

To: Surface Water Advisory Group Members
From: Bennett Brooks, Consensus Building Institute
Date: December 2, 2020
Re: SWAG Comments on Meeting #2 topics

Many thanks for your thoughtful participation in the SWAG meetings to-date. We very much appreciate the time and thought you have been putting into these discussions.

Attached please find a summary of the comments you provided on topics discussed during SWAG Meeting #2 focused on the proposed Monitoring Network and a potential approach for setting Sustainable Management Criteria for Interconnected Surface Waters. Comments were compiled and reviewed in a similar process used for SWAG Meeting #1 comments. Consistent with SGMA guidance, the Subbasin Working Group has considered each individual comment (with technical support from EKI) and put forward a draft plan for addressing these points within its evolving Groundwater Sustainability Plan (also included in the attached document).

A few reminder points to note as you review this document:

- **Green text** denotes recommendations the GSAs will consider as part of their on-going responsibility to fill data gaps and update the GSP every five years.
- Content anticipated in the draft GSP that are anticipated as a result of current Proposition 68 activities and/or comments are also noted.

A similar draft summary document for comments from SWAG Meeting #3 will be prepared and discussed at the December or January Working Group meeting(s). We look forward to our next SWAG meeting on December 4. As always, please feel free to reach out if any questions.

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1	10/9/2020	Bridget Gibbons, California Department of Fish & Wildlife	Proposed Monitoring Network	<p>Proposed Monitoring Network: The update regarding the monitoring network for ISW, including wells with confirmed access and those planned with TSS funding, is appreciated. Suggested that figures representing the monitoring network also identify the location of stream gauges. Additional monitoring wells that can be used to monitor the lateral gradient between near-stream groundwater levels and locations where significant pumping occurs may be helpful in identifying drivers of any ISW depletions for management actions.</p>	<p>Updated figure(s) will include the locations of the Representative Monitoring Wells that GSAs have secured access to for monitoring Depletions of Interconnected Surface Water (RMW-ISW), Representative Monitoring Gauges (RMG), and Groundwater Level Monitoring Wells (RMW-WL) that track water level and gradient changes in response to pumping. Updated table(s) will include well completion information, to the extent available.</p> <p>The GSAs continue to reach out to well owners to expand the number and distribution of supplemental monitoring wells.</p>	<p>Updated figure(s) and tables will be included as part of Monitoring Network description.</p>
2	10/9/2020	Bridget Gibbons, California Department of Fish & Wildlife	Sustainable Management Criteria	<p>Sustainable Management Criteria: In the process identified for developing sustainable management criteria, the “Check” step states that SMCs will be developed to avoid negatively affecting beneficial users, such as domestic well users. SMCs should be developed to be demonstrably protective of all beneficial users, including groundwater dependent ecosystems and environmental beneficial users of interconnected surface waters, and should be stated in the narrative.</p>	<p>Groundwater Dependent Ecosystems (GDEs) and domestic well users are being considered as beneficial users and identified as required by SGMA regulations.</p>	<p>Discussion of Sustainable Management Criteria (SMC) development and checks against interferences with beneficial users including GDEs and domestic well users will be included in the GSP. On-going monitoring will also be discussed.</p>

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3	10/9/2020	Bridget Gibbons, California Department of Fish & Wildlife	Sustainable Management Criteria	<p>Sustainable Management Criteria: Please clarify if and how the GSP is distinguishing shallow or perched groundwater areas from the “principal aquifer,” and identify planned management actions for these areas within the basin, as they may provide significant support to groundwater dependent ecosystems. Consider identifying shallow or perched groundwater areas as a second “principal aquifer” that provides significant yield to GDEs.</p>	<p>Per 23-California Code of Regulations §351(aa) <i>“Principal aquifers” refer to aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems.</i></p> <p>SGMA requires management of the Principal Aquifer(s), and perched aquifers, if they exist, do not store, transmit or yield significant or economic quantities of groundwater in the Cosumnes Subbasin.</p> <p>Proposition 68 funding is supporting GDE verification and geophysical studies, and evidence of perched aquifers will be documented as part of that effort.</p>	<p>Results of Proposition 68 efforts will be incorporated into the GSP.</p> <p>The GSAs plan to address data gaps as part of GSP implementation. To the extent that additional information is developed on perched aquifers, it will be incorporated into future updates of the GSP (e.g., with respect to monitoring and potentially aquifer testing to assess connectivity, if any, to the Principal Aquifer).</p>
4	10/9/2020	Bridget Gibbons, California Department of Fish & Wildlife	Sustainable Management Criteria	<p>The presented possible approach for developing SMCs for interconnected surface waters outlines two sets of MOs and MTs for river reaches that are determined to be connected or disconnected from groundwater. Due to the current data gap related to identification of the location, timing, and quantities of depletion of interconnected surface waters, it is possible that areas identified as disconnected may prove to be connected as additional monitoring takes place. There is also likely to be uncertainty around the precise location of the transition from connected reaches to disconnected, or vice versa. As improved monitoring and data may prompt reclassification of a reach’s connectivity status, adaptive management will be necessary in order to change</p>	<p>The exact location at which the Cosumnes River becomes disconnected is unknown and has been identified as a data gap.</p> <p>As part of Technical Support Services (TSS) Grant and Proposition 68 funding the GSAs are planning additional monitoring wells within the “transitional” zone of the Cosumnes River to improve characterization of interconnected groundwater and surface water in the Cosumnes Subbasin.</p>	<p>Results of TSS and Proposition 68 monitoring infrastructure development will be incorporated into the GSP.</p> <p>Remaining data gaps will be identified in the GSP, and the GSAs plan to address data gaps as part of GSP implementation. To the extent that additional information</p>

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				<p>the SMC and associated management strategy. Additionally, it should be demonstrated that the SMCs for the disconnected reaches will not unreasonably impact nearby or downstream connected reaches. SMCs should be protective of environmental beneficial users of ISWs.</p>		<p>is developed on the location of the transitional zone, it will be incorporated into future updates of the GSP.</p>
5	10/12/2020	<p>Amelia Vankeuren, Ph.D.; Assistant Professor of Geology, Sacramento State; Elk Grove Resident; Member of the Greater Sheldon Rural Estates Homeowners Association</p>	<p>SGMA monitoring network</p>	<p>It is vital that the groundwater elevation monitoring network include a distribution of wells both spatially and with depth, including wells at the typical depth of domestic wells. If most or all monitoring wells are deeper public supply or irrigation wells, there could be locally confined conditions that would cause monitoring wells to show a higher groundwater elevation than domestic wells actually have. Thus domestic wells could reach groundwater elevations lower than the sustainable management criteria without the monitoring network catching the problem and triggering a response.</p>	<p>The Representative Monitoring Well for Chronic Lowering of Groundwater Levels (RMW-WL) network includes 20 wells across the Cosumnes Subbasin with completed depths ranging from 15 ft bgs to 1,654 ft bgs and includes monitoring, irrigation and public supply well uses.</p> <p>Additionally, the GSAs are working on developing a supplemental monitoring network of domestic wells.</p> <p>As part of establishing SMCs for chronic lowering of groundwater levels an in-depth domestic well impact analysis is being conducted.</p>	<p>An updated description of the RMW-WL network, supplemental monitoring wells, and summary of the domestic well impact analysis will be included in the GSP.</p> <p>The GSAs plan to address data gaps as part of GSP implementation, which include missing well construction information of supplemental monitoring wells. To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into</p>

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						future updates of the GSP.
6	10/12/2020	Amelia Vankeuren, Ph.D.; Assistant Professor of Geology, Sacramento State; Elk Grove Resident; Member of the Greater Sheldon Rural Estates Homeowners Association	SGMA monitoring network	It is critical that the groundwater quality monitoring network also include a distribution of wells both spatially and with depth, including wells at the typical depth of domestic wells. If all wells used for monitoring groundwater quality are for public supply (as would be the case with wells from the Public Water System), they may not catch changes to groundwater quality that occur in the shallower portion of the aquifer. For instance, nitrate is often at higher concentration in shallower wells since it is typically transported from the surface to depth.	<p>The Representative Monitoring Well for Degraded Water Quality (RMW-WQ) network includes 12 wells across the Cosumnes Subbasin with completed depths ranging from 135 ft bgs to 890 ft bgs and includes monitoring, irrigation, and public supply well uses.</p> <p>Three sites have been constructed with multiple depth monitoring wells using TSS Grant and Proposition 68 funding, and the GSAs plan for a fourth site has recently been approved by DWR.</p>	<p>An updated description of the RMW-WQ network and its distribution of monitoring depths will be included in the GSP.</p> <p>The GSAs plan to address data gaps as part of GSP implementation, which include identifying missing well construction information and quantifying monitoring depths. To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into future updates of the GSP.</p>
7	10/12/2020	Amelia Vankeuren, Ph.D.; Assistant Professor of Geology,	SGMA monitoring network	It is necessary to be able to determine the location at which the Cosumnes River becomes disconnected. I am concerned that the network used to determine depletions of interconnected surface water is not sufficiently dense where the river is expected to shift from disconnected to	<p>The exact location at which the Cosumnes River becomes disconnected is unknown and has been identified as a data gap.</p> <p>As part of TSS Grant and Proposition 68 funding the GSAs are planning additional</p>	Data gaps will be identified in the GSP, as will results of the Proposition 68 evaluation of GDEs.

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		Sacramento State; Elk Grove Resident; Member of the Greater Sheldon Rural Estates Homeowners Association		connected to the river. While the groundwater elevation contours in TM6 figures GWC-01 and GWC-02 showed dashed lines indicating the groundwater elevations near the river are uncertain, figure GWC 15 does not take into account that level of uncertainty; it instead suggests that the possible locations of GDEs only extend slightly farther upstream than the Cosumnes Preserve, not as far upstream as the McConnell Station. The new monitoring network would benefit from more well/river stage monitoring pairs, particularly in the region where the river likely connects between the McConnell station and the most downstream monitoring point.	<p>monitoring wells within the “transitional” zone of the Cosumnes River to improve characterization of interconnected groundwater and surface water in the Cosumnes Subbasin.</p> <p>Dashed lines in Figures GWC-01 and GWC-02 represent uncertainty of the groundwater elevation near the Cosumnes River resulting from the incision of the stream bed and lack of shallow wells near surface features in the Cosumnes Subbasin.</p> <p>Figure GWC-15 maps potential GDEs, and the mapping exercise included identifying the range in depth-to- water (DTW) at <30 ft bgs delineated by spring (seasonal high) and fall (seasonal low) water levels in the Principal Aquifer during the period 2011 through 2018. All potential GDEs overlying the resulting range in areas with DTW <30 ft bgs are included in Figure GWC-15.</p> <p>As part of TSS Grant and Proposition 68 funding the GSAs are constructing additional wells and gauging stations to increase available data for interconnected groundwater and surface water.</p>	The GSAs plan to address data gaps as part of GSP implementation. To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into future updates of the GSP.
8	10/12/2020	Amelia Vankeuren, Ph.D.; Assistant Professor of Geology, Sacramento State; Elk Grove	Sustainable Management Criteria	It is essential that domestic well users still have access to groundwater at the level of the GSP Measurable Objective. I am concerned that if that level is set to the 2015 water level, there may be tens or hundreds of domestic wells that go dry. As Anona mentioned, the community well survey showed that close to 200 domestic wells may have gone dry in 2015 as a result of the drought, which is about 6% of domestic wells in the subbasin.	The GSAs are conducting specific analysis on the potential well impacts as SMCs are developed. The well impact analysis includes evaluation of all wells that have well completion reports in Department of Water Resource’s Online System of Well Completion Reports (OWSCR) database which is the most complete inventory of wells available. Analysis to date suggests	A summary of the domestic well impact analysis and associated data gaps will be included in the GSP.

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		Resident; Member of the Greater Sheldon Rural Estates Homeowners Association		While I recognize that some of those wells may not have been in use, some of them (or other wells) may have. The fact that no one has heard anecdotal evidence of wells going dry does not prove that they did not. 200 stakeholders filling out a survey on well conditions is a good start, but if there are close to 3,000 wells in the subbasin then clearly we have not heard from everyone. I have many neighbors with domestic wells who do not have a clue about SGMA or the GSP process. This suggests that there may be other domestic well owners who are not tuned into the process and don't know who to tell that their well went dry. There should be efforts to track down the wells that may have gone dry and connect with the well owners to verify the status of their wells during the drought. If the wells did go dry, that may necessitate altering the measurable objective.	<p>that only a small percentage of wells in the subbasin are expected to be impacted at current SMCs.</p> <p>One of the questions on the stakeholder survey, which was sent to all residents within the Cosumnes Subbasin, was whether the stakeholder's well has gone dry before. Out of the 213 responses received, two respondents indicated that their wells had gone completely dry and had to be deepened and six stakeholders responded that they have had to drop pumps.</p> <p>The GSAs recognize the importance of engaging stakeholders and the broader public in discussions related to GSP development and implementation. The GSA's stakeholder outreach and public engagement plan can be found on the homepage of the Cosumnes Subbasin website: http://cosumnes.waterforum.org/sustainable-groundwater-management-act-sgma</p>	The GSAs plan to address data gaps as part of GSP implementation. To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into future updates of the GSP.
9	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Monitoring Network	It is clear that the monitoring network is being designed to meet SGMA requirements. A few points for feedback/consideration: The Cosumnes River flow is affected by diversions (both in the reach of concern and upstream), groundwater pumping, return flows from agricultural operations and wastewater, precipitation amount and timing, and geology affecting groundwater storage/flow rate. Impacts of flows and groundwater levels vary with timeline. Opportunities for multi-benefit management	These points are appreciated and will be considered by the GSAs as part of projects and management actions development. The numerical groundwater-flow model utilized the best available data to estimate diversions, return flows, groundwater pumping, and geologic conditions and will be employed to evaluate potential interferences between SMCs for each Sustainability Indicator.	Projects and Management Actions will be described in the GSP. Data gaps that limit model reliability will be identified, and guide GSA plans to address them as part of GSP

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				<p>require insight to all of these factors, some of which will be monitored in compliance with SGMA. Management actions that address SGMA obligations may find funding in multi-benefit projects.</p>		<p>implementation. To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into future updates of the GSP.</p>
10	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Monitoring Network	<p>The Environmental Defense Fund (EDF) white paper Addressing Regional Surface Water Depletions in California is a resource with respect to monitoring network design that offers some recommendations for monitoring interconnected surface water (ISW). Key points include:</p> <ul style="list-style-type: none"> • Maintain the gradient between the aquifer and the stream at January 2015 level; • There is a need for both longitudinal (streamwise) and laterally spaced monitoring locations. Monitoring wells within 2,000 feet of a river or stream are valuable for documenting near-stream conditions but are not useful for determining whether or not interconnected surface water is being depleted due to influence of stream flow on levels in this zone; and, • Ideally, there will be a monitoring well at an intermediate location between pumping centers and a stream to determine the gradient between the stream and aquifer. • The current ISW monitoring network appears to be limited to near-stream wells 	<p>The EDF white paper and other documents that provide guidance for monitoring network design were reviewed and applied to specific conditions in the Cosumnes Subbasin. The existing infrastructure for monitoring is limited, and guidance provided by documents like the EDF white paper cited can provide a framework for identifying data gaps and recommendations for network improvements.</p> <p>Prop 68 funding is being applied to expand monitoring network capabilities, and remaining network limitations will be identified for resolution as part of GSP implementation.</p> <p>In response to the specific questions, the Working Group provides the following information:</p> <p>Half of the current interconnected surface water monitoring wells are located within 2,000 feet of the Cosumnes River, and the remaining half are located more than 2,000 feet from the River.</p>	<p>An updated description of the monitoring network and the supplemental monitoring wells will be included in the GSP.</p> <p>Data gaps and monitoring network limitations will be identified and summarized in the GSP.</p> <p>The GSAs plan to address data gaps as part of GSP implementation. To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into</p>

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				<p>and thus inclusion of additional lateral wells is recommended in a manner consistent with the document.</p> <ul style="list-style-type: none"> Monitoring wells should be spaced at cross-sections every 4-6 miles along the stream corridor. Please verify if the current network achieves this goal. The monitoring network should also account for geomorphic breaks along the corridor such as the presence of large man-made structures, major tributary confluences, and substantial longitudinal changes in valley width, bed slope, bed material type, and/or lithology, such that each 'geomorphic reach' has at least one monitoring cross-section. 	<p>The longitudinal spacing between sites is at most 7 miles (one site), with the remaining six sites range from 6 miles to 0.5 mile. In regards to monitoring between geomorphic breaks along the corridor (e.g. large man-made structures , major tributary confluences, etc.) the current monitoring network includes the following: the first site is 2 miles below the Arkansas Creek/Cosumnes River confluence, the second site is 2 miles south of the FSC, the third and fourth sites are 1.5 and 2 miles north of the Deer Creek/Cosumnes River confluence, there are no sites between the Deer Creek/Cosumnes River confluence and the Badger Creek/Cosumnes River confluence, the fifth and sixth sites are 1 and 1.5 miles south of the Badger Creek/Cosumnes River confluence, the seventh site is 0.5 miles north of the Laguna Creek/Cosumnes River confluence, there are no sites between the Laguna Creek/Cosumnes River confluence and the Cosumnes River/Mokelumne River confluence, and the eight site is located along Dry Creek.</p> <p>Proposition 68 funding the GSAs are planning additional monitoring well and stream gauge construction.</p>	<p>future updates of the GSP.</p>
11	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The	Monitoring Network	Propose designing monitoring network with both SGMA compliance and grant funded projects (that require adaptive management) in mind. Congratulations on taking advantage of the DWR Technical Services Grant and installing a well with screening at multiple levels in the OHWD	Three sites have been constructed with multiple depth monitoring wells using TSS Grant and Proposition 68 funding, and the GSAs plan for a fourth site that has recently been approved by DWR.	An updated description of the monitoring network and the supplemental monitoring wells will

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		Environmental Defense Fund & Cosumnes Coalition		jurisdictional area, providing important insights to groundwater flow behavior that affect both GDEs and water supply.	The GSAs will continue to identify monitoring network gaps and formulate plans to address those gaps as part of plan implementation.	<p>be included in the GSP.</p> <p>Data gaps and monitoring network limitations will be identified and summarized in the GSP.</p> <p>The GSAs plan to address data gaps as part of GSP implementation. To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into future updates of the GSP.</p>
12	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Monitoring Network	Suggest ensuring both vertical and horizontal heterogeneity are captured in the monitoring design.	<p>Three sites have been constructed with multiple depth monitoring wells using TSS Grant and Proposition 68 funding, and the GSAs plan for a fourth site that has recently been approved by DWR. Two of the four sites are located near surface water features (one near the Cosumnes River and one near Dry Creek).</p> <p>The GSAs will continue to identify data gaps and formulate plans to address those gaps as part of plan implementation.</p>	<p>An updated description of the monitoring network and the supplemental monitoring wells will be included in the GSP.</p> <p>Data gaps and monitoring network limitations will be identified and summarized in the GSP.</p>

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						<p>The GSAs plan to address data gaps as part of GSP implementation. To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into future updates of the GSP.</p>
13	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Monitoring Network	Suggest developing a joint monitoring network in coordination with the South American Subbasin GSA working group that goes beyond minimal SGMA requirements and allows for monitoring of GDE health.	As part of the Proposition 68 funding, monitoring wells and stream gauges are being installed in coordination with the South American Subbasin GSP consultants.	Coordination efforts with the South American Subbasin will be described.
14	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Monitoring Network	Suggest that the Cosumnes Working Group continue to work closely with other entities working in the river corridor currently or in the past: UC Davis Watershed Center, S. American Subbasin GSAs, Reg San, Cosumnes River Preserve, Omochumne Hartnell Water District, Cosumnes Coalition, Sacramento Area Flood Control Agency. Consider a coordinating outreach e-mail or meeting on a regular basis to gather info on current projects or monitoring resources added to avoid duplication and to take advantage of	Using Proposition 68 funds, the Cosumnes Working Group developed the Surface Water Advisory Group (SWAG). SWAG input is being considered as part of GSP development, and the Working Group agrees to continue communication and information sharing as part of GSP implementation can be valuable and maximize returns from resources invested in the Cosumnes Subbasin.	The Surface Water Advisory Group (SWAG) will be described, and its potential role to support plan implementation and reporting will be explained in the GSP.

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				resources available to improve the regional data available.		
15	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Monitoring Network	Suggest coordinating closely with the S. American Subbasin to take advantage of opportunities for sharing monitoring resources and strategies, such as satellite imagery to refine understanding of river connection behavior, gaging station installation and maintenance, and so on.	As part of the Proposition 68 funding the South American Subbasin and Cosumnes Subbasin technical consultants are actively sharing data, including satellite imagery, to improve monitoring infrastructure (monitoring well and stream gauge construction) and characterize interconnected surface water and groundwater conditions for the Cosumnes River.	Inter-basin coordination activities will be described and their role in GSP implementation explained in the GSP. To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into future updates of the GSP, including the 5-year update as suggested.
16	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Sustainable Management Criteria – Interconnected Surface Water	<p>It appears that the proposed approach for developing SMCs for interconnected surface water will not actually result in sustainability; that is, groundwater levels won't be required to be in reach of root systems. If GDEs are unable to survive or reproduce, it won't be possible to attract multi-benefit funding to sustain these resources.</p> <ul style="list-style-type: none"> • Suggest that MOs should be set at a level that are demonstrably sustainable for ISWs/GDEs based on evidence/analysis, or suggest using an average groundwater level from the 2005-2015 time period. • Suggest tracking gaging station flows for this first five years of SGMA and using that data to develop better informed MOs for surface water/groundwater interaction. 	<p>Proposition 68 funding is being used to support a GDE verification study, and results will be considered to develop SMCs. As required by SGMA, the SMCs will be selected to protect beneficial users of interconnected surface water.</p> <p>Per 23-California Code of Regulations §354.24 <i>Each Agency shall establish in its Plan a sustainability goal for the basin that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline.</i> GSAs are not responsible for undesirable results that occurred prior to 2015.</p>	<p>Results of Proposition 68 efforts will be incorporated into the GSP.</p> <p>To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into future updates of the GSP, including the 5-year update as suggested.</p>

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				<ul style="list-style-type: none"> Suggest defining perched aquifer areas to inform management actions. 	As part of Proposition 68 funding the GSAs are also investigating perched water with geophysical studies.	
17	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Sustainable Management Criteria – Interconnected Surface Water	If 2015 groundwater levels will be used to define the MO, it is necessary to provide evidence that these groundwater levels are not adversely impacting ISWs, GDEs, or other beneficial uses. For example, a GDE or specific species may have been capable of surviving under 2015 groundwater levels for a period of time due to drought management attributes, however in the long term these groundwater levels may still lead to crown dieback, lack of sapling recruitment, decreasing returns of anadromous fish, etc. In this case, these groundwater levels would be unsustainable.	Beneficial users will be considered during SMC development and SMCs for the finalized monitoring networks will be protective of all other Sustainability Indicators. Per 23-California Code of Regulations §354.24 <i>Each Agency shall establish in its Plan a sustainability goal for the basin that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline.</i> GSAs are not responsible for undesirable results that occurred prior to 2015.	Discussion of SMC development and checks against interferences with beneficial users including GDEs will be included in the GSP. To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into future updates of the GSP, including the 5-year update as suggested.
18	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Sustainable Management Criteria – Interconnected Surface Water	Two approaches for SMCs were presented in the 9/16 Working Group meeting brief depending on if a river reach is determined to be interconnected or disconnected. If this strategy is identified as the preferred methodology please address the following comments: <ul style="list-style-type: none"> This strategy relies on discrete mapping of reaches as interconnected vs disconnected and that these boundaries remain stationary through time. It may be difficult to clearly identify boundaries of interconnection and it is likely such boundaries are subject to fluctuation through time (see next comment). 	A conservative approach can apply the interconnected strategy also to the transitional reaches, and the disconnected strategy to reaches where water level depths in the Principal Aquifer are more substantial and it is not reasonable to assume water level increases that establish temporary interconnected conditions. This approach will require adequate data, and where data gaps exist the numerical model or other analytical functions and models can be employed to select SMCs based on the best available data. Additionally, the numerical groundwater-flow model will be	Discussion of SMC development and checks against interferences with beneficial users including GDEs will be included in the GSP. Data gaps will be identified and summarized in the GSP.

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				<ul style="list-style-type: none"> Having two management strategies may create challenges at transitions from interconnection-to-disconnection (or visa-versa) as it creates a step change in MO/MT criteria. It may be necessary to create buffer regions between management units where interconnectedness is less clear to ensure management in disconnect reaches does not result in significant and undesirable impacts to interconnected reaches through propagation of declining groundwater levels that results in surface water depletions. In these buffer regions a separate management strategy may be needed with linear, sigmoidal, or other functional transitions between reaches (see concept figure below). In the absence of or even with this consideration in mind it must be shown that the SMCs for disconnected areas which allow continued lowering of GW tables will not impact nearby ISWs or the ability to achieve interconnected SMCs (Boulton & Hancock, 2006). 	<p>employed to evaluate potential interferences between SMCs for each Sustainability Indicator, including the potential interactions between SMCs recommended for Interconnected/Transitional and Disconnected strategies. Data gaps identified during the evaluation will be summarized in the GSP and utilized to identify monitoring network improvements.</p>	<p>The GSAs plan to address data gaps as part of GSP implementation. To the extent that additional information is developed as part of GSP implementation and other coordinated efforts, it will be incorporated into future updates of the GSP, including the 5-year update as suggested.</p>
19	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Sustainable Management Criteria – Interconnected Surface Water	<p>The SMCs for interconnected reaches, as proposed, provide no safeguard that existing seasonal interconnections would be maintained despite the potential for climatic forcing and consumptive trajectories that are likely to increase GW level declines and put pressure on hydrologic processes that maintain these important connections. Further, there is as of yet no analysis, beyond hydro-statistical underpinnings, from a scientific basis for how ISW SMCs would avoid significant and unreasonable changes to beneficial uses (e.g.</p>	<p>The SMCs are based on observed seasonal interconnections because of historical climatic conditions and groundwater use. SGMA requires the GSP show sustainability over a 50-year planning horizon that considers projected climate change effects and demand for water. These projections will be made using the numerical groundwater-flow model.</p>	<p>Discussion of SMC development and checks against interferences with beneficial users including GW-SW connections will be included in the GSP.</p>

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				fluvial-riparian ecosystems and associated hydrogeomorphic processes and organisms that utilize these habitats) (see other comments above and below on this matter).		
20	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Sustainable Management Criteria – Interconnected Surface Water	SMCs for interconnected reaches should ensure the maintenance of existing spatial and temporal GW-SW connections as evidence supports that any increase in SW depletion constitutes a significant and unreasonable impact due to the importance of these connections as well as to the uncertainty of ecosystem and biological responses to an increase in any amount of disconnection (see EDF report as well as Bogan et al., 2019; Boulton & Hancock, 2006).	The SMCs are designed to maintain spatial and temporal GW-SW connections relative to a baseline defined by 2015 conditions consistent with SGMA regulations.	Discussion of SMC development and checks against interferences with beneficial users including GW-SW connections will be included in the GSP.
21	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Sustainable Management Criteria – Interconnected Surface Water	Specifying ISW SMCs based on short-term records may be problematic (see slide 24 for example) as such periods may not adequately reflect baseline conditions or may otherwise be unrepresentative of the region’s hydro-climatic variability. It is understood that data limitations exist and model simulations may be used to supplement historic measurements. Will a minimum period of record such as 2005-2015, be set when establishing SMCs?	The target period of record analyzed to establish SMCs is 1999-2018, and as required by SGMA the GSP shall show sustainability – as defined by the SMCs – over a 50-year planning period that includes potential climate change effects.	Discussion of SMC development, including consideration of climate change, will be included in the GSP.
22	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Sustainable Management Criteria – Interconnected Surface Water	The SMCs for disconnected reaches allow for groundwater levels to decline for a period before P&MAs result in the conceptualized ‘V’ shaped recovery toward MO’s. The impact of these continued declines may have uncertain consequences along the river corridor particularly on riparian communities, GDEs, and channel morphology. For example, if continued GW lowering results in mortality to riparian tree communities this could enhance bank instability and erosion. Such issues should be researched to	The numerical groundwater-flow model will be employed to evaluate potential effects of the glide path toward MO’s (“V” shaped recovery”), including interferences between SMCs for each Sustainability Indicator and potential interactions between SMCs recommended for Interconnected/Transitional and Disconnected river reaches.	Discussion of SMC development and checks against interferences with beneficial users including GDEs will be included in the GSP. To the extent that additional information is developed as part of

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				<p>have a conceptual level understanding of the consequences of these trajectories. Many of these communities may also be GDEs to which there are additional comments in this document.</p>		<p>GSP implementation and other coordinated efforts, it will be incorporated into future updates of the GSP, including the 5-year update as suggested.</p>
23	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	Undesirable Result	<p>What represents an Undesirable Result? How would you define a “significant and unreasonable” change in the system? We suggest that part of the answer to this question is based on what we hope to accomplish with our partners in this basin. If these goals are not being achieved, then it is very likely that impacts are “significant and unreasonable.” Goals for the Cosumnes subbasin should include:</p> <ul style="list-style-type: none"> • Sustain water supply for agricultural, residential, and municipal use; • Create fall flow conditions that allow salmon migration for spawning • Sustain outgoing flow conditions for juvenile salmon migration • Sustain/improve groundwater levels in riparian corridor to support existing GDEs from highway 16 to highway 99; and • Sustain/improve groundwater levels for riparian forest and associated GDEs from highway 99 to highway 5 as necessary (groundwater levels are higher in this area). 	<p>The GSAs have not yet defined Undesirable Results and appreciate stakeholder articulation of goals for the Cosumnes Basin for the Working Group to consider when finalizing those definitions for the GSP.</p>	<p>Undesirable Results will be defined in the GSP.</p>
24	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy,		<p>In addition, when addressing undesirable result “6,” depletions of interconnected surface water [Water Code §10721(w)(6)], any additional depletions beyond January 2015 levels should be deemed “significant and unreasonable” and,</p>	<p>The GSAs appreciate stakeholder’s sharing recommended definitions for Undesirable Results, and the reasons put forward to justify those recommendations. The GSAs will consider these recommendations when</p>	<p>Undesirable Results will be defined in the GSP.</p>

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		The Environmental Defense Fund & Cosumnes Coalition		therefore, an undesirable result. This is due to the history of overdraft in the subbasin, the massive public investment in the Cosumnes River Preserve (in excess of \$100 million), and the State Water Resources Control Board’s (State Water Board) designation of the Cosumnes River and other streams in the subbasin as “fully appropriated streams” (FAS). The Cosumnes is a FAS from July 1st to October 31st, the South Fork Cosumnes River is from April 15th to October 31st, and Deer Creek is from May 1st to October 31st (see Order WR 98-08). Due to these factors, the GSP should assume that any further depletions of interconnected surface water are impacting beneficial uses and are, therefore, “significant and unreasonable.” For a more detailed discussion of this topic see EDF’s white paper “Addressing Regional Surface Water Depletions in California.”	finalizing their definitions for Undesirable Results for the GSP.	
25	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition		It is possible that during normal, above normal, and wet water year types there will be “excess” water flowing in the Cosumnes River and other streams in the subbasin. In this case, some depletions of interconnected surface water may be reasonable, but much more detailed hydrologic analysis will be required to determine when there is truly excess water available before the GSP allows further depletions. The State Water Board’s guidance for diversion of surface water to underground storage may be a useful standard in the interim for determining if a depletion of interconnected surface water is reasonable. This guidance suggests that when stream flows exceed 90% of historical average daily flow between December 1st and March 31st it is safe to divert additional surface water for the purpose of groundwater recharge. We acknowledge this guidance is intended for a different purpose than assessing	The GSAs appreciate stakeholder guidance for the determination of depletions that results from potential Projects and Management Actions. The Working Group will consider these recommendations, as well as available data and results from the numerical groundwater-flow model to estimate depletions and evaluate their potential influence on SMCs and Basin sustainability.	The sustainability goal of the Cosumnes Subbasin will be defined in the GSP.

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				depletions of interconnected surface water, but believe it is a good rule of thumb until a more thorough analysis of the existing demands and beneficial uses along the streams of the subbasin is completed.		
26	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition		Lastly, several currently proposed SMCs cite 2015 water levels as the MO. As discussed in the section above it is possible this water level was already impacting beneficial uses (domestic wells/GDEs/ISWs) in the Basin. Please provide an analysis of the impact of this water level on these uses relative to a reasonable alternative baseline condition (e.g. average from 2005-2015 or longer period of record). This could be in the form of plots of incremental (i.e. 1 ft) water level declines from baseline vs resource metrics. Resource metrics could include: i) percentage of domestic wells that are dry; and ii) percent area of GDEs that become disconnected. The shape of such plots may be useful in understanding and classifying impacts (e.g. a liner response is much different than a sigmoidal response where a clear threshold of increased impact is present – see conceptual figure below).	The GSAs appreciate stakeholder guidance suggestions for data analyses to explore potential Undesirable Results that may occur due to the 2015 minimum baseline established by SGMA. The Working Group will consider these recommended analyses as part of their evaluation of SMCs and definition of Undesirable Results.	Undesirable Results will be defined in the GSP.
27	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund &	Sustainability	Recognizing that arresting the long-term decline in groundwater levels in this Basin will require significant resources, what ideas does this group have for how sustainability can be achieved? Note that groundwater levels can be maintained higher at some locations; it is not necessary to increase groundwater elevations across the entire basin to improve undesirable results at other locations.	The GSAs are currently evaluating a substantial number of potential Projects and Management Actions to arrest the historical decline in groundwater storage and achieve sustainability. The Working Group appreciates the offering of conceptual projects and agree future success can benefit from collaboration, information sharing, and coordinated efforts to obtain funding.	Projects and Management Actions will be described in the GSP. Inter-basin coordination activities will also be described and their role in GSP implementation explained in the GSP.

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		Cosumnes Coalition		Suggest a combination of demand side management (strategic fallowing, water conservation) and multi-benefit projects (flood MAR, reclaimed water for reuse, incentives, water markets, GW banking, floodplain re—connection). Increase coordination with the South American Subbasin GSA working group to identify opportunities for technical collaboration, coordinated funding proposals, and general information sharing.		
28	10/9/2020	Melinda Frost-Hurzel; ECOS, The Nature Conservancy, The Environmental Defense Fund & Cosumnes Coalition	SMCs	<p>General comments on approaches to designate SMCs for groundwater level lowering, ISWs, and GDEs.</p> <p>In setting SMC criteria for GDEs please consider the following factors:</p> <ul style="list-style-type: none"> • There is variability in groundwater requirements for the various ecologic components that make up a GDE (e.g. response/requirements of different vegetation; seasonal requirements; life-history requirement of biota that inhabit GDEs) (Easmus & Froend, 2006); • There may be a lagged response of GDE health to alteration of GW conditions requiring conservative approaches to what GW alterations are acceptable (Easmus & Froend, 2006); • GDE health responds differently depending on the rate and magnitude of GW decline. Vegetation appears to be more resistant/resilient to low rates and magnitudes of GW declines compared to more rapid and larger declines which could force GDEs over a ‘tipping point’ toward an alternative ecological state (Easmus & Froend, 2006; Froend & Sommer, 2010; Kath et al., 2014); and 	The GSAs appreciate the considerations offered for selecting SMCs. The Working Group will evaluate these considerations as they finalize SMCs for the GSP. While SMCs are based on historical conditions, SGMA requires the GSP show the SMCs ensure sustainability over a 50-year planning horizon that considers projected climate change effects and potential changes in water demand.	Discussion of SMC development and checks against interferences with beneficial users will be included in the GSP

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				<ul style="list-style-type: none"> • GDE recovery after a ‘tipping point’ is exceeded may be uncertain or unlikely (Kath et al., 2014). <p>In setting MT criteria, the use of linear fits to extrapolate future conditions is sensitive to the period of record. It is recommended that a standardized or minimum period of record be used if this is the selected approach to setting MTs. The period should be sufficient to capture long-term GW trends and regional hydroclimatic variability that includes inter-decadal processes.</p> <p>Current MTs for many sustainability indicators allow for continued declines in GW levels that appear to assume stationarity in the processes driving GW declines. The ability to achieve MOs based on future declines following these trajectories should be thoroughly analyzed and built into interim measurable objectives with associated management actions should future trajectories not follow these patterns, which could be the case given non-stationarity in GW trends and increased withdrawals and GW declines from climate change related factors.</p>		