepared for the Priority Basin Project were used to identify constituents of concern in the basin and confirm water quality trends prepared for groundwater characterization.

Programs or Data Portals	Parameters	Frequency	Program Objectives	Notes
Geotracker and Envirostor Databases	Many contaminants of concern, organic and inorganic.	Depends on program. Monthly, Semiannually, Annually, etc.	Records database for cleanup program sites, permitted waste dischargers	Records available on GeoTracker include: • Cleanup for Leaking Underground Storage Tank (LUST) sites • Department of Defense Sites • Cleanup Program Sites Other records for various unregulated projects and permitted facilities includes: • Irrigated Lands • Oil and Gas production • Operating Permitted Underground Storage Tanks (USTs) • Land Disposal Sites
ILRP	• Annually: static water level, temperature, pH, electrical conductivity, nitrate as nitrogen, and dissolved oxygen. • Once every five years: general minerals collection	Annual and Every 5 years	Monitor impacts of agricultural and fertilizer applications on first encountered groundwater	Sampling will begin in Fall 2018 with a limited number of wells sampled. The program will be expanded and may incorporate a shared sampling program with SGMA.
USGS California Water Science Center	Conducted multiple groundwater quality studies of the Kaweah Subbasin	Reports and fact sheet publications range from 1998 through 2017.	Special studies related to groundwater quality that provide comprehensive studies to characterize the basin.	Studies used for Basin Setting: • Groundwater Quality in the Shallow Aquifer (2017) • Status and Understanding (2012) • Groundwater Quality in SESJ (2012) • Groundwater Quality Data in the SESJ (2008) • Environmental Setting (1998)