



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

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- 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,



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**Appendix A
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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?

<p><u>Selected relevant requirements and guidance:</u> GSP Element 2.1.5, "Notice & Communication" (§354.10): <i>(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.</i> GSP Element 2.2.2, "Groundwater Conditions" (§354.16): <i>(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.</i> <i>(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.</i> <i>(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.</i> GSP Element 3.3, "Minimum Thresholds" (§354.28): <i>(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.</i></p>
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Review Criteria	Y e s	N o	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)	X			<p>"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))"</p> <p>"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</p>	<p>1.5.2.1, page 34</p> <p>1.5.2.3, page 35</p>

¹ Page numbers refer to the page of the PDF.

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			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	<p>“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.”</p> <p>“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.”</p>	1.5.2.1, page 34 1.5.2.9, page 36
	c. Small community public water systems (<3,300 connections)	X	<p>“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)”</p> <p>The number and sizes of the public water systems within the MKGSA are not clearly described.</p>	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	<p>“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.”</p>	1.5.2.11, page 36

² DWR DAC Mapping Tool: <https://gis.water.ca.gov/app/dacs/>

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			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/>

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			the Tulare Basin Wildlife Partners, Sierra Club Mineral King Group, and Sequoia Riverlands Trust (p. 1-25).”	
<p>Summary/ Comments</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>				

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2. Communications Plan

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

<p><u>Selected relevant requirements and guidance:</u> GSP Element 2.1.5, "Notice & Communication" (§354.10): <i>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:</i></p> <p>(c) <i>Comments regarding the Plan received by the Agency and a summary of any responses by the Agency.</i> (d) <i>A communication section of the Plan that includes the following:</i></p> <p>(1) <i>An explanation of the Agency's decision-making process.</i> (2) <i>Identification of opportunities for public engagement and a discussion of how public input and response will be used.</i> (3) <i>A description of how the Agency encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin.</i> (4) <i>The method the Agency shall follow to inform the public about progress implementing the Plan, including the status of projects and actions.</i></p> <p>DWR Guidance Document for GSP Stakeholder Communication and Engagement⁷</p>
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Review Criteria	Y e s	N o	N / A	Relevant Info per GSP	Location (Section, Page)
1. Is a Stakeholder Communication and Engagement Plan (SCEP) included?	X			<p>"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."</p> <p>"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."</p>	<p>1.5.3, page 37, page 27</p> <p>Appendix 1, (page 43)</p>
2. Does the SCEP or GSP identify that ongoing engagement will be conducted during GSP implementation?	X			<p>"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."</p> <p>"This document identifies and presents the public and stakeholder</p>	<p>1.5.7, page 44</p> <p>Appendix 1, 1.0,</p>

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-Documents-for-Groundwater-Sustainability-Plan---Stakeholder-Communication-and-Engagement.pdf>

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		<p>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.”</p> <p>“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.”</p>	<p>(page 48)</p> <p>Appendix 1, 3.2, (page 60)</p>
<p>3. Does the SCEP or GSP specifically identify how DAC beneficial users were engaged in the planning process?</p>	<p>X</p>	<p>“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.”</p> <p>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:</p> <ul style="list-style-type: none"> • 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.” <p>“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.”</p>	<p>1.5.3, page 37</p> <p>Appendix 1, 2.2.4, (page 53)</p> <p>Appendix 1, 3.3, (page 62)</p>
<p>4. Does the SCEP or GSP explicitly describe how stakeholder input was incorporated into the GSP process and decisions?</p>	<p>X</p>	<p>“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.”</p>	<p>1.5.4.2, page 40</p>

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			"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
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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.

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.

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3. Maps Related to Key Beneficial Uses

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

<p><u>Selected relevant requirements and guidance:</u> GSP Element 2.1.4 “Additional GSP Elements” (§354.8): <i>Each Plan shall include a description of the geographic areas covered, including the following information:</i> (a) <i>One or more maps of the basin that depict the following, as applicable:</i> (5) <i>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.</i></p> <p>GSP Element 3.5 Monitoring Network (§354.34) (b) <i>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:</i> (c) <i>Each monitoring network shall be designed to accomplish the following for each sustainability indicator:</i> (1) <i>Chronic Lowering of Groundwater Levels. Demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features by the following methods:</i> (A) <i>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.</i> (4) <i>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.</i> (6) <i>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:</i> (A) <i>Flow conditions including surface water discharge, surface water head, and baseflow contribution.</i> (B) <i>Identifying the approximate date and location where ephemeral or intermittent flowing streams and rivers cease to flow, if applicable.</i> (C) <i>Temporal change in conditions due to variations in stream discharge and regional groundwater extraction.</i> (D) <i>Other factors that may be necessary to identify adverse impacts on beneficial uses of the surface water.</i> (f) <i>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:</i> (3) <i>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.</i></p>

	Y e s	N o	N / A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP Include Maps Related to Drinking Water Users?	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
a. Well Density				The well locations and depths are not specifically identified in the GSP.	
b. Domestic and Public Supply Well Locations & Depths		X			

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	i. Based on DWR Well Completion Report Map Application ⁸ ?	X		<p>“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.</p> <p>... This GSP was not intended to produce any finer resolution than provided by the DWR map application.”</p>	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)
	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)
	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
3. Does the GSP include maps of monitoring networks?	a. Existing Monitoring Wells	X		<p>“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.”</p> <p>“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.”</p>	4.1.1, page 70 4.4.2, page 76

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

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			<p>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.</p> <p>“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.</p>	Appendix 2A, 2.3.1, page 39
b. Existing Monitoring Well Data sources:	i. California Statewide Groundwater Elevation Monitoring (CASGEM)	X	<p>“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.”</p> <p>“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.”</p>	4.1.1, page 71 Appendix 2A, 2.3.1, page 39
	ii. Water Board Regulated monitoring sites	X	<p>“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. “</p> <p>“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).”</p>	Appendix 2A, 2.3.2.6, (page 42) Appendix 2A, 2.3.2.6, (page 45)
	iii. Department of Pesticide Regulation (DPR) monitoring wells	X	<p>Table 4-2: Existing Groundwater Quality Monitoring Programs</p> <p>“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</p>	4.1.2, page 71 Appendix 2A, 2.3.2.4, (page 44)

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			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		<p>“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:</p> <ul style="list-style-type: none"> • 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.	
ii. SGMA Monitoring Network map includes identified GDEs?		X	The GSP does not include the identified GDEs in the proposed monitoring network maps.	

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.

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.

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.

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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 BMP⁹
DWR Guidance for Climate Change Data Use During GSP Development and Resource Guide¹⁰

Review Criteria	Y e s	N o	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>

¹⁰DWR 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

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			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		<p>“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.”</p> <p>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.</p>	<p>Appendix 2A, 2.5.2.1, page 115</p> <p>Appendix 2B, (Page152)</p>
3. What is used as the basis for climate change assumptions?		X	<p>a. DWR-Provided Climate Change Data and Guidance¹¹</p> <p>“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.”</p>	Appendix 2A, 2.5.2.1, page 115
		X	b. Other	
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

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			<p>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).</p> <p>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).</p> <p>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).</p> <p>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).</p> <p>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).”</p> <p>Projected Changes in imported flow diversions are estimated under the five climate change scenarios, and summarized in Table 36 of Appendix 2A.</p>	<p>(Page163)</p> <p>Appendix 2A, (page 120)</p>
<p>5. Does the GSP quantitatively incorporate climate change projections?</p>	<p>X</p>		<p>“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.”</p> <p>“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</p>	<p>Appendix 2A, (page 116)</p> <p>Appendix 2A, (page 117)</p>

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			to 1.7% in Greater Kaweah and 1.9% in Mid-Kaweah.”		
			<p>“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.”</p> <p>“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 result 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.”</p>	<p>Appendix 2A, (page 118)</p> <p>Appendix 2A, (page 120)</p>	
6. Does the GSP explicitly account for climate change in the following elements of the future/projected water budget?	a. Inflows:	i. Precipitation	X	<p>“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.”</p>	Appendix 2A, (page 117)
		ii. Surface Water	X	<p>“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.”</p>	Appendix 2A, (page 118)
		iii. Imported Water	X	<p>“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.”</p>	Appendix 2A, (page 119)
		iv. Subsurface Inflow	X		
	b. Outflows:	i. Evapotranspiration	X	<p>“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.”</p>	Appendix 2A, (page 116)
		ii. Surface Water Outflows (incl. Exports)	X		

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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	<p>“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.</p> <p>...</p> <p>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.”</p> <p>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.</p>	Appendix 2A, 2.5.2.2, (page 122)
	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	<p>“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).”</p> <p>Please clarify what the term “phreatophyte extraction’ means. The text</p>	Appendix 2A, 2.5.1.3, (page 104)	

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			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.	
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.	

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.

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).

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.

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

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 SGMA¹²
TNC's Groundwater Dependent Ecosystems under the SGMA, Guidance for Preparing GSPs¹³

Review Criteria	Y e s	N o	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 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>

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			<p>distinct from those adopted by the State. The agricultural area is administered by an independent special district.</p> <ul style="list-style-type: none"> • 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.” 	
<p>3. Were the management areas defined specifically to manage DACs?</p>		<p>X</p>	<p>No management areas are specifically defined to manage DACs.</p>	
<p>a. If yes, are the Measurable Objectives (MOs) and MTs for GDE/DAC management areas more restrictive than for the basin as a whole?</p>		<p>X</p>		
<p>b. If yes, are the proposed management actions for GDE/DAC management areas more restrictive/ aggressive than for the basin as a whole?</p>		<p>X</p>		
<p>4. Does the GSP include maps or descriptions indicating what DACs are</p>		<p>X</p>		

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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	<p>“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.</p> <p>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.</p>	4.8, page 83

Summary/ Comments

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

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

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

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.

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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	Y e s	N o	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			<p>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.</p> <p>“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.”</p> <p>“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:</p> <ul style="list-style-type: none"> • 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.” <p>“The beneficial uses of groundwater in the Kaweah Subbasin include:</p>	<p>3.2.3.4, page 69</p> <p>5.3.1.3, page 98</p>

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		<ul style="list-style-type: none"> • 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) <p>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.”</p>	5.3.3.2, page 102
<p>2. Does the GSP explicitly discuss how stakeholder input from DAC community members was considered in the development of URs, MOs, and MTs?</p>	X		
<p>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?</p>	X	<p>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.</p> <p>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.</p> <p>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.</p>	5.4.1, page 109
<p>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?</p>	X	<p>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.”</p> <p>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.</p> <p>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.</p>	5.3.1.2, page 93

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			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”.	
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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.

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.

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.

The trigger for undesirable results (1/3 of wells in all the management zones impacted) creates the potential for disproportionate impacts to disadvantaged communities; those impacts should be assessed.

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

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.

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.

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.

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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	Y e s	N o	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			<p>“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.</p> <p>...</p> <p>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.”</p>	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			<p>“The implementation of SGMA sets in motion the alleviation of overdraft over time and stakeholder interest in providing assistance</p>	7.4.8.1, page 165

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			<p>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:</p> <ul style="list-style-type: none"> • 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 <p>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.”</p>	
<p>c. Does the GSP identify costs to fund a mitigation program?</p>	<p>X</p>		<p>“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.”</p>	<p>7.4.8.5, page 166</p>
<p>d. Does the GSP include a funding mechanism to support the mitigation program?</p>	<p>X</p>		<p>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,</p>	
<p>2. Does the GSP identify specific management actions and funding mechanisms to meet the identified MOs for groundwater quality and groundwater levels?</p>	<p>X</p>		<p>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,</p>	<p>7.3.16.1, page 148</p>

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		<p>priority should be given to multi-benefit projects that can address water quantity as well as providing environmental benefits or benefits to disadvantaged communities.</p> <p>“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.”</p> <p>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:</p> <p>“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”</p>	<p>7.1, page 123</p> <p>7.3.1.6, page 126</p>
<p>3. Does the GSP include plans to fill identified data gaps by the first five-year report?</p>	<p>X</p>	<p>“The following data gaps were identified for the MKGSA:</p> <ul style="list-style-type: none"> • 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 	<p>2.2, page 57</p>

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		<p>groundwater level and groundwater quality conditions above and below the Corcoran Clay</p> <ul style="list-style-type: none"> • 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 <p>The data gaps will be addressed as MKGSA implements the management actions designed to close such gaps, as described in Section 7.4.”</p> <p>“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</p> <ul style="list-style-type: none"> • 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” 	<p>8.2.1, page 182</p>
<p>4. Do proposed management actions include any changes to local ordinances or land use planning?</p>	<p>X</p>	<p>“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”</p> <p>“Authority for groundwater measurement collection and processing resides within SGMA as previously cited. It is not anticipated that additional</p>	<p>1.4.4, page 28</p> <p>7.4.1.3, page 154</p>

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			<p>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.”</p> <p>“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.</p> <p>...</p> <p>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.”</p>	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	<p>“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.”</p> <p>“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.”</p>	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	<p>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.</p>	
Summary/ Comments				

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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.

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.

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

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.