

To: Surface Water Advisory Group Members
From: Bennett Brooks, Consensus Building Institute
Date: February 16, 2021
Re: SWAG Comments on Meeting #3 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 #3 focused on the undesirable results related to interconnected surface waters, historical water budget analysis, and initial projects / management action concepts. Comments were compiled and reviewed in a similar process used for the previous SWAG meetings' 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:

- Recommended changes to the draft GSP text that are a direct result of a comment are shown in [blue text](#).
- [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.
- Changes to the draft GSP that are anticipated as a result of current Proposition 68 activities are also noted.

We look forward to our next SWAG meeting on February 26. As always, please feel free to reach out if any questions.

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1	12/4/2020	ECOS, TNC, and Cosumnes Coalition	Hydrogeologic Conceptual Model (HCM): 3.7 Groundwater Dependent Ecosystems (GDEs)	Valley Oaks are a key species to focus on as part of the GDE verification study. There are numerous stands of Valley Oaks throughout the Cosumnes River Preserve that are likely groundwater dependent. Metrics for assessing the health of Valley Oak stands (and GDEs in general) were developed and described in Rohde et al., 2019, including growth, diversity, recruitment, structure, native plant dominance, and survivorship. TNC can provide access to the Cosumnes River Preserve, as well as guidance for locating Valley Oak stands.	Proposition 68 funding is supporting GDE verification which plans to include Valley Oaks in the analysis, assuming access can be secured. The GDE verification study is considering the reference provided, and the GSAs appreciate the input and offer to assist with gaining access to sites identified for detailed inspection.	Results of the Proposition 68 efforts will be incorporated into the GSP. Remaining data gaps will be identified in the GSP, and the GSAs plan to address data gaps as part of GSP implementation.
2	12/4/2020	ECOS, TNC, and Cosumnes Coalition	HCM: 3.7 GDEs	In addition to Valley Oaks, willow and cottonwood riparian communities along the Cosumnes River and Dry Creek are also of high ecological value and should be considered in the field evaluation program. While focus on Valley Oaks, willow and cottonwood riparian communities is warranted 25 other vegetative communities supporting phreatophytes, not including various wetland types, are also mapped by the NC dataset in the basin. A stratified random sampling by different vegetative community types applied within accessible lands may be a good option to ensure equal effort in surveying these other communities. In addition to Rhode et al., (2019) there are many riparian survey protocols that provide detailed survey methods (Cooper & Merritt, 2012; Merritt et al., 2017; Winward, 2000).	Proposition 68 funding is supporting GDE verification which plans to include riparian communities and other vegetative communities in the analysis, assuming access can be secured. The GSAs appreciate the input on potential species and have provided these comments and reference suggestions to the GDE consultant to consider as part of finalizing their study plan.	Results of the Proposition 68 efforts will be incorporated into the GSP. Remaining data gaps will be identified in the GSP, and the GSAs plan to address data gaps as part of GSP implementation.
3	12/4/2020	ECOS, TNC, and Cosumnes Coalition	HCM: 3.7 GDEs	It is requested that when survey strategies and assessment approaches are finalized such information is shared with the SWAG where feasible. For example, slide 6 notes the strategy may include an approach to “Decide whether feature appears to be a GDE and whether it might be sensitive to regional groundwater	The GSAs are utilizing the SWAG and Working Group meetings as means to communicate strategies and approaches. We encourage attendance and input at these meetings. Efforts will be made to share protocols for GDE related work when possible. Protocols developed by our sub-contractors can be made available to SWAG members and will be documented in their report.	Results of the Proposition 68 efforts will be incorporated into the GSP. Remaining data gaps will be identified in the GSP, and the GSAs plan to address data

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				and/or drought conditions". Our members have an interest in better understanding this approach if possible.		gaps as part of GSP implementation.
4	12/4/2020	ECOS, TNC, and Cosumnes Coalition	HCM: 3.7 GDEs	It is agreed there is value in verification of the NC Dataset through field surveys. There is also value in conducting field based vegetation assessments particularly as part of long term monitoring. However, much of the value of vegetation assessment and certain metrics only emerge from repeat surveys. Such repetition can document trends and through confirmed correspondence (e.g. correlation) with alternative survey methods such as remote sensing provide a sense of validation and confidence in those metrics. Further trends can be correlated with physical conditions (groundwater) to better understand system dynamics and ecohydrologic response. Is continued assessment (e.g. annual, bi-annual) anticipated as part of SGMA implementation? SWAG members are happy to discuss this matter further.	<p>Proposition 68 funding is supporting a single field survey to verify select GDE populations and areas. GSAs welcome the opportunity to identify partners and funds to continue surveys in the future. They will be helpful in assessing any changes in GDEs.</p> <p>Based on these initial results, the GSAs will consider how future SGMA monitoring activities will address GDE's identified as impacted by conditions in the principal aquifer, or otherwise recommended for additional study or monitoring.</p>	GSAs will assess the need and frequency of repeat surveys or other monitoring and data collection when finalizing the SGMA- compliant monitoring plan for the GSP.
5	12/4/2020	ECOS, TNC, and Cosumnes Coalition	<p>SMC: 14.6 Minimum Threshold for Depletions of Interconnected Surface Water (ISW)</p> <p>SMC: 15.6 Measurable Objective for Depletion of ISW</p>	It is good to see consideration of MO/MT criteria for 'transitional reaches'.	Comment noted and we thank the SWAG for their input into the MO/MT development process.	The GSP will document the GSA's development of MO/MTs for the interconnected, transitional, and disconnected reaches of the Cosumnes River.
6	12/4/2020	ECOS, TNC, and Cosumnes Coalition	Monitoring Network: ISW Monitoring Network and Sustainable Management Criteria (SMC)	Cosumnes Working Group Consultants talk about a significant movement of Groundwater from the Cosumnes Subbasin to the South American Subbasin. SCGA's consultant's preliminary analysis indicates some groundwater movement from the Cosumnes subbasin to the South American Subbasin. However, years of groundwater elevation data	All previous investigations have actually <u>not</u> concluded that groundwater movement is from the South American Subbasin to the Cosumnes Subbasin. For example, a previous study evaluated water quality, stable isotope, and groundwater	

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				<p>taken from wells along the subbasin boundary as well as SCGA modeling indicates that groundwater is moving under the Cosumnes from the South American Subbasin into the Cosumnes Subbasin. Consultants from both GSP efforts should coordinate and share information to fully establish the baseline conditions for both Subbasins.</p>	<p>elevations, and concluded that flow from the Cosumnes to the South American subbasins likely occurs (RMC, December 16, 2015, Technical Memorandum to the Sacramento Central Groundwater Authority, “Recharge Mapping and Field Study”).</p> <p>The GSAs in both subbasins are coordinating the development of a numerical model (i.e., the CoSANA model) to support both GSPs, including development of the baseline conditions. If there is data that will assist the Cosumnes WG and SCGA consultants in the modeling flows, please provide it so it can be evaluated and considered in our analysis. It is the intent that both subbasins will be relying on similar conclusions regarding flows across basin boundaries.</p> <p>Proposition 68 funding is supporting refinement of the CoSANA model along major surface water reaches to increase the model’s reliability to determine cross-boundary flows between subbasins.</p>	<p>The GSP will describe all inter-basin coordination efforts, including coordinated model development.</p> <p>Remaining data gaps will be identified in the GSP, and the GSAs plan to address data gaps as part of GSP implementation.</p>

7	12/4/2020	ECOS, TNC, and Cosumnes Coalition	<p>Monitoring Network: 1.1.6. Monitoring Network for Depletions of ISW.</p> <p>HCM: 3.7. GDE</p>	<p>Can the Cosana model be used to predict what the impacts will be on surface water/groundwater interaction and GDEs when the basin returns to the 2015 storage level? Can the model be used to help select recharge areas that improve GDE and surface water interactions? If so can these runs be done now so that the analysis can be included as part of the management actions selection process.</p>	<p>The CoSANA model will be employed to project changes in groundwater levels and the effects of those changes on surface water flows. The application of these results to specific sites depends on the site location, site area, and existing data gaps. The model results will be used to determine the</p>	<p>Projected model results will be summarized and presented in the GSP along with proposed P/MAs that were refined based on the model results.</p>
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					efficacy of Project and Management Actions (P/MAs) to meet the specified sustainable management criteria (SMC).	
8	12/4/2020	ECOS, TNC, and Cosumnes Coalition	SMC- Undesirable Results	With regard to information/examples on relationships between GW levels in the principal aquifer and the timing and magnitude of Cosumnes flows to support juvenile/adult migration and adult spawning (or other life stages such as embryo incubation which could benefit from groundwater discharges) and/or support for GDEs and riparian forest west of 99 we recognize there are data gaps that we hope the GSP can help to fill with future monitoring and modeling.	These topics will be considered when developing GSP implementation and will be included in the data gaps section.	Data gaps will be identified in the GSP, and the GSAs plan to address data gaps as part of GSP implementation.
9	12/4/2020	ECOS, TNC, and Cosumnes Coalition	SMC- Undesirable Results Available Data and Data Gaps	To our knowledge possible information sources in addition to sources provided in previous comment letters include the aforementioned study by Rhode et al. (2019); Mount et al. 2001 (see Appendices I & II for well locations and simulation results that show potential GW levels within rooting depths of potential GDEs); gage measurements from UC Davis (https://watershed.ucdavis.edu/doc/cosumnes-research-group/data-access - data is notably limited to mostly wet season flows) and possible inferences on groundwater discharges for similar head conditions, if they could be documented, as those simulated by Niswonger (2006)/Niswonger & Fogg (2008) from the perched aquifer near the Hwy 99 crossing.	Thank-you for the cited references and potential data sources. Information from these sources were considered for inclusion into the Basin DMS, development of TM6 (Hydrogeological Conceptual Model and Groundwater Conditions), CoSANA model development, and current interconnected surface water evaluations.	Appropriate data from these sources will continue to support GSP development.
10	12/4/2020	ECOS, TNC, and Cosumnes Coalition	13.6 Undesirable Results for Depletions of ISW; 14.6 Minimum Threshold for Depletions of ISW; 15.6 Measurable	In considering SMCs and undesirable results for ISWs it would be beneficial to be presented with a hydro-statistical analysis of GW-SW interconnections in the lower basin. For instance, using simulated and available monitored GW levels and streambed elevations what are frequencies of any connections, what	Thank-you for the suggested analytical approach. It will be considered relative to the quantity and frequency of available data and model limitations.	If appropriate, results from the analysis will be summarized and included in the GSP. Remaining data gaps will be identified in the GSP, and the

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			Objective for Depletion of ISW.	are the GW level exceedance probabilities, what are the summary statistics for the annual timing and duration of any interconnections along the river? Similarly, how do such metrics vary by water year and are there temporal trends in the metrics? Such metrics could serve as a valuable reference frame and working from the assumption that periods of connection are important to beneficial uses it could be construed that significant deviation from this reference frame in the future would be an undesirable result. The degree of this deviation requires further consideration and discussion. Revaluation of metrics could be conducted during each 5-year review as part of adaptive management and with understanding of P&MA lag times. It is understood that data limitations exist toward this analysis, 2015 conditions may still serve as an official baseline for GW-SW connections, and GSAs are not responsible for undesirable results that occurred prior to 2015.		GSAs plan to address data gaps as part of GSP implementation.
11	12/4/2020	ECOS, TNC, and Cosumnes Coalition	13.6 Undesirable Results for Depletions of ISW	The approach to defining and monitoring undesirable results for GDEs should be based on modeling and well elevation data that translates to appropriate plant colony root zones. It is not sufficient to use the 30' elevation associated with full grown trees because this level will not allow for any replacement grown or natural understory growth.	Proposition 68 funding is supporting GDE verification. The outcome of this study, model results, and available data, will be used, as appropriate, to determine appropriate SMCs when defining undesirable results in regard to interconnected surface water and their associated effects on GDEs, as applicable. The Cosumnes Working Group would appreciate information from the SWAG on recommended water table depths to protect against undesirable results in the context of the issue raised here regarding Cosumnes Subbasin GDEs.	Results of Proposition 68 GDE verification study will be summarized in the GSP and used, as appropriate, in defining undesirable results, as applicable. Remaining data gaps will be identified in the GSP, and the GSAs plan to address data gaps as part of GSP implementation.

12	12/4/2020	ECOS, TNC, and	Projects and Management Actions	In situations where GDEs are or have been sustained by a shallow aquifer, recharge	Many factors need to be balanced when determining recharge project locations. For example, physical conditions, cooperative landowners, and existing projects on the So American Subbasin side of the Cosumnes River. The Cosumnes Working Group welcomes information from the SWAG identifying potential locations for multi-benefit recharge projects. The P/MAs are being developed to maintain the long-term	Results of Proposition 68 GDE verification study will be
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		Cosumnes Coalition		projects that both contribute to the shallow and deep aquifers should be given preferential treatment as management actions	sustainability of the Basin as defined by undesirable results and identified using SMCs. Undesirable results include interconnected surface-water and its associated effects on GDEs, as applicable.	summarized in the GSP and used in defining undesirable results, as applicable.
13	12/4/2020	ECOS, TNC, and Cosumnes Coalition	Projects and Management Actions	The proposed GSP Projects and Management Actions represent an important step towards sustainable groundwater management for the basin. We look forward to hearing more details regarding implementation.	The GSAs appreciate the active engagement and input provided by the SWAG.	The GSP will summarize the planned P/MAs.
14	12/4/2020	ECOS, TNC, and Cosumnes Coalition	Projects and Management Actions	Conservation Landowners are willing to work with the GSAs to identify any Conservation Lands that can effectively serve as recharge areas and contribute as multi-benefit management projects.	Good suggestion. We are interested in exploring opportunities for partnership with conservation landowners, and some GSA members have already initiated discussions with SWAG members regarding these opportunities. The GSAs appreciate the active engagement and input provided by the SWAG.	The GSP will summarize the planned P/MAs.